

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF WISCONSIN

CODY FLACK and
SARA ANN MAKENZIE,

Plaintiffs,

v.

Case No. 18-CV-0309

WISCONSIN DEPARTMENT OF
HEALTH SERVICES and
LINDA SEEMEYER, in her official
capacity as Secretary of the Wisconsin
Department of Health Services,

Defendants.

**DECLARATION OF COLIN ROTH IN RESPONSE TO
PLAINTIFFS' MOTION FOR PRELIMINARY INJUNCTION**

I, **COLIN ROTH**, pursuant to 28 U.S.C. § 1746, declare as follows:

1. I am employed as an Assistant Attorney General at the Wisconsin Department of Justice (DOJ). I am one of the attorneys for the State of Wisconsin Department of Employee Trust Funds, State of Wisconsin Group Health Insurance Board, and Robert J. Conlin in the above-captioned matter.

2. This declaration is based on my personal knowledge.

3. Attached hereto as **Exhibit 1000** is a true and correct copy of the expert witness report of Dr. Lawrence S. Mayer that was filed in the case of *Boyden v. ETF*, No. 17-CV-0264 (W.D. Wis.).

4. Attached hereto as **Exhibit 1001** is a true and correct copy of the *Decision Memo for Gender Dysphoria and Gender Reassignment Surgery* (August 30, 2016), Centers for Medicare and Medicaid Services. This document is publicly available at <https://www.cms.gov/medicare-coverage-database/details/nca-decision-memo.aspx?NCAId=282>.

5. Attached hereto as **Exhibit 1002** is a true and correct copy of the deposition transcript of Dr. Lawrence S. Mayer that was taken in the case of *Boyden v. ETF*, No. 17-CV-0264 (W.D. Wis.), on June 15, 2018, and that was subsequently filed with the court in that case.

6. Attached hereto as **Exhibit 1003** is a true and correct copy of the Declaration of Lawrence S. Mayer Filed in Support of State Defendants' Reply in Support of Summary Judgment, dated July 9, 2018, which was filed in the case of *Boyden v. ETF*, No. 17-CV-0264 (W.D. Wis.).

7. Attached hereto as **Exhibit 1004** is a true and correct copy of the expert witness report of David V. Williams that was filed in the case of *Boyden v. ETF*, No. 17-CV-0264 (W.D. Wis.).

8. Attached hereto as **Exhibit 1005** is a true and correct copy of the World Professional Association for Transgender Health (WPATH) Standards of Care for the Health of Transsexual, Transgender, and Gender Nonconforming People (7th Version). I obtained these standards of care from WPATH's website, www.wpath.org, where these were presented as the most recent version of the standards of care.

9. Attached hereto as **Exhibit 1006** is a true and correct PDF copy of a letter entitled *Dear Colleague Letter on Transgender Students* dated May 13, 2016, issued by the U.S. Department of Justice, Civil Rights Division, and U.S. Department of Education, Office for Civil Rights. I obtained this document from the U.S. Department of Education website, <https://www2.ed.gov/about/offices/list/ocr/letters/colleague-201605-title-ix-transgender.pdf>.

10. Attached hereto as **Exhibit 1007** is a true and correct PDF copy of what appears on the "Know Your Rights: Transgender People and the Law" page, which is a link on the ACLU's website found at, <https://www.aclu.org/know-your-rights/transgender-people-and-law>.

11. Attached hereto as **Exhibit 1008** is a true and correct PDF copy of what appears on the "National Equality Map" page, which is a link on the Transgender Law Center website found at, <https://transgenderlawcenter.org/equalitymap>.

12. Attached hereto as **Exhibit 1009** is a true and correct PDF copy of the Wikipedia entry entitled, *Transgender rights in the United States*. I obtained this document from Wikipedia's website, https://en.wikipedia.org/wiki/Transgender_rights_in_the_United_States.

13. Attached hereto as **Exhibit 1010** is a true and correct PDF copy of the "Values" page, which is a link on the Transgender Law Center website, found at <https://transgenderlawcenter.org>.

14. Attached hereto as **Exhibit 1011** is a true and correct PDF copy of the "About Us" page, which is a link on the National Center for Transgender Equality website, found at <https://transequality.org>.

15. Attached hereto as **Exhibit 1012** is a true and correct PDF copy of the "LGBT Rights" page, which is a link on the ACLU website, found at <https://www.aclu.org/issues/lgbt-rights>.

16. Attached hereto as **Exhibit 1013** is a true and correct PDF copy of the "About Us–History" page, which is a link on the Lambda Legal website, found at <https://www.lambdalegal.org>.

17. Attached hereto as **Exhibit 1014** is a true and correct PDF copy of homepage for the Movement Advancement Project website, found at <http://www.lgbtmap.org>.

18. Attached hereto as **Exhibit 1015** is a true and correct PDF copy of an online opinion editorial in The New York Times entitled, *Trump's Heartless Transgender Military Ban Gets a Second Shot*, NY Times (Mar. 28, 2018), found at https://www.nytimes.com/2018/03/28/opinion/trump-transgender-military-ban.html?rref=collection%2Ftimestopic%2FTransgender%20issues&action=click&contentCollection=timestopics&region=stream&module=stream_unit&version=latest&contentPlacement=28&pgtype=collection.

19. Attached hereto as **Exhibit 1016** is a true and correct PDF copy of an online opinion editorial in the Washington Post entitled, *Trump's transgender troop ban is as insidious as ever*, Wash. Post (Mar. 28, 2018), found at https://www.washingtonpost.com/opinions/trumps-transgender-troop-ban-is-as-insidious-as-ever/2018/03/28/773283be-32b6-11e8-8abc-22a366b72f2d_story.html?utm_term=.c6ff0fb7dd0b.

20. Attached hereto as **Exhibit 1017** is a true and correct PDF copy of an online editorial in the Los Angeles Times entitled, *Time for transgender rights opponents to give up the fight*, L.A. Times (Dec. 27, 2015), found at <http://www.latimes.com/opinion/editorials/la-ed-transgender-ballot-initiative-20151227-story.html>. Online comments at the end of this editorial are excluded from this copy.

21. Attached hereto as **Exhibit 1018** is a true and accurate copy of a Bates No. Flack 002404, which is a letter dated June 14, 2018, from Sara Ann Makenzie's psychotherapist at the Sauk County Department of Human Services. This letter was contained in Makenzie's medical records that I received from Plaintiffs' attorneys.

I declare under penalty of perjury that the forgoing is true and correct.

Executed on the 12th day of July, 2018.

s/ Colin T. Roth

COLIN ROTH

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF WISCONSIN

ALINA BOYDEN and
SHANNON ANDREWS,

Plaintiffs,

v.

Case No. 17-CV-264

STATE OF WISCONSIN DEPARTMENT
OF EMPLOYEE TRUST FUNDS, et al.,

Defendants.

**EXPERT REPORT OF DR. LAWRENCE S. MAYER
SUBMITTED ON BEHALF OF THE STATE DEFENDANTS**

Lawrence S. Mayer, MD, MS, PhD
4 Via Corsica
Dana Point, CA 92629
lsmdphd@gmail.com

April 19th , 2018

While retained as a private consultant in this matter, I currently serve as a Visiting Fellow in Integrative Knowledge and Human Flourishing at Harvard University.

I have been asked to provide my opinion on the efficacy, safety, and optimality of hormonal and surgical interventions for the treatment of gender dysphoria.

QUALIFICATIONS

1. I am a research physician, epidemiologist and biostatistician and one of the few physicians with training in clinical epidemiology and a M.S. and Ph.D. in Mathematics and Statistics.
2. I have served as a tenured (and nontenured) professor at major universities for over four decades. My professorial (and research) appointments have been at Arizona State University, Johns Hopkins University, The Ohio State University, The Mayo Clinic, Princeton, Stanford, University of Michigan, University of Pennsylvania, and Virginia Tech. I am currently a Visiting Fellow at Harvard University where my research focuses on the integration of the quantitative methods of the social sciences with more classical biostatistical and epidemiological methods.
3. My full-time and part-time appointments have been in 23 disciplines including statistics, biostatistics, epidemiology, public health, social methodology,

psychiatry, mathematics, sociology, political science, economics and biomedical informatics. My primary focus has been on the intersection among biostatistics, medicine and public health.

4. I have reviewed as a biostatistician, epidemiologist, physician and social methodologist hundreds of manuscripts submitted for publication to many of the major medical, statistical and public health journals such as *The New England Journal of Medicine*, *The Journal of the American Statistical Association* and *The American Journal of Public Health*. I have served as an associate editor for *The Journal of the American Statistical Association* and *Social Methods and Research*. I am a founding member of the editorial board of the journal *Social Methodology* and the Sage series on Social Methodology.
5. I am a Fellow of the Royal Statistical Society
6. I attach a copy of my current Professional Vita, which lists my education, appointments, publications, research, and other professional experience.

SUMMARY OF OPINIONS

1. Sex is a biological trait and gender is a cultural construct.
2. Gender develops over time.
3. There is no evidence that gender is innate, immutable, or present at birth.
4. Gender dysphoria is the distress associated with incongruence between sex and gender.
5. Gender dysphoria is a serious medical condition that deserves treatment.

6. Medical and surgical treatments have not been demonstrated to be safe and effective for gender dysphoria.

OPINIONS

1. Since the publication of Sexuality and Gender, Findings from the Biological, Psychological, and Social Sciences in Fall of 2016, which I co-authored, there have been no new publications which have changed my understanding of gender. Mayer and McHugh (2016). Scientific and other sources that support my current understanding of gender are cited in that publication.
2. Scientific findings since the publication of Sexuality and Gender have reinforced my understanding of gender. See, for example, Mueller (2017).
3. Gender is almost uniformly defined as a cultural construct while sex is a biological trait. An excerpt from my Sexuality and Gender publication explains this idea in more detail:

To clarify what is meant by “gender” and “sex,” we begin with a widely used definition, here quoted from a pamphlet published by the American Psychological Association (APA):

Sex is assigned at birth, refers to one’s biological status as either male or female, and is associated primarily with physical attributes such as chromosomes, hormone prevalence, and external and internal anatomy. Gender refers to the socially constructed roles, behaviors, activities, and attributes that a given society considers appropriate for boys and men or girls and women. These influence the ways that people act, interact, and feel about themselves.

While aspects of biological sex are similar across different cultures, aspects of gender may differ. This definition points to the obvious fact that there are social norms for men and women, norms that vary across different cultures and that are not simply determined by biology. But it goes further in holding that gender is wholly “socially constructed” — that it is detached from biological sex. This idea has been an important part of a feminist movement to reform or eliminate traditional gender roles. In the classic feminist book *The Second Sex* (1949), Simone de Beauvoir wrote that “one is not born, but becomes a woman.” This notion is an early version of the now familiar distinction between sex as a biological designation and gender as a cultural construct: though one is born, as the APA explains, with the “chromosomes, hormone prevalence, and external and internal anatomy” of a female, one is socially conditioned to take on the “roles, behaviors, activities, and attributes” of a woman.

Mayer and McHugh (2016) at 87. I go on to explain that:

In biology, an organism is male or female if it is structured to perform one of the respective roles in reproduction. This definition does not require any arbitrary measurable or quantifiable physical characteristics or behaviors; it requires understanding the reproductive system and the reproduction process. Different animals have different reproductive systems, but sexual reproduction occurs when the sex cells from the male and female of the species come together to form newly fertilized embryos. It is these reproductive roles that provide the conceptual basis for the differentiation of animals into the biological categories of male and female. There is no other widely accepted biological classification for the sexes.

Mayer and McHugh (2016) at 90. I further explore this concept in my amicus brief for the *Gloucester County School Board v. G.G.* U.S. Supreme Court case, at page 7:

Sex is thus innate and immutable. The genetic information directing development of male or female gonads and other primary sexual traits, which normally are encoded on chromosome pairs “XY” and “XX,” are present immediately upon conception. As early as eight

weeks' gestation, endogenously produced sex hormones cause prenatal brain imprinting that ultimately influences postnatal behaviors. *See* Francisco I. Reyes et al., Studies on Human Sexual Development, 37 J. of Clin. Endocrinology & Metabolism 74-78 (1973); Michael Lombardo, Fetal Testosterone Influences Sexually Dimorphic Gray Matter in the Human Brain, 32 J. of Neuroscience 674-80 (2012); Geneva Foundation for Medical Education and Research, "Human Sexual Differentiation" (2016), *available at* http://www.gfmer.ch/Book&'Reproductive_health/Human_sexual_differentiation.html. It is therefore not the reproductive system alone that carries one's sexual identity. Every cell in the body is marked with a sexual identity by its chromosomal constitution XX or XY.

Thus, sex is not "assigned" at birth, as Respondent suggests; rather, it "declares itself anatomically in utero and is acknowledged at birth." Michelle A. 8 Cretella, Gender Dysphoria in Children and Suppression of Debate, 21 J. of Am. Physicians & Surgeons 50, 51 (2016). A baby's sex – male or female – is recognized and recorded at birth.

4. Definitions of sex which include gender as a part of sex do not contribute to our understanding of either sex or gender.

5. There is an emerging theory that gender identity is innate and immutable.

Components of this theory are described in the report of Dr. Budge. It makes no sense.

6. For example, the following is a fundamental error in the Budge report:

Sex refers to one's classification as male, female, or neither male or female. The term refers a person's chromosomes, hormones, reproductive organs, secondary sex characteristics, *and gender identity (i.e., internal sense of gender)*.

Budge (2018) at 7 (emphasis added).

7. Beyond any doubt, sex is biological and, as such, cannot depend on cultural constructs.
8. Budge compounds her error by stating with emphasis:

[G]ender identity is one of the primary factors when defining an individual's sex.

Budge (2018) at 7.
9. Not only is this definition of sex inconsistent with fundamental biology as taught in every Biology 101 course across the country, but to say that a cultural construct ought to be the “primary factor” in the definition of a biological concept is wholly inconsistent with basic scientific principles.
10. There is no evidence to support the idea that gender identity is a latent or innate trait present at birth. See, for example, Mayer, et al. Amicus Brief (2017) at 10 n.4.
11. The formation of gender identity is a developmental process. Budge's report suggests that gender identity is a process of discovery of a latent variable, present at birth, and revealed around the age of three, rather than developed over time. There is not a scintilla of scientific support for this idea.
12. Gender dysphoria is the distress associated with an individual's identification with a non-conforming gender. It is not the same as being transgendered.
13. Transgenderism is not a disease, disorder, or diagnosis. As such it cannot be treated. Many fought long and hard to remove the diagnosis of Gender Identity Disorder as a diagnosis for all transgendered people.

14. Transgenderism is neither necessary nor sufficient for a diagnosis of gender dysphoria.
15. There is evidence that transgender individuals may benefit from supportive measures but these measures cannot be viewed as “treatments” for being transgendered.
16. Gender dysphoria, unlike transgenderism, is a serious medical condition that deserves to be treated.
17. Treatment for gender dysphoria must be borne of medical necessity and address the medically relevant portion of this condition, which is *distress* associated with the conflict between an individual’s gender and their sex.
18. Treatment interventions on behalf of gender dysphoric individuals must be held to the same scientific standards as other medical treatments. These interventions must be optimal, efficacious, and safe.
19. Any treatment which alters biological development must be used with extreme caution.
20. A variety of medical and surgical procedures have been proposed for treating gender dysphoria.
21. The evidence that these interventions are safe, effective, and optimal is minimal. The bases for this opinion with respect to both children and adults, along with the studies on which this opinion relies, can be found in both my Sexuality and Gender publication and my amicus brief. Mayer and McHugh (2016) at 106–13; Mayer, et al. Amicus Brief (2017) at 15–21. This opinion is supported by the

Centers for Medicare and Medicaid Services (Decision Memo for Gender Dysphoria and Gender Reassignment Surgery) which reviews many available studies and found “inconclusive” clinical evidence regarding gender reassignment surgery.

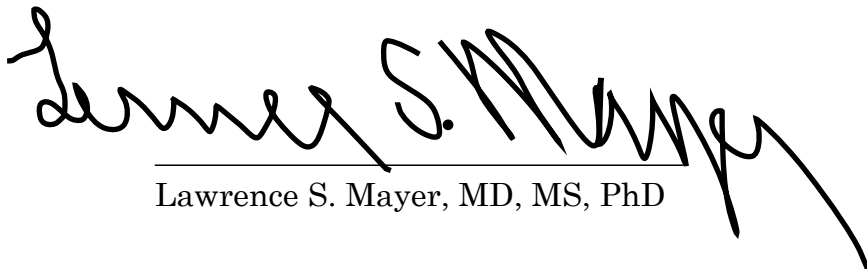
22. Optimality requires that the procedures employed in the treatment of a condition effectively address the underlying features of that condition. For transgendered patients, the idea that they require treatment for being transgendered is dated, offensive, and mistaken.
23. Optimality considerations for the treatment of gender dysphoria, the distress associated with have a non-conforming gender, should aim at reducing or eliminating this distress.
24. In body dysmorphic disorders, such as anorexia nervosa, we do not give patients interventions to alter their physical appearance. We treat the distress caused by the conflict between their perception of themselves and the reality of themselves. In other words, treatment of the distress associated with the disorder is what is medically appropriate and medically necessary.
25. If we disregard the principle of optimality, problems of equity arise: If a transgendered woman is entitled to feminization procedures to reduce her distress, surely a cis-gendered woman, similarly distressed, should be entitled to the same procedure.
26. Neither patient as presented above is entitled to the procedure as a medical necessity.

27. It is particularly difficult for me to imagine a world in which we might favor one category of person over another when considering the allocation of medical resources as a public good.
28. Suppose identical twins are both bothered by the masculinity of their face. However, the twins differ in their gender identity. If we accept treatment suggestions as proposed by Budge, one but not the other would be entitled to surgery. Why should one twin be treated but the other not, when neither twin presents a medical necessity for treatment?
29. Furthermore, since feminization or masculinization of transgender individuals is defined by concepts of femininity or masculinity which are cultural constructs, then the treatments for these individuals varies by culture.
30. Suppose in a particular society small hands is part of the archetypal female gender. Would a transgendered woman in that society be entitled to hand reduction surgery? What if she moves to a different culture?
31. Since gender affirming medical and surgical procedures depend on cultural values, the medical necessity of these interventions would vary depending upon the cultural traits of an individual, in a given place, at a given time.
32. Suppose a transgendered woman chooses, after a period of time, to adopt a male gender identity. Would she be entitled to surgery to re-masculinize her face?
33. According to Budge, transgender women are women from birth and are entitled to procedures that reduce the impact of biology on their development as a transgendered person.

34. According to the ideas presented in Budge's report not only does culture dominate biology, but biology is interpreted as being dependent upon culture. In essence, who you believe you are is more important than who you are.

CONCLUSION

Sex is a biological trait while gender is a cultural construct that develops over time and varies across cultures. There is no evidence that gender is innate, immutable, or present at birth. Some patients develop gender dysphoria, a serious condition that deserves treatment. There is little evidence that medical and surgical interventions reduce the incidence and prevalence of gender dysphoria. There is even less evidence that they would be cost effective compared to social and psychological interventions.



Lawrence S. Mayer, MD, MS, PhD

Date: 19 April 2018

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Appendix A: Testimony in Last Four Years

1. Court Appearances:

Elenza, Inc. v. Alcon Laboratories, Superior Court of the State of Delaware, No. N14-03-185 MMJ CCLD, May 8, 2017

2. Depositions:

Sowards v. Las Cruces Medical Center, Third Judicial District Court, County of Dona Ana, State of New Mexico, no. D-307-CV-2009-02563, July 15, 2014

Hilverding v. Steptodont, Inc. and Novocol Pharmaceutical of Canada, Inc., Court of Fulton County, State of Georgia, No. 13EV018074B, January 15, 2015

Hilverding v. Steptodont, Inc. and Novocol Pharmaceutical of Canada, Inc., State Court of Fulton County, State of Georgia, No. 13EV018074B, February 10, 2015 in

Prelas v. Mercedes Benz, USA, LLC, Circuit Court, Boone County, State of Missouri, 09BA-CV2409, April 17, 2015

Hilverding v. Septodont, et al., State Court of Fulton County, State of Georgia, Civil Action NO. 13EV018074B, August 31, 2015

Hyoung v. Target Corporation, Los Angeles County Superior Court, State of California, No. NC0580059, January, 6 2016

Environmental Research Center Aloe Vera of America, San Francisco County Superior Court, State of California, January 20, 2016

Elenza, Inc v. Alcon Laboratories, Superior Court of the State of Delaware, No. N14-03-185 MMJ CCLD, October 25, 2016

Ball v. Bukeirat, Circuit Court of Monongalia County, West Virginia, CA 14-C-37, November 4, 2016

Cheney v. Falcon Safety Products, Circuit Court of the 15th Judicial Court, Palm Beach County, FL, NO: 02013CA007140XXXXMBAN, December 27, 2017

Appendix B: Professional Vita

LAWRENCE S. MAYER, MD, MS, PhD

Professional Vita

February 2018

Primary interests: The biostatistical foundations, methods and interpretations used in the analysis of epidemiological and social science data. Development implementation and evaluation of statistical methods for assessing health effects of preventive interventions and environmental exposures including life-style variables. Analysis of statistical and epidemiological issues arising from applying evidence-based medicine in a clinical or policy environment. Analysis of the statistical issues arising from applying epidemiological models in the diagnosis, treatment, and prognosis of disease. Particularly interested in the intersections among social methodology, biostatistics and epidemiology.

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Previous Offices:

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Department of Psychiatry
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410-336-2100

Mayo Clinic
Samuel C. Johnson Research Building
13212 East Shea Boulevard
Scottsdale, AZ 85259
480-884-0221

Arizona State University
Department of Economics
Tempe, AZ 85258
480-965-6528

Current Position:

Visiting Fellow, Harvard University

Education:

Undergraduate: Arizona State University (1963-64) and Ohio State University: Psychology (Pre-med), BS, 1967, Phi Beta Kappa, *magna cum laude* with distinction in psychology. President's award for outstanding graduate.

Professional: Ohio State University College of Medicine (pre-clinical), dual enrollment, 1966-68; Guy's Hospital Medical School, London, MB (British MD), 1969; Junior House Officer, Associated Medical Schools, British Virgin Islands 1969-1970, MD qualified to practice as a Public Health Physician (psychiatric epidemiologist), British Health Service, 1970

Graduate: Ohio State University, Mathematics, MS, 1969; Mathematics (Statistics and Biostatistics); PhD, 1971

Honorary: MA in Arts and Letters, *honoris causa*, University of Pennsylvania, 1981

Previous Appointments:

Scholar in Residence, Department of Psychiatry, Johns Hopkins School of Medicine, 2016-2017

Professor of Statistics, Biostatistics, and Economics, Arizona State University, 1995-

(Affiliate) Professor, Mayo Clinic/ASU Program in Biomedical Informatics, 2008-2017

Professor of Psychiatry and Public Health (Part-time), School of Medicine and Bloomberg School of Public Health, Johns Hopkins University, 1989-2016

Detective (Fully Sworn), District (County) Attorney's Office, Maricopa County, Arizona 1998-2016 (retired) and State Resource Officer (Fully Sworn), State of Arizona, 1983-1998

Professor of Epidemiology, College of Public Health, University of Arizona, 2000-2016

Research Staff Member, Mayo Clinic, 2014-2016

Consultant in Psychiatric Epidemiology, Banner Alzheimer's Institute, Phoenix, 2003-2016

Chief, Epidemiology and Biostatistics Section, Integrated Fellowship in Cardiology, Phoenix, 1998-2016

Faculty Member, Medical Education, Banner Good Samaritan Medical Center, Phoenix, 1993-2016

Visiting Professor, Division of Neuropsychiatry, Department of Psychiatry, Johns Hopkins Medicine,
2003-2004

Visiting Professor, Department of Biostatistics, Johns Hopkins School of Public Health,
1996-1997, 1989-1990

Director of Research, Maricopa Integrated Health System, 2003-2006

System Director, Research and Director and Medical Director of the Banner Health Research Institute, Banner Health System, Phoenix, 2001-2003

Director, Wharton Analysis Center, Wharton School; Associate Professor of Statistics, Public and Urban Policy, and Epidemiology, University of Pennsylvania, 1979-1983

Visiting Professor, Department of Statistics, Stanford University, 1982-1983

Research Statistician and Lecturer with Rank of Associate Professor, Department of Statistics; Member, Center for Energy and Environmental Studies; Associate Master and Fellow, Princeton Inn College; Instructor, Woodrow Wilson School of Public Affairs; Princeton University, 1974-1979

Assistant Professor of Statistics (with secondary appointments in Political Science, Sociology, and Education) Virginia Polytechnic Institute and State University, 1971-1974

Assistant Professor, Department of Political Science, The Ohio State University, 1971

Teaching Assistant, Department of Mathematics, The Ohio State University, 1967-1968

Visiting Scholar, Department of Statistics, Stanford University, Summer Semesters, 1984-1988

Instructor, Summer Programs, Inter-University Consortium for Political and Social Research, Institute for Social Research, University of Michigan, 1971-1980

Other Major Appointments:

Clinical Professor, College of Medicine, University of Arizona, 1997-2006

Chair, Division of Research, Medical Professionals of Arizona, Phoenix, 2003-2006

Director, Good Samaritan Research Institute, Phoenix, 1999-2001

Consultant in Biostatistics and Clinical Epidemiology, Good Samaritan Medical

Center, Phoenix, 1993-2000

Thesis Advisor, Masters in Public Health, School of Public Health, University of Arizona, 1996-1998

Member, Committee on Statistics, Graduate College, Arizona State University, 1989-2004

Member, Program on Law and the Social Sciences, Arizona State University, 1983-2004

Member, Committee on Malpractice Reform, Arizona Supreme Court, 1989-1993

Ersikine Fellow, Occupational Medicine, University of Canterbury, Christchurch, New Zealand, 1989-90

Scholarly Publications:

Hruz, PW, McHugh, PR, and Mayer, LS (2017) Growing Pains: Problems with Puberty Suppression in Treating Gender Dysphoria, *The New Atlantis*, Spring;(51): 1-24

Mayer, LS, and McHugh, PR (2016) Sexuality and Gender: Findings from the Biological, Psychological, and Social Sciences, *The New Atlantis*, Fall;(50): 7-143 (the entire issue – an invited issue)

Samus QM, Onyike CU, Johnston D, Mayer L, McNabney M, Baker AS, Brandt J, Rabins PV, Lyketsos CG, Rosenblatt A (2013) 12-month incidence, prevalence, persistence, and treatment of mental disorders among individuals recently admitted to assisted living facilities in Maryland. *Int Psychogeriatr*. 2013 May;25(5):721-731

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Ramsey CM, Leoutsakos JM, Mayer LS, Eaton WW, Lee HB (2010) History of manic and hypomanic episodes and risk of incident cardiovascular disease: 11.5 year follow-up from the Baltimore Epidemiologic Catchment Area Study. *J Affective Disord*. Sep;125(1-3):35-41.

Samus QM, Rosenblatt A, Steele C, Baker A, Harper M, Brandt J, Mayer, LS, Rabins PV, and Lyketsos CG (2009) The Impact of Neuropsychiatric Symptoms and Environmental

Characteristics on Quality of Life in Assisted Living Residents with Dementia. Journal of the American Geriatric Society (in press)

Samus QM, Mayer L, Onyike CU, Brandt J, Baker A, McNabney M, Rabins PV, Lyketsos CG, Rosenblatt A. (2009) Correlates Of Functional Dependence Among Recently Admitted Assisted Living Residents With And Without Dementia. J Am Med Dir Assoc. Jun;10(5):323-9.

Hayden KM, Zandi PP, West NA, Tschanz JT, Norton MC, Corcoran C, Breitner JC, Welsh-Bohmer KA; Cache County Study Group. Effects of family history and apolipoprotein E epsilon4 status on cognitive decline in the absence of Alzheimer dementia: the Cache County Study. Arch Neurol. 2009 Nov;66(11):1378-83.

Welsh-Bohmer KA, Ostbye T, Sanders L, Pieper CF, Hayden KM, Tschanz JT, ..., Mayer L, ... (2009) Neuropsychological performance in advanced age: influences of demographic factors and Apolipoprotein E: findings from the Cache County Memory Study. Clin Neuropsychol 2009 Jan;23(1):77-99. Epub 2008 Jun 10.

Samus QM, Mayer L, Baker A, McNabney M, Brandt J, Onyike CU, Rabins PV, Lyketsos CG, Rosenblatt A. (2008) Characteristics And Outcomes For Assisted Living Residents With Dementia: Comparing Dementia-Specific Care Units With Non-Dementia-Specific Care Units. Journal of the American Geriatric Society. July;56(7):1361-3

Rao V, Spiro J, Samus QM, Steele C, Baker A, Brandt J, Mayer L, Lyketsos CG, Rosenblatt A. (2008) Insomnia And Daytime Sleepiness In People With Dementia Residing In Assisted Living: Findings From The Maryland Assisted Living Study. Int J Geriatr Psychiatry. Feb;23(2):199-206

Rosenblatt A, Samus QM, Onyike CU, Baker AS, McNabney M, Mayer LS, Brandt J, Lyketsos CG. (2008) Acetylcholinesterase Inhibitors In Assisted Living: Patterns Of Use And Association With Retention. Int J Geriatr Psychiatry Feb;23(2):178-84.

Tighe SK, Leoutsakos JM, Carlson M, Onyike CU, Samus Q, Baker A, Brandt J, Rabins PV, Mayer L, Rosenblatt A, Lyketsos CG. (2008) The Association Between Activity Participation And Time To Discharge In The Assisted Living Setting Int J Geriatr Psychiatry Jun;23(6):586-91

Steinberg M, Shao H, Zandi P, Lyketsos CG, Welsh-Bohmer KA, Norton MC, Breitner JC, Steffens DC, Tschanz JT...Mayer, L....(2008) Point and 5-year period prevalence of neuropsychiatric symptoms in dementia: the Cache County Study Int J Geriatr Psychiatry Feb;23(2):170-7.

Lyketsos CG, Samus QM, Baker A, McNabney M, Onyike CU, Mayer LS, Brandt J, Rabins P, Rosenblatt A. (2007) Effect Of Dementia And Treatment Of Dementia On Time

To Discharge From Assisted Living Facilities: The Maryland Assisted Living Study. J Am Geriatr Soc;55(7):1031-7

Mayer LS, Bay RC, Politis A, Steinberg M, Steele C, Baker AS, Rabins PV, Lyketsos CG. Comparison Of Three Rating Scales As Outcome Measures For Treatment Trials Of Depression In Alzheimer Disease: Findings From DIADS (2006) Int J Geriatr Psychiatry. Oct;21(10):930-6

Maust DT, Onyike CU, Sheppard JM, Mayer LS, Samus QM, Brandt J, Rabins PV, Lyketsos CG, Rosenblatt A. (2006) Predictors Of Caregiver Unawareness And Nontreatment Of Dementia Among Residents Of Assisted Living Facilities: The Maryland Assisted Living Study. Am J Geriatr Psychiatry. 2006 Aug;14(8):668-75

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Maust, Donovan T., Onyike, Chiadi U., Sheppard, Jeannie-Marie E., Mayer, Lawrence S., Samus, Quincy M., Brandt, Jason, Rabins, Peter V., Lyketsos, Constantine G., Rosenblatt, Adam (2006) Predictors of Caregiver Unawareness and Nontreatment of Dementia Among Residents of Assisted Living Facilities: The Maryland Assisted Living Study Am. J. Geriatr. Psychiatry.14: 668-675

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assisted-living facilities: the Maryland Assisted Living study. J Gerontol A Biol Sci Med Sci. Feb;60(2):258-64

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Kellam, S., Rebok G., Mayer, L., Ialongo, N. and Kalodner, C. (1994) "Depressive Symptoms Over First Grade and Their Response to a Developmental Epidemiologically Based Preventive Trial Aimed at Improving Achievement" , Development and Psychopathology, 6, 463-481

Kellam, S.G., Rebok, G.W., Wilson, R. and Mayer, L.S.(1994) "The Social Field of the Classroom: Context for the Developmental Epidemiological Study of Aggressive Behavior", in Adolescence in Context: The Interplay of Family, School, Peers, and Work in Adjustment, Silbereisen, R. K. and Todt, E. (eds), New York: Springer-Verlag, 390-408

Kellam, S., Rebok G., Ialongo, N., and Mayer, L. (1994) "The Course and Malleability of Aggressive Behavior from Early First Grade Into Middle School: Results of a Developmental Epidemiological Based Preventive Trial", The Journal of Child Psychology and Psychiatry, 35(2), 259-281

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Mayer, L. S., and Brown, G.H. (1991) "Preventing Early Risk Behavior: Process Issues and Problem Areas in Prevention Research", The Community Psychologist, 24, 18-21

Mayer, L.S. and Carroll, S.S. (1991) "Modeling the Contemporaneous Relationship in a Continuous Variable Panel Model", Communications in Statistics, 17, 463-477

Mayer, L.S. and Carroll, S.S. (1988) "Measures of Dependence for Cross-Lagged Panel Models," Sociological Methods and Research, 17(1) August, 248-260

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Mayer, L.S. and Carroll, S.S. (1987) "Testing for Lagged, Cotemporal, and Total Dependence in Cross-Lagged Panel Analysis, Sociological Methods and Research, 16(2), 187-217

Mayer, L.S. (1986) "Statistical Inferences for Cross-Lagged Panel Models Without the Assumption of Normal Errors," Social Science Research, 15, 28-42

Mayer, L.S. and Carroll, S.S. (1986) "Detecting Serial Correlation in the Error Structure of a Cross-Lagged Panel Model," Communications in Statistics, 15, 347-366

Carroll, S.S. and Mayer, L.S. (1986) "Analysis of the Cross-Effects in a Cross-Lagged Panel Study," Communication in Statistics, 15, 3361-3395

Mayer, L.S. (1986) "On Cross-Lagged Panel Studies with Serially Correlated Errors," Journal of Business and Economic Statistics, 4, 347-357

Mayer, L.S. (1981). "A Comment on 'Estimating Volumes of Remaining Fossil Fuel Resources'," Journal of the American Statistical Association, 76, 551-554

Mayer, L.S. and Horowitz, C.E. (1979). "The Effect of Price on the Residential Demand for Electricity: A Statistical Study," Energy, 4, 87-99

Mayer, L.S. (1978). "Estimating the Effects of the Onset of the Energy Crisis on Residential Energy Demand," Resource and Energy, 1, 57-92

Mayer, L.S. and Benjamin, Y. (1978). "Modeling Residential Demand for Natural Gas as a Function of the Coldness of the Month," Energy and Buildings, 1, 301-312

Mayer, L.S., Hoyer, R.W., and Bernd, J.L. (1977). "Some Problems in the Validation of Mathematical and Stochastic Models of Political Phenomena: The Case of the Supreme Court," American Journal of Political Science, 21, 381-403

Mayer, L.S. and Younger, M.S. (1976). "Estimation of Standardized Regression Coefficients," Journal of the American Statistical Association, 71, 154-157

Mayer, L.S. and Robinson, J.A. (1977). "Measures of Association for Multiple Regression Models with Ordinal Predictor Variables," Sociological Methodology, 1978, Jossey-Bass, 141-162

Jensen, D.R. and Mayer, L.S. (1977). "Some Variational Results and Their Applications to Problems in Multiple Inference," Annals of Statistics, 5, 922-931

Horowitz, C.E. and Mayer, L.S. (1977). "The Relationship Between the Price and Demand for Natural Gas: A Partially Controlled Study," Energy Research, 1, 193-222

Hoyer, R.W. and Mayer, L.S. (1976). "On Electoral Equilibria in a Spatial Analysis Based on the Theory of Games," Journal of Politics, 38, 116-171

Hoyer, R.W. and Mayer, L.S. (1975). "On Social Preference Orderings Under Majority Rule," Econometrica, 43, 803-806

Mayer, L.S., and Good, I.J. (1975). "Is Minimax Regret Applicable to Voting Decisions?" American Political Science Review, 69, 916-917

Good, I.J. and Mayer, L.S. (1975). "Estimating the Efficacy of a Vote," Behavioral Science, 20, January, 25-33

Mayer, L.S. and Younger, M.S. (1975). "Multiple Indicators and the Relationship Between Abstract Variables," Sociological Methodology, 1975, 191-211

Jensen, D.R. and Mayer, L.S. (1975). "Normal-Theory Approximations to Tests for Linear Hypotheses," Annals of Statistics, 3, 429-444

Jensen, D.R., Mayer, L.S. and Myers, R.H. (1975). "Optimal Designs and Large-Sample Tests for Linear Hypotheses," Biometrika, 62, 71-78

Hoyer, R.W. and Mayer, L.S. (1974). "Comparing Strategies in a Spatial Model of Electoral Competition," American Journal of Political Science, 18, 501-523

Bush, W. and Mayer, L.S. (1974). "Some Implications of Anarchy for the Distribution of Property," Journal of Economic Theory, 4, 401-411

Mayer, L.S., Singh, J. and Willke, T.A. (1974). "Utilizing Initial Estimates in Estimating the Coefficients in a Linear Model," Journal of the American Statistical Association, 69, 219-222

Mayer, L.S. and Younger, M.S. (1974). "Procedures for Estimating Standardized Regression Coefficients from Sample Data," Sociological Methods and Research, 1, 431-453

Mayer, L.S. and Good, I.J. (1974). "On Ordinal Prediction Problems," Social Forces, 52 (4), 543-549

Mayer, L.S. (1974). "On the Use of Non-Random Exogenous Variables in Path Analysis," American Sociological Review, 39, 891-893

Klemmack, D.L., Leggette, T.A. and Mayer, L.S. (1973). "Non-Random Exogenous Variables in Path Analysis," American Sociological Review, 38 (December), 778-784

Mayer, L.S. and Hendrickson, A. (1973). "A Method for Constructing an Optimal Regression Design After an Initial Set of Input Values Has Been Selected," Communications in Statistics, 2(5), 465-477

Mayer, L.S. and Willke, T.A. (1973). "On Biased Estimation in Linear Models," Technometrics, 15, 497-508

Mayer, L.S. (1973). "Estimating a Correlation Coefficient When One Variable is Not Directly Observed," Journal of the American Statistical Association, 68, 420-421

Burgess, P.M. and Mayer, L.S. (1973). "Simulation and Society, A Review Essay," Journal of Regional Science, 12, 303-311

Good, I.J. and Mayer, L.S. (1973). "On Surfaces of Constant Societal Loss in a Model of Social Choice," Journal of Mathematical Sociology, 2, 209-219

Mayer, L.S. (1972). "Using Monotone Regression to Estimate a Correlation Coefficient," Sociological Methodology, (Herbert Costner, ed.), Jossey-Bass: San Francisco, 200-212

Mayer, L.S. (1972). "An Analysis of Measures of Crosscutting and Fragmentation," Comparative Politics, 4, 405-415

Mayer, L.S. (1971). "Comment on 'The Assignment of Numbers to Rank Order Categories'," American Sociological Review, 35, 916-917

Mayer, L.S. (1971). "A Note on Treating Ordinal Data as Interval Data," American Sociological Review, 36, 519-520

Mayer, L.S. (1971). "A Note on An Axiomatic Model of Voting Bodies," American Political Science Review, 65, 764-765

Mayer, L.S. (1971). "A Method of Cluster Analysis When There Exists Multiple Indicators of a Theoretic Concept," Biometrics, 27, 143-155

Mayer, L.S. (1971). "A Comment on 'A Theorem on Voting'," American Political Science Review, 65, 779-780

Research Monographs:

Energy Consumption Measurement: Data Needs for Public Policy, (1977) Committee on Measurement of Energy Consumption, Washington: National Academy of Science

Mayer, L.S. (1976). An Analysis of Alternative Voter Registration Systems, Modules in Applied Mathematics, Washington: Mathematical Association of America

Chapters in Research Monographs:

Mayer, L. S. (1994) "On Cross-Lagged Panel Studies with Serially Correlated Errors," Frontiers in Econometrics, G. Maddala (ed), 154-165

Mayer, L.S. (1980). "The Effects of Price on Energy Demand: Econometrics Versus Exploratory Data Analysis," in Evaluation of Econometric Models (J. Kmenta and J. Ramsey, eds.), Academic Press, 15-45

Mayer, L.S. and Benjamin, Y. (1980). "Modelling Residential Demand for Natural Gas as a Function of the Coldness of the Month," in Saving Energy in the Home, (R. Socolow, ed.) New York: Ballinger

Bush, W. and Mayer, L.S. (1976). "On the Economics of Human Fertility," in Essays on Unorthodox Economic Strategies: Anarchy, Politics and Population, (A.T. Denzau and R.J. Mackay, eds.), University Publications, 163-181

Mayer, L.S. (1974). "Optimal Voting Behavior in a Two-Party Primary", in Applications of Mathematics in Political Science, Vol. VIII, (J. Herndon and J. Bernd, eds.), Charlottesville: University of Virginia Press, 4-14

Published Book Reviews

On the Verge: The Legal Fight of Travellers in England for their Rights (many authors), Romani Studies, 2001, 144-146

Firms and Markets (C. Tucker and R. Fuller, eds.), Perspective, Winter, 1988, 41

Social Science and Social Policy (R. Shotland and M. Mark, eds.), Perspective, April, 1986, 60

Principles of Epidemiology (Kleinbaum, Kupper and Morgenstern) Journal of the American Statistical Association, July/August 1984, 108

U.S. Interests and Global Natural Resources (Castle and Price, eds.), Perspective, September, 1984, 725-726

Proximity and Preference: Problems in the Multidimensional Analysis of Large Data

Sets (R. Golledge and J. Raynor, eds.), Journal of the American Statistical Association, September, 1983, 78, 734

Statistical Applications in the Spatial Sciences (N. Wrigley, ed.), Journal of the American Statistical Association, June, 1983, 78, 509-510

Power, Voting, and Voting Power (Manfred J. Holler, ed.), Perspective, February, 1983

Exploratory Data Analysis (J. Tukey), Evaluation and Program Planning, 1981, 4, 195-196

On the Social Use of Information (A. Wissel), Perspective, June, 1977, Vol. 6, No. 5

Simulation Model Building: A Statistical Approach to Modeling in the Social Sciences With The Simulation Method (U. Norlen), Perspective, March 1977, Vol. 6, No. 2

Research Methods in the Social Sciences (D. Nachimas and C. Nachimas), Perspective, November 1976, Vol. 5, No. 9

Registering Voters by Mail: The Maryland and New Jersey Experience (R. Smolka), Perspective, October 1975, Vol. 4, No. 8

Other Professional Activities:

Guest Lecture, Statistics and Epidemiology in Court, University of Maryland Law School, March, 2012

Editorial Board Member, Journal of Cardiology Research, 2003-

Member, Development Board, Copper Ridge Institute, Sykesville, MD, 1998-2000

Member, Expert Panel, Sexually Transmitted Disease and Teens, W. T. Grant Foundation, 2000-2001

Advisor, Sexually Transmitted Diseases & the Internet, American Social Health Association, 2000-2001

Invited Member, Panel on Mental Health Problems of Asylum Seekers, University of Greenwich, July 2000

Invited participant, Expert Panel on Mortality Associated with Alternative Fuels, Department of Energy, Carmel, May, 2000

Chief, Epidemiology and Biostatistics Branch, Phoenix Integrated Residency in Cardiology, 1999-

Clinical Professor, Prevention Center, College of Medicine, University of Arizona, 1999-

Member, Faculty of the Psychiatry Residency Program, Good Samaritan, 1998 –

Member of the Board of Directors, Palms Clinic, Phoenix, 1998-

Invited Participant, US Environmental Protection Agency Expert Panel on Cryptosporidium, October, 1998

Member, Evaluation Panel, Graduate Programs, University of Greenwich, London, August, 1998

Expert Witness, Appropriations Hearing on NIH Budget, US Senate, October, 1997-

Member, Expert Review Committee on Grant Applications and Awards, Health Care and Promotion Fund, Hong Kong, 1996-1998

Member, Clinical Committee, Health Services Advisory Group, Arizona, [the arm of the Medicare system that advises Medicare on reimbursements], 1994-1996

Alternate Member, Institutional Review Board, Samaritan Health Systems 1994-2001

Invited Attendee, Workshop on Psychosocial Research, American Psychiatric Association, Massachusetts General Hospital, Boston, October, 1996

Invited Attendee, Risk Estimation Conference, Environmental Protection Agency, Durham, North Carolina, September, 1996

Invited Attendee, Society for Prevention Research, Annual Conference, Puerto Rico, May, 1996

Proposal Evaluation Site Visit, Raptor Research Center, Boise State University, March 1996

Workshop Attendee, The Epidemiology of Avian Mortality, California Energy Commission, Sacramento, California, January, 1996

Invited Attendee, Prevention Science and Methodology Conference, Baltimore, MD, October, 1995

Invited Attendee, Avian Windpower Planning Meeting, Palm Springs, September, 1995

Invited Attendee, US Department of Energy Course on Risk Assessment, Boulder, July 1995

Invited Attendee, Mini-conference on Measuring Health Outcomes, Phoenix, March

1995

Invited Attendee, Private Conference on Wind Energy Research, California Energy Commission, Grand Island, California, December, 1994

Invited Participant, Workshop on Prevention Methodology, University of South Florida, Baltimore, December, 1994

Invited Participant, National Conference on Prevention Research, Washington, DC, December, 1994

Invited Consultant, California Energy Commission, Flagstaff, Arizona, November, 1994

Invited Participant, Workshop on the Science of Prevention, NIMH, Baltimore, December, 1994

Invited Participant, Meeting on Renewable Energy, California Energy Commission, Flagstaff, Arizona, November, 1994

Invited Participant, Workshop on Prevention Methodology, Oregon Social Learning Center, Eugene Oregon, August, 1994

Invited Technical Advisor, National Planning Meeting on Wind Power and Avian Mortality, Lakewood, CO, July, 1994

Invited Participant, Workshop on Biostatistical Methods in Preventive Mental Health Research, College of Public Health, University of South Florida, Tampa, March, 1994

Invited Participant, Biomedical Effects of Renewable Energy, Invited Conference, US Department of Energy, Washington, DC February, 1994

Member, Special Study Section, National Institute of Health, 1993-

Invited Participant, Avian Mortality Taskforce Meeting, October, Pleasonton, CA, December, 1993

Invited Participant, Conference on Avian Mortality and Wind Energy, Pacific Gas and Electric, Livermore, CA, October, 1993

Invited Participant, Prevention Center Directors Meeting, National Institute of Mental Health, Tysons Corner, September, 1993

Invited Participant, National Conference on Prevention Research, McLean, Virginia, April, 1993.

Invited Participant, Prevention Center Directors Meeting, National Institute of Mental

Health, Rockville, September, 1992

Invited Participant, Prevention Center Directors Meeting, National Institute of Mental Health, Rockville, September, 1991

Invited Participant, Conference on the Future of Prevention Research, National Institute of Mental Health, Washington, DC, July, 1991

Invited Participant, Workshop on Development of Delinquency, National Academy of Science, Woods Hole Study Center, July, 1991

Invited Participant, Workshop on Preventive Research, National Institute of Mental Health, October, 1990

Invited Lecturer, Exploratory Data Analysis, The Bootstrap and Panel Models in Occupational Medicine, lecture series, College of Business Administration, University of Canterbury, Christchurch, New Zealand, September - October, 1989

Invited Host, Mini-conference on The Epidemiology of Bladder Cancer, August, 1988, Lenox, Massachusetts

Expert Witness, Department of Public Health, Commonwealth of Massachusetts, July, 1988

Expert Witness, Department of Labor and Industry, Commonwealth of Massachusetts, July, 1988

Invited Participant, Workshop in Multidimensional Analysis, Information Theory and Asymptotic Methods, Stanford University, July 1983

Assisted in Preparation and Coordination, Conference on Science and Technology in the Soviet Union, Stanford University, July, 1983

Session Organizer, International Conference on Energy Use Management, Berlin, October, 1981

Member, Committee on Industrial Use of Solar Energy, Solar Energy Research Institute, Golden, Colorado, 1979-1981

Press Conference on Wharton's Support to Litigation Project Award, April, 1981, Philadelphia

Invited Participant, Workshop on Model Validation, Department of Economics, New York University, April, 1980.

Expert Witness, Hearings on Energy Tax Exemptions, Energy Committee, Pennsylvania State Assembly, April, 1980

Lecturer, Workshop in Environmental Policy, Florida Atlantic University, March, 1980

Interviewed on Feasibility of Philadelphia's Refinery Tax Proposal, WUSL Radio, Philadelphia, November, 1980

Member, Committee on Health Manpower Training, Department of Health, New Jersey, 1976-79.

Interviewed on Model Validation, WPEN Radio, Philadelphia, November, 1979.

Interviewed on Value of Energy Forecasts, Philadelphia Inquirer, October, 1979.

Invited Panelist, Panel on Energy Models in Energy Policy-making, Program in Science Technology and Public Policy, George Washington University, Washington, D.C., October, 1979

Organizer, Workshop on Resource Estimation, Department of Energy Statistical Symposium, Gatlinburg, Tennessee, October, 1979

Session Chairperson, Special Topics Meetings on Regression, Institute of Mathematical Statistics, October, 1979

Invited Participant, Workshop on the Measurement and Interpretation of Model Confidence, National Bureau of Standards, U.S. Department of Commerce, Washington, D.C., October, 1979

Invited Participant, Workshop on Measuring Model Confidence, National Bureau of Standards, Gaithersburg, MD, October 1979

Expert Witness, Hearings on State Health Benefits, Ohio State Assembly, February, 1979

Member, Committee on Model Evaluation, General Accounting Office, United States Congress, 1977-1978.

Participant, Workshop on Assessment of Energy Models, Massachusetts Institute of Technology, October, 1978.

Organizer, Session on Multivariate Statistics, Annual Meeting, Institute of Mathematical Statistics, August, 1978

Lecturer, Program on Environmental Management, Florida Atlantic University, April, 1978

Expert Witness, Hearings on Local Energy Policies, Subcommittee on Energy and Power, Committee on Interstate and Foreign Commerce, U.S. House of Representatives, May, 1978

Invited Panelist, Policy Workshop on Energy Policy, Swarthmore College, March, 1978

Chairperson, Committee on Membership, Institute of Mathematical Statistics, 1974-78

Invited Participant, Workshop on Energy Information, Stanford University, December 1977

Invited Participant, Conference on Criteria for Evaluation of Econometric Models, University of Michigan, June 1977

Expert Witness, Hearings on Health Impacts of Energy Conservation, Commerce Committee, US House Representatives, April, 1977

Conference Chair, Conference on the Analysis of Large Data Sets, Institute of Mathematical Statistics and American Statistical Association, Dallas, February 1977

Panelist, Seminars on Models and Energy Policy, Program in Public Policy, George Washington University, February, 1977

Invited Participant, Workshop on Stochastic Models of Social Structure Carnegie-Mellon University, MSSB Workshop, Pittsburgh, December, 1977

Interviewed on Energy Policy, West Virginia Public Television Network, October, 1976

Member, Committee on Measurement of Energy Consumption, National Academy of Sciences, 1975-76

Interviewed on Energy Policy, West Virginia Public Television Network, October, 1976

Participant, Workshop on Model Building, Mathematical Association of America, Cornell University, August, 1976

Organizer and Chair, Session on Voting Models, Annual Meeting of the Public Choice Society, Roanoke, VA, April, 1976

Instructor, Short Course on Advances in Data Analysis, Princeton University, April, 1976

Member, Organizing Committee, Annual Convention, Institute of Mathematical Statistics, 1975-76

Member, Site Review Committee, University of Texas, San Antonio, National Science Foundation, 1975

Participant, Workshop on Validation of Econometric Models, National Science Foundation, Vail, Colorado, June, 1975

Participant, Workshop on Decentralization Theory, National Science Foundation, Princeton University, March, 1975

Member of the Council, Polymetrics Section, International Studies Association, 1973-75

Member, Committee on Education of Gifted Children, Department of Education, Virginia, 1973-74

Member, Committee on Health Training, State Council of Higher Education, Virginia, 1973-74

Instructor, Workshop on Survey Research, University of Cologne, Cologne, West Germany, 1973

Lecturer, Institute on Model Building, National Science Foundation, Blacksburg, Virginia, August, 1973

Clinical Assistant [Clinical Rotations], Associated Medical Schools, British Virgin Islands, 1969-1970

Summer Fellow, College of Medicine, University of Michigan, Summer, 1970

Major Consulting Appointments (Other than Public and Non-profit):

Play an active advisory role to several CEO's, corporate medical directors, courts, boards, and non-profits on specific health issues, which are confidential, private, proprietary or privileged. I would be glad to discuss these activities in an executive session. They are not appropriate for open documentation.

Major Consulting Appointments (Public and Non-profit):

Consultant in Research Compliance, Maricopa Integrated Medical System, 2002-2003

Consultant, California Energy Commission, 1994-2002

Consultant, National Renewable Energy Laboratory, 1992-1996

Consultant, Department of Mental Hygiene, Johns Hopkins Medical Institutions, June-August, 1990 -1993

Consultant, Program on Delinquency, Child and Maternal Health, Harvard School of Public Health, 1991.

Consultant, Committee on the Courts, Arizona Supreme Court, 1988-1989.

Consultant, Bonneville Power Authority, 1986-1988.

Consultant, Special Counsel, Department of Energy, 1979-82.

Consultant, National Governors Association, 1979-81

Consultant, Environmental Monitoring Project, Environmental Protection Agency, 1979

Consultant, Energy Office, State of New York, 1976-78

Consultant, Department of Health, City of New York, 1976-78

Consultant, Center for the Study of Emergency Health Services, University of Pennsylvania, 1977

Consultant, Chancellor, The University of Missouri, 1976

Consultant, National Commission on Water Quality, 1974-76

Consultant, Trout Unlimited, 1976

Consultant, Policy Analysis Division, Department of Housing and Urban Development, 1974

Consultant, Department of Political Science, Ohio State University, 1974

Consultant, Committee on State Employee Benefits, Assembly of the State of Ohio, 1973

Consultant, Department of Preventive Medicine, Ohio State University, 1972-73

Editorial Service:

Abstract Review Board, Annual Meeting, Society for General Internal Medicine, 1995

Member, Editorial Board, Sociological Methodology, Publication of the American Sociological Association, 1979-1983

Associate Editor, Series on Social Methodology, Sage Publications, 1974-81

Member, Editorial Board, Journal of Politics, 1974-81

Associate Editor, Journal of the American Statistical Association, 1977-79

Abstracter, Executive Sciences Incorporated, 1974-79

Abstracter, Mathematical Reviews, 1974-76

Proposal reviewer for a variety of public agencies. In 1991-93 reviewed proposals for NIH, NIMH, NSF, DOE, EPA and others

Manuscript reviewer for several publishers including John Wiley and Sons and Wadsworth

Honors and Awards:

Listed in the International Who's Who in Medicine, 1997-

Listed in Who's Who in Medicine, 1994-

Honorary Member, Phi Beta Phi, Honorary Society, inducted 1991

Distinguished Research Professor, Arizona State University, 1987-88

Fellow, Royal Statistical Society, elected November, 1984.

Listed in Who's Who in the West, 1983-

Listed in Who's Who in Medical Research, 1982-

Listed in Personalities in America, 1981-

Listed in Distinguished Educators, 1982-

Member, Phi Beta Kappa, inducted 1967

Member, Alpha Iota Delta (Decision Science Honorary Society), elected 1986

Distinguished Alumni Award, Ohio State University, 1971

Awardee, Graduate Scholarship, National Science Foundation, 1967

Recipient, President's Scholarship Award, Ohio State University, 1968

Recipient, President's Scholarship Award, Ohio State University, 1967

Research Grants and Contracts:

Co-Principal Investigator, Alzheimer's Disease and Anti-Inflammatory Prevention: Is Elevated Serum Cholesterol Predictive of Developing AD?, D. Larry Sparks, PI, Institute for the Study of Aging, funded, March 2001, 360,000

Biostatistical Problems in Research Methodology, Samaritan Health Services, Principal Investigator: L.S. Mayer, 1996-2003, approximate award 450,000

Statistical Problems in Developing Intermediate Outcome Models of the Role of Apolipoprotein E in Alzheimer's Disease, Office of Research, Arizona State University, 1994-95, approximate award 20,000.

Biostatistical Problems in Research Methodology, Samaritan Health Services, Principal Investigator: L.S. Mayer, 1995-96, approximate award 26,000

Co-Principal Investigator, Prevention Research Training Grant, awarded by the Prevention Branch, National Institute of Mental Health, to the Prevention Center, Department of Mental Hygiene, Johns Hopkins School of Hygiene and Public Health. Principal Investigator: S. G. Kellam, 1994-1999, approximate award 500,000

Co-Principal Investigator, Epidemiological Prevention Center for Early Risk Behavior, awarded by the Prevention Branch, National Institute of Mental Health, to the Prevention Center, Department of Mental Hygiene, Johns Hopkins School of Hygiene and Public Health. Principal Investigator: S. G. Kellam, 1990-1995, approximate award, 5,000,000

Biostatistical Problems in Research Methodology, Samaritan Health Services, Principal Investigator: L.S. Mayer, 1994-95, approximate award 26,000

Biostatistical Problems in Research Methodology, Samaritan Health Services, Principal Investigator: L.S. Mayer, 1993-94, approximate award 25,000

Wharton Support to Litigation Project, awarded by the Office of the Special Counsel, Department of Energy to the Wharton Analysis Center, Wharton School, University of Pennsylvania. Principal Investigator: L.S. Mayer, 1981-83, approximate award: 2,200,000

Wharton Energy Allocation Project, awarded by the Department of Energy to the Wharton Analysis Center, Wharton School, University of Pennsylvania, Principal Investigator: L.S. Mayer, 1981-83, approximate award: 100,000

Wharton Energy Data Analysis Project, awarded by Oak Ridge National Laboratory to the Wharton Analysis Center, Wharton School, University of Pennsylvania, Principal Investigator: L.S. Mayer, 1980-81, approximate award: 450,000

Wharton Petroleum Data Analysis Project, awarded by CEXEC, Inc. to the Wharton Analysis Center, Wharton School, University of Pennsylvania, Principal Investigator:

L.S. Mayer, 1980-81, approximate award: 100,000

Wharton Model Evaluation Project, awarded by the Energy Information Administration, Department of Energy to the Wharton Analysis Center, Wharton School, University of Pennsylvania, Principal Investigator: L.S. Mayer, 1979-81, approximate award: 900,000

Wharton Energy Assessment Project, awarded by Oak Ridge National Laboratory to the Wharton Analysis Center, Wharton School, University of Pennsylvania, Principal Investigator: L.S. Mayer, 1980-81, approximate award: 100,000

Princeton Resource Estimation and Validation Project, awarded by the Energy Information Administration, Department of Energy, to the Departments of Statistics and Geology, Princeton University, Principal Investigators: K. Deffeyes, G. Watson, and L. Mayer, 1978-79, approximate award: 450,000

Analysis of Residential Energy Demand, awarded by the Office of Conservation, Department of Energy to the Center for Energy and Environmental Studies, Princeton University, Principal Investigators: R. Socolow, D. Harrje, L. Mayer and F. Sinden, 1977-78, approximate award: 300,000

Analysis of Statistical Issues Arising from Energy Studies, awarded by the National Science Foundation to the Center for Energy and Environmental Studies, Princeton University, Principal Investigator: L.S. Mayer, 1977-78, approximate award: 50,000

Analysis of Residential Energy Demand, awarded by the Energy Research and Development Administration to the Center for Energy and Environmental Studies, Princeton University, Principal Investigators: R. Socolow, D. Harrje and L. Mayer, 1976-77, approximate award: 300,000

Assessing the Value of Econometric Energy Models, awarded by the Department of Commerce to the Center for Energy and Environmental Studies, Princeton University, Principal Investigator: L.S. Mayer, 1976-77, approximate award: 25,000

Energy Husbandry in Residential Housing, awarded by the National Science Foundation to the Center for Environmental Studies, Princeton University, Principal Investigators: R. Socolow, D. Harrje and L. Mayer, 1975-76, approximate award: 300,000

On Comparing Factor Matrices, awarded by the National Institute of Mental Health to the Department of Statistics, Princeton University, Principal Investigator: L.S. Mayer, 1974 - 1975, approximate award: 15,000

Measuring the Relationship Between Abstract Variables, awarded by the National Institute of Mental Health to the Department of Statistics, Virginia Polytechnic Institute and State University, Principal Investigator: L.S. Mayer, 1972-74,

approximate award: 15,000

Component Analysis of Variance, awarded by the National Institute of Mental Health to the Behavioral Sciences Laboratory, Ohio State University and the Department of Statistics, Virginia Polytechnic Institute and State University, Principal Investigator: L.S. Mayer, 1971-72, approximate award: 15,000

Papers Presented at Professional Meetings:

Depression in Assisted Living is Common and Related To Physical Burden, Gerontology Society Annual Meeting, Washington DC, November 2004

"Methodological Issues In Modeling The Incidence Of Alzheimer's Disease As A Function Of Age", World Congress of Epidemiology, Toronto, June, 2001

"Biostatistical Problems in Forecasting the Prevalence of Alzheimer's Disease" World Psychiatric Congress, Baltimore, March, 2001

"Using Latent Growth Models and Exploratory Methods to Assess the Relationship Between Responses in a Bivariate Prevention Model (with M. Reiser) Society for Prevention Research, Annual Meeting, Washington DC, May 1997

"Standard Metrics and Methods for Conducting Avian Wind Energy Interaction Studies (with R. Anderson) American Wind Energy Association Conference, Austin Texas, June, 1997

"A Randomized Clinical Trial of a Group Empowerment Program for Somatizing Patients: Six Months Follow-up Results", (with J. C. Peirce, A. Miller and J. Westley), invited lecture, Society for General Internal Medicine, Washington, DC, May 1997

"Measuring Effectiveness: Lessons from Heparinizing Patients with Deep Vein Thrombosis and Pulmonary Embolism" (with J. C. Peirce and R. A. Raschke), invited lecture, Society for General Internal Medicine, Washington, DC, May 1997

"Latent Growth Models of the Impact of Intervention on a Bivariate Longitudinal Response", invited lecture, Society for Research on Child Development, Washington, DC, March, 1997

"Developmental Epidemiology and its Implications for Prevention Research" invited lecture (with Sheppard Kellam), Life History Society Annual Meeting, London, December, 1996

"Standard Methods for Conducting Avian Mortality Studies", with R. L. Anderson, European Wind Energy Conference, Rome, October, 1996

"Using Multilevel Models to Tease Out Variability in Individual Behavior", invited lecture,

Association for Clinical Psychosocial Research, American Psychiatric Association, Boston, October, 1996

"Statistical Issues Arising from Application of the Proximal-Distal Model in Prevention Research, Society for Prevention Research, San Juan, Puerto Rico, June, 1996.

"Recent Advances in Prevention Methodology: Multilevel Models", invited lecture, Prevention Methodology Conference, Tempe, Arizona, May 1996

"Advances in the Methods of Prevention Research", invited lecture, National Forum on Prevention, McLean, VA, May, 1996

"Multilevel Models in Prevention Science", invited presentation, Prevention Science Methodology Group meeting, College of Public Health, University of South Florida, Tampa, March, 1996

"Prevented Fractions and Attributable Risk in Proximal Distal Prevention Models", invited lecture, College of Public Health, University of South Florida, Tampa, February, 1996

"Prevented Fractions and Attributable Risks in Preventive Trials", invited paper, Prevention Science and Methodology Conference, Baltimore, MD, October, 1995

"The Use of Epidemiological Measures to Estimate the Effects of Adverse Factors and Preventive Interventions", Workshop on Avian Mortality, Palm Springs, September, 1995

"The Use of Epidemiological Measures to Estimate the Effects of Adverse Factors and Preventive Interventions", invited presentation, Workshop on Avian Mortality and Avian Windpower Planning Meeting, Department of Energy, Palm Springs, September, 1995

"Methodological Advances in Prevention Research", with S. Kellam and J. Anthony, invited symposium, Prevention Research Society, Scottsdale Arizona, June 1995

"Multilevel Modeling and the Development of Aggressive Behavior", invited paper, World Psychiatric Association, New York, May, 1995

"Attributable Risk and Preventive Fractions in Prevention Research", invited lecture, Workshop on the Science of Prevention, NIMH, Baltimore, December, 1994

"Reduction of Aggressive Behavior Among First Graders and Its Consequences for Later Antisocial Behavior and Drug Use", with S. Kellam, H. Chilcoat, J. Anthony, G. Rebok, and N. Ialongo, invited lecture, Society for Prevention Research, Washington, June, 1994

"The Impact of Failure on Boys and Girls: Preventive Intervention Studies on Achievement and Depression" with S. Kellam, G. Rebok, and N. Ialongo, Society for Life History, Durham, November, 1993

"The Course and Malleability of Aggressive Behavior", with S. Kellam, G. Rebok, and N. Ialongo, invited lecture, American Society of Criminology, Annual Meeting, Phoenix, October, 1993

"Mediated Effects in Structural Equation Models", invited paper, American Statistical Association Annual Meeting, August, 1992

"The Course and Malleability of Aggressive Behavior in Young Children", invited presentation, with S. Kellam, et. al., National Academy of Science Institute of Medicine, Committee on Prevention of Mental Disorders, June, 1992

"Developmental Epidemiology and the course of Aggressive Behavior", Life Course Development Society, Philadelphia, April, 1992

"Modeling the Cotemporal Effects in a Cross-Lagged Panel Model", ASA Annual Meeting, New Orleans, August, 1988

"Estimating Multivariate Continuous Variable Panel Models", ASA Annual Meeting, San Francisco, August, 1987

"Inferences in Cross-Lagged Panel Models," invited paper, AIDS Convention, Phoenix, March, 1986

"Recent Advances in Cross-Lagged Panel Analysis," invited lecture, Southwest Social Science Convention, San Antonio, March, 1986

Hypothesis Testing with Continuous Variable Panel Data," Annual Meeting, Biometrics Society (WNAR), San Luis Obispo, June, 1985

"Multivariate Cross-Lagged Panel Models: Does IQ Cause Achievement?" invited lecture, Regional Meeting, Institute of Mathematical Statistics, Humboldt State University, Arcata, CA, June, 1983

"Analysis of the U.S. Short-Term Integrated (Energy) Forecasting System," invited lecture, International Energy Conference, Berlin, October 1981

"Assessing Energy Models: A Policy Process Approach," invited lecture, Workshop on Energy Model Validation, National Bureau of Standards, January 1979

"Energy Use and Potential for Conservation," (with David Harrie et al.), invited lecture, International Conference on Energy Use Management, Tucson, October 1977

"Large Data Sets and the Meta-Theorems of Exploratory Data Analysis," invited lecture, American Statistical Association, Special Topic Meeting, Dallas, 1977

"The Internalization of Cosmopolitan-Local Orientations Among College Students," (with W. Snizek), invited lecture, Southern Sociological Association, Washington, D.C., April 1975

"Equivalent Estimation and a Special Group Structure," (with T. Woteki), invited lecture, Regional Meeting, Institute of Mathematical Statistics, Minneapolis, March 1975

"The Use and Abuses of Probability in Voting Theory Models," invited lecture, Annual Meeting, Public Choice Society, New Haven, April 1974

"Some Problems with the Theory of Coalitions as Applied to the Judiciary," invited paper, Annual Meeting, American Political Science Association Convention, Chicago, August 1974

"On Principal Components and Clusters," invited lecture, Annual Meeting, International Classification Society, Atlanta, Georgia, April, 1973

"On Biased Estimation in Linear Models," invited lecture, Annual Meeting, American Statistical Association, New York, December, 1973

"Invariant Estimation with Applications to Linear Models," (with M.S. Younger), Institute of Mathematical Statistics, Blacksburg, Virginia, Academy of Science, May, 1972

"On Biased Estimation in Linear Models," invited lecture, Virginia Academy of Science, Lexington, Virginia, May, 1972

"Methods of Cluster Analysis Which Utilize Principle Components," invited lecture, International Classification Society Convention, Chicago, Illinois, April 1972

"A Method of Cluster Analysis," invited lecture, Annual Meeting, Biometrics Society, Fort Collins, Colorado, August, 1971

"Measures of Association," invited lecture, International Studies Association, San Juan, Puerto Rico, March, 1971

"Utilizing Initial Estimates in Estimating the Coefficients in a General Linear Model," Annual Meeting, Institute of Mathematical Statistics, Laramie, Wyoming, August 1970

Speeches, Presentations, Lectures and Colloquia:

"Validating Biomarkers in Psychiatry", Department of Psychiatry, University of Athens,

Athens, Greece, October, 2006

“Fitting Failure Models to the Incidence of Alzheimer’s Disease: Methodological Problems”, invited lecture, Johns Hopkins School of Public Health, Noon conference series on Mental Health, January, 2001

“Psychiatric Epidemiology”, Residency Program in Psychiatry, Samaritan Health System, September, 2000

“Critical Appraisal in Internal Medicine”, invited speaker, Good Samaritan Internal Medicine Program. April, 2000

“Psychiatric Epidemiology”, Residency Program in Psychiatry, Samaritan Health System, September, 1999

“Tradeoffs Between Latent Growth Models and Epidemiological Models of Preventive Interventions, invited colloquium, Department of Mental Hygiene, Johns Hopkins School of Hygiene and Public Health, October, 1998

“Psychiatric Epidemiology”, Residency Program in Psychiatry, Samaritan Health System, September, 1998

“Advances in Psychiatric Epidemiology”, Clinical Epidemiology Section, Royal Medical Society (Edinburgh), August, 1998

“Latent Growth Models and Attributable Risks”, luncheon speaker, Fellowship in Drug Epidemiology, Johns Hopkins University, April 1998

“Attributable Risk Measure in Mediational Impact Models: Somatizing Behavior”, invited colloquium, Department of Mental Hygiene, Johns Hopkins School of Hygiene and Public Health, March, 1998

“Statistical Issues in Using Attributable Risk Measures in Intermediate Outcome Models”, Department of Statistics, The University of Lancaster, Lancaster, England, June, 1997

“Statistical Problems that Arise in Applying Intermediate outcome Models in Prevention Research”, invited lecture, Department of Statistics, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, May, 1997

"The Epidemiology of Thyroid Disease", invited lecture, Grand Rounds in Endocrinology, Samaritan Health Services, April, 1997

"Attributable Risk and Preventive Fractions in Prevention Research", invited lecture, Workshop on the Science of Prevention, NIMH, Baltimore, December, 1994

"Advances in Prevention Methodology", invited lecture, Prevention Research Center, Johns Hopkins University, September, 1994

"Multi-level Modeling in Prevention Research", invited colloquium, Prevention Research Center, Arizona State University, April, 1994

"Multi-level Modeling of Health Data; The Effects of Intervention on Aggressive Behavior", invited lecture, Program in Developmental Biology, University of North Carolina, April, 1994

"Mediation in Intermediate Variable Models", Department of Epidemiology and Biostatistics, College of Public Health, University of South Florida, March, 1994

"Assessing the Impact of Interventions on Proximal and Distal Outcomes" NIMH Prevention Research Center Directors Meeting, October 1993 with Reiser, M. and Warsi, G

"Epidemiology and Social Methodology: Complementarity in Prevention Research", invited presentation, with S. Kellam, et. al., NIMH Prevention Research Conference, Tysons Corners, VA, April, 1993

"Statistical Issues in Prevention Research", invited lecture, Directors' Meeting, Prevention Research Center Directors Meeting, National Institute of Mental Health, Rockville, Maryland, October, 1992

"The Course and Malleability of Aggressive Behavior in Young Children", invited presentation, with S. Kellam, et. al., National Academy of Science Institute of Medicine, Committee on Prevention of Mental Disorders, June, 1992

"Causal Models in Prevention Research: Mediation Moderation and Confounding", invited seminar, Carl A. Taube Memorial Colloquium Series in Psychiatry and Mental Health, Johns Hopkins University, May, 1992

"Breast Implants, Risk Surveillance and Health Statistics", invited lecture, MBA Special Colloquium Series, Arizona State University, March, 1992

"Proximal/Distal Effects on Two Developmental Epidemiologically-Based Preventive Interventions", invited seminar, Colloquium Series in Mental Health, Johns Hopkins School of Hygiene and Public Health, February, 1992

"Analyzing Subgroups and Contextual Effects" [with Sheppard Kellam], invited presentation, Directors' Meeting, Prevention Research Center Directors Meeting, National Institute of Mental Health, Rockville, Maryland, September, 1991

"Proximal/Distal Effects on Two Developmental Epidemiologically-Based Preventive Interventions" [with Sheppard Kellam, et. al.], invited seminar, Carl A. Taube Memorial

Colloquium Series in Mental Health, Johns Hopkins School of Hygiene and Public Health, September 1991

"The Epidemiology of Preventive Care in the Workplace", invited lecture, Phoenix Chapter, Association of Corporate Fitness Directors, Phoenix, May 1991.

"Statistics, Medicine and the Law", Invited Lecture, East Mesa Doctors Club, November 1990

"Statistical Models in the Analysis of Panel Data", invited lecture, Department of Biostatistics, Johns Hopkins School of Hygiene and Public Health, April, 1990

"Applications of Statistics to Occupational Health Problems", invited lecture, Department of Statistics, MacQuarie University, Australia, October, 1989

"Panel Models and Policy Analysis", invited lecture, Lincoln College, Christchurch, New Zealand, September 1989

"Panel Analysis and Occupational Health Analysis", invited lecture, University of Otago, New Zealand", September 1989

"Current Trends in Data Analysis, invited lecture, MBA colloquium, University of Canterbury, Christchurch, New Zealand, September 1989

"Managing the Health of Workers and the Health of the Firm", invited banquet speech, Conference on Analysis of Occupational Health Risks, Phoenix, August 1987

"Panel Models, Covariance Structures and the Exclusion of Liberals from 'Death-Sentence' Juries", invited colloquium, Department of Statistics, Stanford University, August, 1986

"A Statistician Looks at Panel Analysis or a Perfidious Peek at Pundits and Pookas," invited lecture, Arizona Chapter, American Statistical Association, March, 1984.

"A Statistician Looks at Panel Analysis", invited lecture, College of Business, University of Tennessee, June, 1983

"The Use of Panel Models in Non-experimental Research", invited lecture, College of Medicine, University of California, San Francisco, June, 1983

"Competing Approaches to Analysis of Panel Data", invited lecture, Econometrics Seminar, Stanford University, May 1983

"Science Analysis in Politics and the Politics of Science Analysis", invited lecture, Butler University, Indianapolis, March, 1983

"Statistical Problems in Panel Models", invited lecture, College of Education, Stanford University, March, 1983

"A Statistician Looks at Panel Analysis or a Perfidious Peek at Pundits and Pookas", invited lecture, Department of Computer and Information Sciences, University of California, Santa Cruz, February, 1983

"A Statistician Looks at Panel Analysis or a Perfidious Peek at Pundits and Pookas", invited lecture, Department of Computer and Information Sciences, University of Santa Clara, February, 1983

"Statistical Problems in Panel Analysis", invited lecture, Department of Mathematics, University of California, Santa Barbara, February, 1983

"A Statistician Looks at Panel Analysis", invited lecture, Department of Statistics, University of Arizona, February, 1983

"A Crossed Lagged Penal Analysis of Cross-Lagged Panel Analysis", invited colloquium, Department of Statistics, Stanford University, January, 1983

"Some Exciting Problems in Energy Modeling", invited lecture, Department of Mathematics, Arizona State University, August, 1982

"Statistical Problems in Short-term Energy Forecasting", invited lecture, Energy Information Administration, Washington, D.C., February, 1982

"Problems in Forecasting Energy Supplies", Decision Sciences Seminar, Wharton School, September, 1981

"Energy Policy: Myth and Reality", invited lecture, Philadelphia Business Seminar, April, 1981

"Energy Management: Building Image and Minimizing Liabilities", invited lecture, Wharton Executive Development Seminar, April, 1981

"Evaluating Energy Models", invited lecture, Delaware Chapter, American Statistical Association, University of Delaware, May, 1980

"Evaluating Models of Resource Depletion", invited lecture, Department of Economics, New York University, April, 1980.

"Exploratory Methods and the Art of Data Analysis", Dinner speech, Philadelphia Chapter, American Statistical Association, October, 1979

"Models of Domestic Oil Resources: Science Products and Political Agents", invited lecture, Thayer School of Engineering, Dartmouth College, March, 1979

"Models of Sequential Voting", invited lecture, Department of Political Science, Dartmouth College, March, 1979

"Estimating Oil Reserves: The Methods, Models and Policy Issues", invited lecture, School of Public and Urban Policy, University of Pennsylvania, December, 1978

"Estimating the Domestic Crude Oil Resource Base: Examining the King's Approach", invited lecture, Department of Statistics, University of Pennsylvania, November, 1978

"Picking a Multivariate Test Function, The Eenie-Meany Principle", invited lecture, Montreal Joint Statistics Colloquium, Montreal, November, 1977

"Econometric Energy Models: The Emperor's Quantitative Suit", invited lecture, Department of Commerce, October, 1977

"Exploratory Data Analysis as an Alternative to the Econometric Analysis of Social Problems," invited lecture, Department of Psychology, College of William and Mary, April, 1977

"Analyzing Energy Policy: The Competing Roles of the Economist, Engineer and Mathematician", invited lecture, Department of Mathematics, University of South Carolina, April, 1977

"Analyzing Political Data: What Can Statistics Tell Us?," invited lecture, School of International Studies, University of Denver, May, 1976

"Schur-Convexity and the Equivalence of Multivariate Tests", invited seminar, Department of Statistics, Rutgers University, October, 1975

"On Communal Indifference Curves," (with I.J. Good), invited seminar, Mathematical Economics Seminar, Virginia Polytechnic Institute and State University, October, 1975

"The Statistical Analysis of Energy Problems: Who Should We Believe?", invited lecture, Office of Energy Analysis, Department of Commerce, October, 1975

"Energy Research and Residential Housing", invited lecture, The Federal Energy Administration, September, 1975

"Consumer Reaction to the Energy Crisis: The Long Underwear Effect", invited address, West Virginia University, February, 1975

"Mathematical Models and other Forms of Hocus-Pocus", invited lecture, Department of Political Science, West Virginia University, February, 1975

"Factor Analysis: The Short Bed Problem", invited lecture, Department of Statistics

and Operations Research, University of Pennsylvania, March, 1975

"LSD and Political Science: Distinguishing Uppers and Downers", invited address, Western New England College, November, 1974

"Probability, Statistics and the Theory of Democracy", invited lecture, Department of Statistics, University of Connecticut, October, 1974

"Statistical Policy Analysis: Assessing the Unobservable", invited lecture, Department of Statistics, Princeton University, January, 1974

"On Procedures for Comparing Factor Matrices", invited lecture, Department of Statistics, University of Connecticut, January, 1974.

"A Mathematician's Doubts About Econometric Solutions to Political Problems", invited lecture, Department of Political Science, Ohio State University, May, 1973

"Estimating the Relationship Between Unobserved Variables, or Can We Sell the Second Canonical Correlation to the Social Scientists?", invited lecture, Department of Statistics, Ohio State University, May, 1973

"Generalized Spatial Models of Voting Theory", invited lecture, Center for Public Choice, Virginia Polytechnic Institute and State University, February, 1973

"Estimating the Relationship Between Ordinal Variables", invited lecture, Department of Statistics, Harvard University, 1973.

"Some Statistical Problems in Spatial Models", invited colloquium, Department of Statistics, Carnegie-Mellon University, Pittsburgh, October, 1972.

"Sex, the Generation Gap, and Fermat's Last Theorem", invited speech, Tidewater Council of Teachers of Mathematics, Norfolk, Virginia, September, 1972

"Mathematics: Is it Irrelevant by Necessity or Design?", invited lecture, Department of Mathematics, Emory and Henry College, Emory, Virginia, April, 1972

"Is There Reason for a Mathematician to help a Social Scientist?", invited to deliver annual Phi Mu Epsilon Lecture, Blacksburg, Virginia, 1972

"Probability Without Calculus and Statistics Without Mathematics", invited lecture, Virginia Mathematics Teachers Annual Convention, Roanoke, Virginia, November, 1972

"If Educators Educate Educators, Who Educates the Educated?", banquet address, State Mathematics Teachers Convention, Norfolk, Virginia, 1971

"Two-Stage Estimation in linear Models", invited lecture, Department of Statistics, Pennsylvania State University, January, 1971

"Problems in Cluster Analysis", invited lecture, Department of Applied Statistics, University of Minnesota, January 1971

Papers in Proceedings:

Mayer, L. S. and Reiser M.(1992) "Mediation and Confounding in Panel Models of Prevention Research" Proceedings of the Social Statistics Section, American Statistical Association

Mayer, L. S. and Carroll, S. S.(1988) "Modeling the Cotemporal Effect in a Cross-Lagged Panel Model," Proceedings of the Business and Economics Section, American Statistical Association

Carroll, S. S. and Mayer, L. S. (1987) "Testing for Serial Correlation in Cross-Lagged Panel Studies," Proceedings of the Business and Economics Section, American Statistical Association

Carroll, S. S. and Mayer, L. S. (1986) "Evaluation of the Cross Effects Parameters in a Cross-Lagged Panel Model," Proceedings of the Business and Economic Section, American Statistical Association

Mayer, L. S. (1985) "Hypothesis Testing in Cross-Lagged Panel Models," Proceedings of the Social Statistics Section, American Statistical Association

Mayer, L. S. and Carroll, S. S. (1985) "Testing for Serial Correlation in Cross-Lagged Panel Studies," Proceedings of the Business and Economics Section, American Statistical Association

Mayer, L.S. et. al. (1982). "Analysis of the U.S. Short-Term Integrated (Energy) Forecasting System," Proceedings of the International Conference on Energy Use Management, New York: Pergamon Press, 971-982

Harrje, D. and Mayer, L.S. (1978). "Energy Use and the Potential for Conservation," Proceedings of the International Conference on Energy Use Management, Volume II, R. Fazzolare and C. Smith (eds.), New York: Pergamon Press, 749- 771

Mayer, L.S. (1978). "The Use of Semi-Controlled Experiments in the Analysis of Residential Energy Demand," Proceedings of the 1978 Department of Energy Symposium, Washington: Government Printing Office

Mayer, L.S. (1978). "The Value of the Econometric Approach to Forecasting Our Energy Future," Proceedings of the International Conference on Energy Use Management, Volume III, R. Fazzolare and C. Smith (eds.), New York: Pergamon Press, 1073-1082

Mayer, L.S. (1978). "Difficulty in Developing Local Energy Policy," expert testimony, Hearings on Local Energy Policy, Washington: U.S. Congress

Mayer, L.S. (1977). "Exploratory Data Analysis and Classical Statistics: Their Abilities to Shed Light on Energy Issues," Proceedings of the 1977 Department of Energy Symposium, 27-32, Washington: Government Printing Office

Published Abstracts:

"Equivariant Estimation and A Special Group Structure", (with T. Woteki), Bulletin of the Institute of Mathematical Statistics, 1975

"A Fortran Program for Linear Log Odds Analysis", (with P.J. Pichotta), Behavior Research Methods and Instrumentation, 1974, 6, p. 521

"Invariant Estimation in the Social Sciences", (with M. S. Younger), Bulletin of the Institute of Mathematical Statistics, 1973

"On Principal Components and Clusters", Bulletin of the International Classification Society, 1973

"Methods of Cluster Analysis Which Utilize Principal Components", Bulletin of the International Classification Society, 1972

"Utilizing Initial Estimates in Estimating the Coefficients in General Linear Model", Annals of Mathematical Statistics, October 1970

Society Membership:

Society for Epidemiological Research, Society for Environmental Epidemiology, Royal Statistical Society, Society for Medical Decision Making, American Statistical Association, Biometrics Society, Institute for Mathematical Statistics, Psychometric Society, Econometric Society, American Association for the Advancement of Science, American Political Science Association, American Sociological Association, and Council for Applied for Social Research.

Courses Taught at Arizona State University and Banner Good Samaritan Medical Center

Epidemiology, Epidemiology Methodology, Clinical Epidemiology, Panel Analysis, Biostatistics, Multiple Regression, Time Series Modeling, Applied Forecasting Methods, Stochastic Processes, Exploratory Data Analysis, Seminar in Multivariate Analysis, Advanced Topics in Statistical Inference, Advanced Topics in Linear Models, Advanced Research Methods.

Courses taught at other Universities:

Undergraduate:

Biostatistics, Data Analysis, Nonparametric Methods, Regression Analysis, Mathematical Statistics, Mathematical Modeling, Design of Experiments, Statistics for the Social Sciences, Educational Statistics, Statistics and Public Policy, Computers and Society, Forecasting.

Graduate:

Biostatistics, Clinical Epidemiology, Statistical Forecasting, Exploratory Data Analysis, Epidemiological Methods, Econometrics, Applied Multivariate Statistics, Advanced Multivariate Statistics, Stochastic Processes, Advanced Probability, Linear Models, Advanced Inference, Time Series, Sampling Theory, Quantitative Methods of Policy Analysis, Philosophy of Science, Advances in Social Methodology.

Professional:

Statistics and Public Policy (Woodrow Wilson School, Princeton University); Advanced Study in Energy Analysis (Wharton MBA Program, University of Pennsylvania); Advanced Study in Statistics and Law (Law School, University of Pennsylvania); Medical Statistics (College of Medicine, Ohio State University)

Notable University Committees:

Member, Graduate Committee on Ph.D. program in Health Services Administration and Policy, Arizona State University (ASU) 1991-1992

Member, Executive Board, Program on Law and the Social Sciences, ASU, 1983-1989

Faculty Senate (elected), ASU, 1987-89

University Services Committee, ASU, 1988-89

Council on Research and Creative Activities, ASU, 1986-1988

Sunset Review Committee, Meteorite Center, ASU, 1987

Sunset Review Committee, Energy Research Center, ASU, 1987

Chair, Sunset Review Committee, Center for Advanced Research in Transportation, ASU, 1987

Women Studies Research Awards Committee, ASU, 1984-1989

Board, Ph.D. Program in Justice Studies, ASU, 1987-1989

Biomedical Research Committee, ASU< 1986-1988

Notable Previous University Committee Assignments:

Member, Health Professions Advisory Board, University of Pennsylvania, 1980-83

Member, Environmental Task Force Committee, Office of the Provost, University of Pennsylvania, 1979-82

Member, Committee on Undergraduate Student Life, Princeton University, 1976

Member, Council of Masters, Princeton University, 1976-79

Fellow, Princeton Inn College, Princeton University, 1975-76

Member, Chair Search Committee, Department of Statistics, Virginia Polytechnic Institute and State University, 1972-74

Appendix C: Compensation

\$400.00 per hour.

APPENDIX D

Preface

This report was written for the general public and for mental health professionals in order to draw attention to—and offer some scientific insight about—the mental health issues faced by LGBT populations.

It arose from a request from Paul R. McHugh, M.D., the former chief of psychiatry at Johns Hopkins Hospital and one of the leading psychiatrists in the world. Dr. McHugh requested that I review a monograph he and colleagues had drafted on subjects related to sexual orientation and identity; my original assignment was to guarantee the accuracy of statistical inferences and to review additional sources. In the months that followed, I closely read over five hundred scientific articles on these topics and perused hundreds more. I was alarmed to learn that the LGBT community bears a disproportionate rate of mental health problems compared to the population as a whole.

As my interest grew, I explored research across a variety of scientific fields, including epidemiology, genetics, endocrinology, psychiatry, neuroscience, embryology, and pediatrics. I also reviewed many of the academic empirical studies done in the social sciences including psychology, sociology, political science, economics, and gender studies.

I agreed to take over as lead author, rewriting, reorganizing, and expanding the text. I support every sentence in this report, without reservation and without prejudice regarding any political or philosophical debates. This report is about science and medicine, nothing more and nothing less.

Readers wondering about this report's synthesis of research from so many different fields may wish to know a little about its lead author. I am a full-time academic involved in all aspects of teaching, research, and professional service. I am a biostatistician and epidemiologist who focuses on the design, analysis, and interpretation of experimental and observational data in public health and medicine, particularly when the data are complex in terms of underlying scientific issues. I am a research physician, having trained in medicine and psychiatry in the U.K. and received the British equivalent (M.B.) to the American M.D. I have never practiced medicine (including psychiatry) in the United States or abroad. I have testified in dozens of federal and state legal proceedings and regulatory hearings, in

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most cases reviewing scientific literature to clarify the issues under examination. I strongly support equality and oppose discrimination for the LGBT community, and I have testified on their behalf as a statistical expert.

I have been a full-time tenured professor for over four decades. I have held professorial appointments at eight universities, including Princeton, the University of Pennsylvania, Stanford, Arizona State University, Johns Hopkins University Bloomberg School of Public Health and School of Medicine, Ohio State, Virginia Tech, and the University of Michigan. I have also held research faculty appointments at several other institutions, including the Mayo Clinic.

My full-time and part-time appointments have been in twenty-three disciplines, including statistics, biostatistics, epidemiology, public health, social methodology, psychiatry, mathematics, sociology, political science, economics, and biomedical informatics. But my research interests have varied far less than my academic appointments: the focus of my career has been to learn how statistics and models are employed across disciplines, with the goal of improving the use of models and data analytics in assessing issues of interest in the policy, regulatory, or legal realms.

I have been published in many top-tier peer-reviewed journals (including *The Annals of Statistics*, *Biometrics*, and *American Journal of Political Science*) and have reviewed hundreds of manuscripts submitted for publication to many of the major medical, statistical, and epidemiological journals (including *The New England Journal of Medicine*, *Journal of the American Statistical Association*, and *American Journal of Public Health*).

I am currently a scholar in residence in the Department of Psychiatry at Johns Hopkins School of Medicine and a professor of statistics and biostatistics at Arizona State University. Up until July 1, 2016, I also held part-time faculty appointments at the Johns Hopkins Bloomberg School of Public Health and School of Medicine, and at the Mayo Clinic.

An undertaking as ambitious as this report would not be possible without the counsel and advice of many gifted scholars and editors. I am grateful for the generous help of Laura E. Harrington, M.D., M.S., a psychiatrist with extensive training in internal medicine and neuroimmunology, whose clinical practice focuses on women in life transition, including affirmative treatment and therapy for the LGBT community. She contributed to the entire report, particularly lending her expertise to the sections on endocrinology and brain research. I am indebted also to Bentley J. Hanish, B.S., a young geneticist who expects to graduate medical school in 2021 with an M.D./Ph.D. in psychiatric epidemiology.

LAWRENCE S. MAYER

He contributed to the entire report, particularly to those sections that concern genetics.

I gratefully acknowledge the support of Johns Hopkins University Bloomberg School of Public Health and School of Medicine, Arizona State University, and the Mayo Clinic.

In the course of writing this report, I consulted a number of individuals who asked that I not thank them by name. Some feared an angry response from the more militant elements of the LGBT community; others feared an angry response from the more strident elements of religiously conservative communities. Most bothersome, however, is that some feared reprisals from their own universities for engaging such controversial topics, regardless of the report's content—a sad statement about academic freedom.

I dedicate my work on this report, first, to the LGBT community, which bears a disproportionate rate of mental health problems compared to the population as a whole. We must find ways to relieve their suffering.

I dedicate it also to scholars doing impartial research on topics of public controversy. May they never lose their way in political hurricanes.

And above all, I dedicate it to children struggling with their sexuality and gender. Children are a special case when addressing gender issues. In the course of their development, many children explore the idea of being of the opposite sex. Some children may have improved psychological well-being if they are encouraged and supported in their cross-gender identification, particularly if the identification is strong and persistent over time. But nearly all children ultimately identify with their biological sex. The notion that a two-year-old, having expressed thoughts or behaviors identified with the opposite sex, can be labeled for life as transgender has absolutely no support in science. Indeed, it is iniquitous to believe that all children who have gender-atypical thoughts or behavior at some point in their development, particularly before puberty, should be encouraged to become transgender.

As citizens, scholars, and clinicians concerned with the problems facing LGBT people, we should not be dogmatically committed to any particular views about the nature of sexuality or gender identity; rather, we should be guided first and foremost by the needs of struggling patients, and we should seek with open minds for ways to help them lead meaningful, dignified lives.

LAWRENCE S. MAYER, M.B., M.S., Ph.D.

Executive Summary

This report presents a careful summary and an up-to-date explanation of research—from the biological, psychological, and social sciences—related to sexual orientation and gender identity. It is offered in the hope that such an exposition can contribute to our capacity as physicians, scientists, and citizens to address health issues faced by LGBT populations within our society.

Some key findings:

Part One: Sexual Orientation

- The understanding of sexual orientation as an innate, biologically fixed property of human beings—the idea that people are “born that way”—is not supported by scientific evidence.
- While there is evidence that biological factors such as genes and hormones are associated with sexual behaviors and attractions, there are no compelling causal biological explanations for human sexual orientation. While minor differences in the brain structures and brain activity between homosexual and heterosexual individuals have been identified by researchers, such neurobiological findings do not demonstrate whether these differences are innate or are the result of environmental and psychological factors.
- Longitudinal studies of adolescents suggest that sexual orientation may be quite fluid over the life course for some people, with one study estimating that as many as 80% of male adolescents who report same-sex attractions no longer do so as adults (although the extent to which this figure reflects actual changes in same-sex attractions and not just artifacts of the survey process has been contested by some researchers).
- Compared to heterosexuals, non-heterosexuals are about two to three times as likely to have experienced childhood sexual abuse.

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Part Two: Sexuality, Mental Health Outcomes, and Social Stress

- Compared to the general population, non-heterosexual sub-populations are at an elevated risk for a variety of adverse health and mental health outcomes.
- Members of the non-heterosexual population are estimated to have about 1.5 times higher risk of experiencing anxiety disorders than members of the heterosexual population, as well as roughly double the risk of depression, 1.5 times the risk of substance abuse, and nearly 2.5 times the risk of suicide.
- Members of the transgender population are also at higher risk of a variety of mental health problems compared to members of the non-transgender population. Especially alarmingly, the rate of lifetime suicide attempts across all ages of transgender individuals is estimated at 41%, compared to under 5% in the overall U.S. population.
- There is evidence, albeit limited, that social stressors such as discrimination and stigma contribute to the elevated risk of poor mental health outcomes for non-heterosexual and transgender populations. More high-quality longitudinal studies are necessary for the “social stress model” to be a useful tool for understanding public health concerns.

Part Three: Gender Identity

- The hypothesis that gender identity is an innate, fixed property of human beings that is independent of biological sex—that a person might be “a man trapped in a woman’s body” or “a woman trapped in a man’s body”—is not supported by scientific evidence.
- According to a recent estimate, about 0.6% of U.S. adults identify as a gender that does not correspond to their biological sex.
- Studies comparing the brain structures of transgender and non-transgender individuals have demonstrated weak correlations between brain structure and cross-gender identification. These correlations do not provide any evidence for a neurobiological basis for cross-gender identification.

EXECUTIVE SUMMARY

- Compared to the general population, adults who have undergone sex-reassignment surgery continue to have a higher risk of experiencing poor mental health outcomes. One study found that, compared to controls, sex-reassigned individuals were about 5 times more likely to attempt suicide and about 19 times more likely to die by suicide.
- Children are a special case when addressing transgender issues. Only a minority of children who experience cross-gender identification will continue to do so into adolescence or adulthood.
- There is little scientific evidence for the therapeutic value of interventions that delay puberty or modify the secondary sex characteristics of adolescents, although some children may have improved psychological well-being if they are encouraged and supported in their cross-gender identification. There is no evidence that all children who express gender-atypical thoughts or behavior should be encouraged to become transgender.

Sexuality and Gender

Findings from the Biological, Psychological, and Social Sciences

Lawrence S. Mayer, M.B., M.S., Ph.D. and Paul R. McHugh, M.D.

Introduction

Few topics are as complex and controversial as human sexual orientation and gender identity. These matters touch upon our most intimate thoughts and feelings, and help to define us as both individuals and social beings. Discussions of the ethical questions raised by sexual orientation and gender identity can become heated and personal, and the associated policy issues sometimes provoke intense controversies. The disputants, journalists, and lawmakers in these debates often invoke the authority of science, and in our news and social media and our broader popular culture we hear claims about what “science says” on these matters.

This report offers a careful summary and an up-to-date explanation of many of the most rigorous findings produced by the biological, psychological, and social sciences related to sexual orientation and gender identity. We examine a vast body of scientific literature from several disciplines. We try to acknowledge the limitations of the research and to avoid premature conclusions that would result in over-interpretation of scientific findings. Since the relevant literature is rife with inconsistent and ambiguous definitions, we not only examine the empirical evidence but also delve into underlying conceptual problems. This report does not, however, discuss matters of morality or policy; our focus is on the scientific evidence—what it shows and what it does not show.

We begin in Part One by critically examining whether concepts such as heterosexuality, homosexuality, and bisexuality represent distinct, fixed, and biologically determined properties of human beings. As part of this discussion, we look at the popular “born that way” hypothesis, which

INTRODUCTION

posits that human sexual orientation is biologically innate; we examine the evidence for this claim across several subspecialties of the biological sciences. We explore the developmental origins of sexual attractions, the degree to which such attractions may change over time, and the complexities inherent in the incorporation of these attractions into one's sexual identity. Drawing on evidence from twin studies and other types of research, we explore genetic, environmental, and hormonal factors. We also explore some of the scientific evidence relating brain science to sexual orientation.

In Part Two we examine research on health outcomes as they relate to sexual orientation and gender identity. There is a consistently observed higher risk of poor physical and mental health outcomes for lesbian, gay, bisexual, and transgender subpopulations compared to the general population. These outcomes include depression, anxiety, substance abuse, and most alarmingly, suicide. For example, among the transgender subpopulation in the United States, the rate of attempted suicide is estimated to be as high as 41%, ten times higher than in the general population. As physicians, academics, and scientists, we believe all of the subsequent discussions in this report must be cast in the light of this public health issue.

We also examine some ideas proposed to explain these differential health outcomes, including the “social stress model.” This hypothesis—which holds that stressors like stigma and prejudice account for much of the additional suffering observed in these subpopulations—does not seem to offer a complete explanation for the disparities in the outcomes.

Much as Part One investigates the conjecture that sexual orientation is fixed with a causal biological basis, a portion of Part Three examines similar issues with respect to gender identity. Biological sex (the binary categories of male and female) is a fixed aspect of human nature, even though some individuals affected by disorders of sex development may exhibit ambiguous sex characteristics. By contrast, gender identity is a social and psychological concept that is not well defined, and there is little scientific evidence that it is an innate, fixed biological property.

Part Three also examines sex-reassignment procedures and the evidence for their effectiveness at alleviating the poor mental health outcomes experienced by many people who identify as transgender. Compared to the general population, postoperative transgender individuals continue to be at high risk of poor mental health outcomes.

An area of particular concern involves medical interventions for gender-nonconforming youth. They are increasingly receiving therapies that affirm their felt genders, and even hormone treatments or surgical

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modifications at young ages. But the majority of children who identify as a gender that does not conform to their biological sex will no longer do so by the time they reach adulthood. We are disturbed and alarmed by the severity and irreversibility of some interventions being publicly discussed and employed for children.

Sexual orientation and gender identity resist explanation by simple theories. There is a large gap between the certainty with which beliefs are held about these matters and what a sober assessment of the science reveals. In the face of this complexity and uncertainty, we need to be humble about what we know and do not know. We readily acknowledge that this report is neither an exhaustive analysis of the subjects it addresses nor the last word on them. Science is by no means the only avenue for understanding these astoundingly complex, multifaceted topics; there are other sources of wisdom and knowledge—including art, religion, philosophy, and lived human experience. And much of our scientific knowledge in this area remains unsettled. However, we offer this overview of the scientific literature in the hope that it can provide a shared framework for intelligent, enlightened discourse in political, professional, and scientific exchanges—and may add to our capacity as concerned citizens to alleviate suffering and promote human health and flourishing.

Part One

Sexual Orientation

While some people are under the impression that sexual orientation is an innate, fixed, and biological trait of human beings—that, whether heterosexual, homosexual, or bisexual, we are “born that way”—there is insufficient scientific evidence to support that claim. In fact, the concept of sexual orientation itself is highly ambiguous; it can refer to a set of behaviors, to feelings of attraction, or to a sense of identity. Epidemiological studies show a rather modest association between genetic factors and sexual attractions or behaviors, but do not provide significant evidence pointing to particular genes. There is also evidence for other hypothesized biological causes of homosexual behaviors, attractions, or identity—such as the influence of hormones on prenatal development—but that evidence, too, is limited. Studies of the brains of homosexuals and heterosexuals have found some differences, but have not demonstrated that these differences are inborn rather than the result of environmental factors that influenced both psychological and neurobiological traits. One environmental factor that appears to be correlated with non-heterosexuality is childhood sexual abuse victimization, which may also contribute to the higher rates of poor mental health outcomes among non-heterosexual subpopulations, compared to the general population. Overall, the evidence suggests some measure of fluidity in patterns of sexual attraction and behavior—contrary to the “born that way” notion that oversimplifies the vast complexity of human sexuality.

The popular discussion of sexual orientation is characterized by two conflicting ideas about why some individuals are lesbian, gay, or bisexual. While some claim that sexual orientation is a choice, others say that sexual orientation is a fixed feature of one’s nature, that one is “born that way.” We hope to show here that, though sexual orientation is not a choice, neither is there scientific evidence for the view that sexual orientation is a fixed and innate biological property.

A prominent recent example of a person describing sexual orientation as a choice is Cynthia Nixon, a star of the popular television series *Sex and the City*, who in a January 2012 *New York Times* interview explained, “For me it’s a choice, and you don’t get to define my gayness for me,” and commented that she was “very annoyed” about the issue of whether or not gay people are born that way. “Why can’t it be a choice? Why is that any less legitimate?”¹ Similarly, Brandon Ambrosino wrote in *The New Republic* in

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2014 that “It’s time for the LGBT community to stop fearing the word ‘choice,’ and to reclaim the dignity of sexual autonomy.”²

By contrast, proponents of the “born that way” hypothesis—expressed for instance in Lady Gaga’s 2011 song “Born This Way”—posit that there is a causal biological basis for sexual orientation and often try to bolster their claims with scientific findings. Citing three scientific studies³ and an article from *Science* magazine,⁴ Mark Joseph Stern, writing for *Slate* in 2014, claims that “homosexuality, at least in men, is clearly, undoubtedly, inarguably an inborn trait.”⁵ However, as neuroscientist Simon LeVay, whose work in 1991 showed brain differences in homosexual men compared to heterosexual men, explained some years after his study, “It’s important to stress what I didn’t find. I did not prove that homosexuality is genetic, or find a genetic cause for being gay. I didn’t show that gay men are ‘born that way,’ the most common mistake people make in interpreting my work. Nor did I locate a gay center in the brain.”⁶

Many recent books contain popular treatments of science that make claims about the innateness of sexual orientation. These books often exaggerate—or at least oversimplify—complex scientific findings. For example, in a 2005 book, psychologist and science writer Leonard Sax responds to a worried mother’s question as to whether her teenage son will outgrow his homosexual attractions: “Biologically, the difference between a gay man and a straight man is something like the difference between a left-handed person and a right-handed person. Being left-handed isn’t just a phase. A left-handed person won’t someday magically turn into a right-handed person.... Some children are destined at birth to be left-handed, and some boys are destined at birth to grow up to be gay.”⁷

As we argue in this part of the report, however, there is little scientific evidence to support the claim that sexual attraction is simply fixed by innate and deterministic factors such as genes. Popular understandings of scientific findings often presume deterministic causality when the findings do not warrant that presumption.

Another important limitation for research and for interpretation of scientific studies on this topic is that some central concepts—including “sexual orientation” itself—are often ambiguous, making reliable measurements difficult both within individual studies and when comparing results across studies. So before turning to the scientific evidence concerning the development of sexual orientation and sexual desire, we will examine at some length several of the most troublesome conceptual ambiguities in the study of human sexuality in order to arrive at a fuller picture of the relevant concepts.

PART ONE: SEXUAL ORIENTATION

Problems with Defining Key Concepts

A 2014 *New York Times Magazine* piece titled “The Scientific Quest to Prove Bisexuality Exists”⁸ provides an illustration of the themes explored in this Part—sexual desire, attraction, orientation, and identity—and of the difficulties with defining and studying these concepts. Specifically, the article shows how a scientific approach to studying human sexuality can conflict with culturally prevalent views of sexual orientation, or with the self-understanding that many people have of their own sexual desires and identities. Such conflicts raise important questions about whether sexual orientation and related concepts are as coherent and well-defined as is often assumed by researchers and the public alike.

The author of the article, Benoit Denizet-Lewis, an openly gay man, describes the work of scientists and others trying to demonstrate the existence of a stable bisexual orientation. He visited researchers at Cornell University and participated in tests used to measure sexual arousal, tests that include observing the way pupils dilate in response to sexually explicit imagery. To his surprise, he found that, according to this scientific measure, he was aroused when watching pornographic films of women masturbating:

Might I actually be bisexual? Have I been so wedded to my gay identity—one I adopted in college and announced with great fanfare to family and friends—that I haven’t allowed myself to experience another part of myself? In some ways, even asking those questions is anathema to many gays and lesbians. That kind of publicly shared uncertainty is catnip to the Christian Right and to the scientifically dubious, psychologically damaging ex-gay movement it helped spawn. As out gay men and lesbians, after all, we’re supposed to be sure—we’re supposed to be “born this way.”⁹

Despite the apparently scientific (though admittedly limited) evidence of his bisexual-typical patterns of arousal, Denizet-Lewis rejected the idea that he was actually bisexual, because “It doesn’t feel true as a sexual orientation, nor does it feel right as my identity.”¹⁰

Denizet-Lewis’s concerns here illustrate a number of the quandaries raised by the scientific study of human sexuality. The objective measures the researchers used seemed to be at odds with the more intuitive, subjective understanding of what it is to be sexually aroused; our own understanding of what we are sexually aroused by is tied up with the entirety of our lived experience of sexuality. Furthermore, Denizet-Lewis’s insistence

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that he is gay, not bisexual, and his concern that uncertainty about his identity could have social and political implications, points to the fact that sexual orientation and identity are understood not only in scientific and personal terms, but in social, moral, and political terms as well.

But how do categories of sexual orientation—with labels such as “bisexual” or “gay” or “straight”—help scientists study the complex phenomenon of human sexuality? When we examine the concept of sexual orientation, it becomes apparent, as this part will show, that it is too vague and poorly defined to be very useful in science, and that in its place we need more clearly defined concepts. We strive in this report to use clear terms; when discussing scientific studies that rely on the concept of “sexual orientation,” we try as much as possible to specify how the scientists defined the term, or related terms.

One of the central difficulties in examining and researching sexual orientation is that the underlying concepts of “sexual desire,” “sexual attraction,” and “sexual arousal” can be ambiguous, and it is even less clear what it means that a person identifies as having a sexual orientation grounded in some pattern of desires, attractions, or states of arousal.

The word “desire” all by itself might be used to cover an aspect of volition more naturally expressed by “want”: I want to go out for dinner, or to take a road trip with my friends next summer, or to finish this project. When “desire” is used in this sense, the objects of desire are fairly determinate *goals*—some may be perfectly achievable, such as moving to a new city or finding a new job; others may be more ambitious and out of reach, like the dream of becoming a world-famous movie star. Often, however, the language of desire is meant to include things that are less clear: indefinite *longings* for a life that is, in some unspecified sense, different or better; an inchoate sense of something being missing or lacking in oneself or one’s world; or, in psychoanalytic literature, unconscious dynamic forces that shape one’s cognitive, emotional, and social behaviors, but that are separate from one’s ordinary, conscious sense of self.

This more full-blooded notion of desire is, itself, ambiguous. It might refer to a hoped-for state of affairs like finding a sense of meaning, fulfillment, and satisfaction with one’s life, a desire that, while not completely clear in its implications, is presumably not entirely out of reach, although such longings may also be forms of fantasizing about a radically altered or perhaps even unattainable state of affairs. If I want to take a road trip with my friends, the steps are clear: call up my friends, pick a date, map out a route, and so on. However, if I have an inchoate longing for change, a hope for sustainable intimacy, love, and belonging, or an unconscious conflict

PART ONE: SEXUAL ORIENTATION

that is disrupting my ability to move forward in the life I have tried to build for myself, I face a different sort of challenge. There is not necessarily a set of well-defined or conscious goals, much less established ways of achieving them. This is not to say that the satisfaction of these longings is impossible, but doing so often involves not only choosing concrete actions to achieve particular goals but the more complex shaping of one's own life through acting in and making sense of the world and one's place in it.

So the first thing to note when considering both popular discussions and scientific studies of sexuality is that the use of the term "desire" could refer to distinct aspects of human life and experience.

Just as the meanings that might be intended by the term "desire" are many, so also is each of these meanings varied, making clear delineations a challenge. For example, a commonsense understanding might suggest that the term "sexual desire" means wanting to engage in specific sexual acts with particular individuals (or categories of individuals). Psychiatrist Steven Levine articulated this common view in his definition of sexual desire as "the sum of the forces that incline us toward and away from sexual behavior."¹¹ But it is not obvious how one might study this "sum" in a rigorous way. Nor is it obvious why all the diverse factors that can potentially influence sexual behavior, such as material poverty—in the case of prostitution, for instance—alcohol consumption, and intimate affection, should all be grouped together as aspects of sexual desire. As Levine himself points out, "In anyone's hands, sexual desire can be a slippery concept."¹²

Consider a few of the ways that the term "sexual desire" has been employed in scientific contexts—designating one or more of the following distinct phenomena:

1. States of physical arousal that may or may not be linked to a specific physical activity and may or may not be objects of conscious awareness.
2. Conscious erotic interest in response to finding others attractive (in perception, memory, or fantasy), which may or may not involve any of the bodily processes associated with measurable states of physical arousal.
3. Strong interest in finding a companion or establishing a durable relationship.
4. The romantic aspirations and feelings associated with infatuation or falling in love with a specific individual.

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5. Inclination towards attachment to specific individuals.
6. The general motivation to seek intimacy with a member of some specific group.
7. An aesthetic measure that latches onto perceived beauty in others.¹³

In a given social science study, the concepts mentioned above will often each have its own particular operational definition for the purposes of research. But they cannot all mean the *same* thing. Strong interest in finding a companion, for example, is clearly distinguishable from physical arousal. Looking at this list of experiential and psychological phenomena, one can easily envision what confusions might arise from using the term “sexual desire” without sufficient care.

The philosopher Alexander Pruss provides a helpful summary of some of the difficulties involved in characterizing the related concept of sexual attraction:

What does it mean to be “sexually attracted” to someone? Does it mean to have a tendency to be aroused in their presence? But surely it is possible to find someone sexually attractive without being aroused. Does it mean to form the belief that someone is sexually attractive to one? Surely not, since a belief about who is sexually attractive to one might be wrong—for instance, one might confuse admiration of form with sexual attraction. Does it mean to have a noninstrumental desire for a sexual or romantic relationship with the person? Probably not: we can imagine a person who has no sexual attraction to anybody, but who has a noninstrumental desire for a romantic relationship because of a belief, based on the testimony of others, that romantic relationships have noninstrumental value. These and similar questions suggest that there is a cluster of related concepts under the head of “sexual attraction,” and any precise definition is likely to be an undesirable shoehorning. But if the concept of sexual attraction is a cluster of concepts, neither are there simply univocal concepts of heterosexuality, homosexuality, and bisexuality.¹⁴

The ambiguity of the term “sexual desire” (and similar terms) should give us pause to consider the diverse aspects of human experience that are often associated with it. The problem is neither irresolvable nor unique to this subject matter. Other social science concepts—aggression and addiction, for example—may likewise be difficult to define and to

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operationalize and for this reason admit of various usages.* Nevertheless, the ambiguity presents a significant challenge for both research design and interpretation, requiring that we take care in attending to the meanings, contexts, and findings specific to each study. It is also important to bracket any subjective associations with or uses of these terms that do not conform to well-defined scientific classifications and techniques.

It would be a mistake, at any rate, to ignore the varied uses of this and related terms or to try to reduce the many and distinct experiences to which they might refer to a single concept or experience. As we shall see, doing so could in some cases adversely affect the evaluation and treatment of patients.

The Context of Sexual Desire

We can further clarify the complex phenomenon of sexual desire if we examine what relationship it has to other aspects of our lives. To do so, we borrow some conceptual tools from a philosophical tradition known as phenomenology, which conceives of human experience as deriving its meaning from the whole context in which it appears.

The testimony of experience suggests that one’s experience of sexual desire and sexual attraction is not voluntary, at least not in any immediate way. The whole set of inclinations that we generally associate with the experience of sexual desire—whether the impulse to engage in particular acts or to enjoy certain relationships—does not appear to be the sole product of any deliberate choice. Our sexual appetites (like other natural appetites) are experienced as given, even if their expression is shaped in subtle ways by many factors, which might very well include volition. Indeed, far from appearing as a product of our will, sexual desire—however we define it—is often experienced as a powerful force, akin to hunger, that many struggle (especially in adolescence) to bring under direction and control. Furthermore, sexual desire can impact one’s attention involuntarily or color one’s day-to-day perceptions, experiences, and encounters. What seems to be to some extent in our control is how we choose to live with this appetite, how we integrate it into the rest of our lives.

But the question remains: What *is* sexual desire? What is this part of our lives that we consider to be given, prior even to our capacity to

* “Operationalizing” refers to the way social scientists make a variable measurable. Homosexuality may be operationalized as the answers that survey respondents give to questions about their sexual orientation. Or it could be operationalized as answers to questions about their desires, attractions, and behavior. Operationalizing variables in ways that will reliably measure the trait or behavior being studied is a difficult but important part of any social science research.

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deliberate and make rational choices about it? We know that some sort of sexual appetite is present in non-human animals, as is evident in the mammalian estrous cycle; in most mammalian species sexual arousal and receptivity are linked to the phase of the ovulation cycle during which the female is reproductively receptive.¹⁵ One of the relatively unique features of *Homo sapiens*, shared with only a few other primates, is that sexual desire is not exclusively linked to the woman’s ovulatory cycle.¹⁶ Some biologists have argued that this means that sexual desire in humans has evolved to facilitate the formation of sustaining relationships between parents, in addition to the more basic biological purpose of reproduction. Whatever the explanation for the origins and biological functions of human sexuality, the lived experience of sexual desires is laden with significance that goes beyond the biological purposes that sexual desires and behaviors serve. This significance is not just a subjective add-on to the more basic physiological and functional realities, but something that pervades our lived experience of sexuality.

As philosophers who study the structure of conscious experience have observed, our way of experiencing the world is shaped by our “embodiment, bodily skills, cultural context, language and other social practices.”¹⁷ Long before most of us experience anything like what we typically associate with sexual desire, we are already enmeshed in a cultural and social context involving other persons, feelings, emotions, opportunities, deprivations, and so on. Perhaps sexuality, like other human phenomena that gradually become part of our psychological constitution, has roots in these early meaning-making experiences. If meaning-making is integral to human experience in general, it is likely to play a key role in sexual experience in particular. And given that volition is operative in these other aspects of our lives, it stands to reason that volition will be operative in our experience of sexuality too, if only as one of many other factors.

This is not to suggest that sexuality—including sexual desire, attraction, and identity—is the result of any deliberate, rational decision calculus. Even if volition plays an important role in sexuality, volition itself is quite complex: many, perhaps most, of our volitional choices do not seem to come in the form of discrete, conscious, or deliberate decisions; “volitional” does not necessarily mean “deliberate.” The life of a desiring, volitional agent involves many tacit patterns of behavior owing to habits, past experiences, memories, and subtle ways of adopting and abandoning different stances on one’s life.

If something like this way of understanding the life of a desiring, volitional agent is true, then we do not deliberately “choose” the objects of our

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sexual desires any more than we choose the objects of our other desires. It might be more accurate to say that we gradually guide and give ourselves over to them over the course of our growth and development. This process of forming and reforming ourselves as human beings is similar to what Abraham Maslow calls self-actualization.¹⁸ Why should sexuality be an exception to this process? In the picture we are offering, internal factors, such as our genetic make-up, and external environmental factors, such as past experiences, are only ingredients, however important, in the complex human experience of sexual desire.

Sexual Orientation

Just as the concept of “sexual desire” is complex and difficult to define, there are currently no agreed-upon definitions of “sexual orientation,” “homosexuality,” or “heterosexuality” for purposes of empirical research. Should homosexuality, for example, be characterized by reference to desires to engage in particular acts with individuals of the same sex, or to a patterned history of having engaged in such acts, or to particular features of one’s private wishes or fantasies, or to a consistent impulse to seek intimacy with members of the same sex, or to a social identity imposed by oneself or others, or to something else entirely?

As early as 1896, in a book on homosexuality, the French thinker Marc-André Raffalovich argued that there were more than ten different types of affective inclination or behavior captured by the term “homosexuality” (or what he called “unisexuality”).¹⁹ Raffalovich knew his subject matter up close: he chronicled the trial, imprisonment, and resulting social disgrace of the writer Oscar Wilde, who had been prosecuted for “gross indecency” with other men. Raffalovich himself maintained a prolonged and intimate relationship with John Gray, a man of letters thought to be the inspiration for Wilde’s classic *The Picture of Dorian Gray*.²⁰ We might also consider the vast psychoanalytic literature from the early twentieth century on the topic of sexual desire, in which the experiences of individual subjects and their clinical cases are catalogued in great detail. These historical examples bring into relief the complexity that researchers still face today when attempting to arrive at clean categorizations of the richly varied affective and behavioral phenomena associated with sexual desire, in both same-sex and opposite-sex attractions.

We may contrast such inherent complexity with a different phenomenon that can be delineated unambiguously, such as pregnancy. With very few exceptions, a woman is or is not pregnant, which makes classification

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of research subjects for the purposes of study relatively easy: compare pregnant women with other, non-pregnant women. But how can researchers compare, say, “gay” men to “straight” men in a single study, or across a range of studies, without mutually exclusive and exhaustive definitions of the terms “gay” and “straight”?

To increase precision, some researchers categorize concepts associated with human sexuality along a continuum or scale according to variations in pervasiveness, prominence, or intensity. Some scales focus on both intensity and the objects of sexual desire. Among the most familiar and widely used is the Kinsey scale, developed in the 1940s to classify sexual desires and orientations using purportedly measurable criteria. People are asked to choose one of the following options:

- 0 - Exclusively heterosexual
- 1 - Predominantly heterosexual, only incidentally homosexual
- 2 - Predominantly heterosexual, but more than incidentally homosexual
- 3 - Equally heterosexual and homosexual
- 4 - Predominantly homosexual, but more than incidentally heterosexual
- 5 - Predominantly homosexual, only incidentally heterosexual
- 6 - Exclusively homosexual²¹

But there are considerable limitations to this approach. In principle, measurements of this sort are valuable for social science research. They can be used, for example, in empirical tests such as the classic “t-test,” which helps researchers measure statistically meaningful differences between data sets. Many measurements in social science, however, are “ordinal,” meaning that variables are rank-ordered along a single, one-dimensional continuum but are not intrinsically significant beyond that. In the case of the Kinsey scale, this situation is even worse, because it measures the self-identification of individuals, while leaving unclear whether the values they report all refer to the same aspect of sexuality—different people may understand the terms “heterosexual” and “homosexual” to refer to feelings of attraction, or to arousal, or to fantasies, or to behavior, or to any combination of these. The ambiguity of the terms severely limits the use of the Kinsey scale as an ordinal measurement that gives a rank order to variables along a single, one-dimensional continuum. So it is not clear that this scale helps researchers to make even rudimentary classifications among the relevant groups using qualitative criteria, much less to rank-order variables or conduct controlled experiments.

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Perhaps, given the inherent complexity of the subject matter, attempts to devise “objective” scales of this sort are misguided. In a critique of such approaches to social science, philosopher and neuropsychologist Daniel N. Robinson points out that “statements that lend themselves to different interpretation do not become ‘objective’ merely by putting a numeral in front of them.”²² It may be that self-reported identifications with culturally fraught and inherently complex labels simply cannot provide an objective basis for quantitative measurements in individuals or across groups.

Another obstacle for research in this area may be the popular, but not well-supported, belief that romantic desires are sublimations of sexual desires. This idea, traceable to Freud’s theory of unconscious drives, has been challenged by research on “attachment theory,” developed by John Bowlby in the 1950s.²³ Very roughly, attachment theory holds that later affective experiences that are often grouped under the general rubric “romantic” are explained in part by early childhood attachment behaviors (associated with maternal figures or caregivers)—not by unconscious, sexual drives. Romantic desires, following this line of thought, might not be as strongly correlated with sexual desires as is commonly thought. All of this is to suggest that simple delineations of the concepts relating to human sexuality cannot be taken at face value and that ongoing empirical research sometimes changes or complicates the meanings of the concepts.

If we look at recent research, we find that scientists often use at least one of three categories when attempting to classify people as “homosexual” or “heterosexual”: sexual *behavior*; sexual *fantasies* (or related emotional or affective experiences); and *self-identification* (as “gay,” “lesbian,” “bisexual,” “asexual,” and so forth).²⁴ Some add a fourth: inclusion in a community defined by sexual orientation. Consider, for example, the American Psychological Association’s definition of sexual orientation in a 2008 document designed to educate the public:

Sexual orientation refers to an enduring pattern of emotional, romantic and/or sexual *attractions* to men, women or both sexes. Sexual orientation also refers to a person’s sense of *identity* based on those attractions, related *behaviors*, and membership in a *community* of others who share those attractions. Research over several decades has demonstrated that sexual orientation ranges along a *continuum*, from exclusive attraction to the other sex to exclusive attraction to the same sex.²⁵ [Emphases added.]

One difficulty with grouping these categories together under the same general rubric of “sexual orientation” is that research suggests they often

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do not coincide in real life. Sociologist Edward O. Laumann and colleagues summarize this point clearly in a 1994 book:

While there is a core group (about 2.4 percent of the total men and about 1.3 percent of the total women) in our survey who *define themselves* as homosexual or bisexual, have same-gender *partners*, and express homosexual *desires*, there are also sizable groups who do not consider themselves to be either homosexual or bisexual but have had adult homosexual experiences or express some degree of desire.... [T]his preliminary analysis provides unambiguous evidence that no single number can be used to provide an accurate and valid characterization of the incidence and prevalence of homosexuality in the population at large. In sum, homosexuality is fundamentally a multidimensional phenomenon that has manifold meanings and interpretations, depending on context and purpose.²⁶ [Emphases added.]

More recently, in a 2002 study, psychologists Lisa M. Diamond and Ritch C. Savin-Williams make a similar point:

The more carefully researchers map these constellations—differentiating, for example, between *gender identity* and *sexual identity*, *desire* and *behavior*, *sexual* versus *affectionate* feelings, early-appearing versus late-appearing *attractions* and *fantasies*, or social *identifications* and sexual *profiles*—the more complicated the picture becomes because few individuals report uniform inter-correlations among these domains.²⁷ [Emphases added.]

Some researchers acknowledge the difficulties with grouping these various components under a single rubric. For example, researchers John C. Gonsiorek and James D. Weinrich write in a 1991 book: “It can be safely assumed that there is no necessary relationship between a person’s sexual behavior and self-identity unless both are individually assessed.”²⁸ Likewise, in a 1999 review of research on the development of sexual orientation in women, social psychologist Letitia Anne Peplau argues: “There is ample documentation that same-sex attractions and behaviors are not inevitably or inherently linked to one’s identity.”²⁹

In sum, the complexities surrounding the concept of “sexual orientation” present considerable challenges for empirical research on the subject. While the general public may be under the impression that there are widely accepted scientific definitions of terms such as “sexual orientation,” in fact, there are not. Diamond’s assessment of the situation in 2003 is still true today, that “there is currently no scientific or popular consensus on

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the exact constellation of experiences that definitively ‘qualify’ an individual as lesbian, gay, or bisexual.”³⁰

It is owing to such complexities that some researchers, for instance Laumann, proceed by characterizing sexual orientation as a “multidimensional phenomenon.” But one might just as well wonder whether, in trying to shoehorn this “multidimensional phenomenon” into a single category, we are not reifying a concept that corresponds to something far too plastic and diffuse in reality to be of much value in scientific research. While labels such as “heterosexual” and “homosexual” are often taken to designate stable psychological or even biological traits, perhaps they do not. It may be that individuals’ affective, sexual, and behavioral experiences do not conform well to such categorical labels because these labels do not, in fact, refer to natural (psychological or biological) kinds. At the very least, we should recognize that we do not yet possess a clear and well-established framework for research on these topics. Rather than attempting to research sexual desire, attraction, identity, and behavior under the general rubric of “sexual orientation,” we might do better to examine empirically each domain separately and in its own specificity.

To that end, this part of our report considers research on sexual desire and sexual attraction, focusing on the empirical findings related to etiology and development, and highlighting the underlying complexities. We will continue to employ ambiguous terms like “sexual orientation” where they are used by the authors we discuss, but we will try to be attentive to the context of their use and the ambiguities attaching to them.

Challenging the “Born that Way” Hypothesis

Keeping in mind these reflections on the problems of definitions, we turn to the question of how sexual desires originate and develop. Consider the different patterns of attraction between individuals who report experiencing predominant sexual or romantic attraction toward members of the same sex and those who report experiencing predominant sexual or romantic attraction toward members of the opposite sex. What are the causes of these two patterns of attraction? Are such attractions or preferences innate traits, perhaps determined by our genes or prenatal hormones; are they acquired by experiential, environmental, or volitional factors; or do they develop out of some combination of both kinds of causes? What role, if any, does human agency play in the genesis of patterns of attraction? What role, if any, do cultural or social influences play?

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Research suggests that while genetic or innate factors may influence the emergence of same-sex attractions, these biological factors cannot provide a complete explanation, and environmental and experiential factors may also play an important role.

The most commonly accepted view in popular discourse we mentioned above—the “born that way” notion that homosexuality and heterosexuality are biologically innate or the product of very early developmental factors—has led many non-specialists to think that homosexuality or heterosexuality is in any given person unchangeable and determined entirely apart from choices, behaviors, life experiences, and social contexts. However, as the following discussion of the relevant scientific literature shows, this is not a view that is well-supported by research.

Studies of Twins

One powerful research design for assessing whether biological or psychological traits have a genetic basis is the study of identical twins. If the probability is high that both members in a pair of identical twins, who share the same genome, exhibit a trait when one of them does—this is known as the concordance rate—then one can infer that genetic factors are likely to be involved in the trait. If, however, the concordance rate for identical twins is no higher than the concordance rate of the same trait in fraternal twins, who share (on average) only half their genes, this indicates that the shared environment may be a more important factor than shared genes.

One of the pioneers of behavioral genetics and one of the first researchers to use twins to study the effect of genes on traits, including sexual orientation, was psychiatrist Franz Josef Kallmann. In a landmark paper published in 1952, he reported that for all the pairs of identical twins he studied, if one of the twins was gay then both were gay, yielding an astonishing 100% concordance rate for homosexuality in identical twins.³¹ Were this result replicated and the study designed better, it would have given early support to the “born that way” hypothesis. But the study was heavily criticized. For example, philosopher and law professor Edward Stein notes that Kallmann did not present any evidence that the twins in his study were in fact genetically identical, and his sample was drawn from psychiatric patients, prisoners, and others through what Kallmann described as “direct contacts with the clandestine homosexual world,” leading Stein to argue that Kallmann’s sample “in no way constituted a reasonable cross-section of the homosexual population.”³²

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(Samples such as Kallmann's are known as convenience samples, which involve selecting subjects from populations that are conveniently accessible to the researcher.)

Nevertheless, well-designed twin studies examining the genetics of homosexuality indicate that genetic factors likely play some role in determining sexual orientation. For example, in 2000, psychologist J. Michael Bailey and colleagues conducted a major study of sexual orientation using twins in the Australian National Health and Medical Research Council Twin Registry, a large probability sample, which was therefore more likely to be representative of the general population than Kallmann's.³³ The study employed the Kinsey scale to operationalize sexual orientation and estimated concordance rates for being homosexual of 20% for men and 24% for women in identical (maternal, monozygotic) twins, compared to 0% for men and 10% for women in non-identical (fraternal, dizygotic) twins.³⁴ The difference in the estimated concordance rates was statistically significant for men but not for women. On the basis of these findings, the researchers estimated that the heritability of homosexuality for men was 0.45 with a wide 95% confidence interval of 0.00–0.71; for women, it was 0.08 with a similarly wide confidence interval of 0.00–0.67. These estimates suggest that for males 45% of the differences between certain sexual orientations (homosexual versus heterosexuals as measured by the Kinsey scale) could be attributed to differences in genes.

The large confidence intervals in the study by Bailey and colleagues mean that we must be careful in assessing the substantive significance of these findings. The authors interpret their findings to suggest that “any major gene for strictly defined homosexuality has either low penetrance or low frequency,”³⁵ but their data did show (marginal) statistical significance. While the concordance estimates seem somewhat high in the models used, the confidence intervals are so wide that it is difficult to judge the reliability, including the replicability, of these estimates.

It is worth clarifying here what “heritability” means in these studies, since the technical meaning in population genetics is narrower and more precise than the everyday meaning of the word. Heritability is a measure of how much variation in a particular trait within a population can be attributed to variation in genes in that population. It is not, however, a measure of how much a trait is genetically determined.

Traits that are almost entirely genetically determined can have very low heritability values, while traits that have almost no genetic basis can be found to be highly heritable. For instance, the number of fingers human beings have is almost completely genetically determined. But there is little

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variation in the number of fingers humans have, and most of the variation we do see is due to non-genetic factors such as accidents, which would lead to low heritability estimates for the trait. Conversely, cultural traits can sometimes be found to be highly heritable. For instance, whether a given individual in mid-twentieth century America wore earrings would have been found to be highly heritable, because it was highly associated with being male or female, which is in turn associated with possessing XX or XY sex chromosomes, making variability in earring-wearing behavior highly associated with genetic differences, despite the fact that wearing earrings is a cultural rather than biological phenomenon. Today, heritability estimates for earring-wearing behavior would be lower than they were in mid-twentieth century America, not because of any changes in the American gene pool, but because of the increased acceptance of men wearing earrings.³⁶

So, a heritability estimate of 0.45 does not mean that 45% of sexuality is determined by genes. Rather, it means that 45% of the variation between individuals in the population studied can be attributed in some way to genetic factors, as opposed to environmental factors.

In 2010, psychiatric epidemiologist Niklas Långström and colleagues conducted a large, sophisticated twin study of sexual orientation, analyzing data from 3,826 identical and fraternal same-sex twin pairs (2,320 identical and 1,506 fraternal pairs).³⁷ The researchers operationalized homosexuality in terms of lifetime same-sex sexual partners. The sample's concordance rates were somewhat lower than those found in the study by Bailey and colleagues. For having had at least one same-sex partner, the concordance for men was 18% in identical twins and 11% in fraternal twins; for women, 22% and 17%, respectively. For total number of sexual partners, concordance rates for men were 5% in identical twins and 0% in fraternal twins; for women, 11% and 7%, respectively.

For men, these rates suggest an estimated heritability rate of 0.39 for having had at least one lifetime same-sex partner (with a 95% confidence interval of 0.00–0.59), and 0.34 for total number of same-sex partners (with a 95% confidence interval of 0.00–0.53). Environmental factors experienced by one twin but not the other explained 61% and 66% of the variance, respectively, while environmental factors shared by the twins failed to explain any of the variance. For women, the heritability rate for having had at least one lifetime same-sex partner was 0.19 (95% confidence interval of 0.00–0.49); for total number of same-sex partners, it was 0.18 (95% confidence interval of 0.11–0.45). Unique environmental factors accounted for 64% and 66% of the variance, respectively, while

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shared environmental factors accounted for 17% and 16%, respectively. These values indicate that, while the genetic component of homosexual behavior is far from negligible, non-shared environmental factors play a critical, perhaps preponderant, role. The authors conclude that sexual orientation arises from both heritable and environmental influences unique to the individual, stating that “the present results support the notion that the individual-specific environment does indeed influence sexual preference.”³⁸

Another large and nationally representative study of twins published by sociologists Peter S. Bearman and Hannah Brückner in 2002 used data from the National Longitudinal Study of Adolescent to Adult Health (commonly abbreviated as “Add Health”) of adolescents in grades 7–12.³⁹ They attempted to estimate the relative influence of social factors, genetic factors, and prenatal hormonal factors on the development of same-sex attractions. Overall, 8.7% of the 18,841 adolescents in their study reported same-sex attractions, 3.1% reported a same-sex romantic relationship, and 1.5% reported same-sex sexual behavior. The authors first analyzed the “social influence hypothesis,” according to which opposite-sex twins receive less gendered socialization from their families than same-sex twins or opposite-sex siblings, and found that this hypothesis was well-supported in the case of males. While female opposite-sex twins in the study were the least likely of all the groups to report same-sex attractions (5.3%), male opposite-sex twins were the likeliest to report same-sex attractions (16.8%)—more than twice as likely as males with a full, non-twin sister (16.8% vs. 7.3%). The authors concluded there was “substantial indirect evidence in support of a socialization model at the individual level.”⁴⁰

The authors also examined the “intrauterine hormone transfer hypothesis,” according to which prenatal hormone transfers between opposite-sex twin fetuses influences the sexual orientation of the twins. (Note that this is different from the more general hypothesis that prenatal hormones influence the development of sexual orientation.) In the study, the proportion of male opposite-sex twins reporting same-sex attraction was about twice as high for those without older brothers (18.7%) as for those with older brothers (8.8%). The authors argued that this finding was strong evidence against the hormone-transfer hypothesis, since the presence of older brothers should not decrease the likelihood of same-sex attraction if that attraction has a basis in prenatal hormonal transfers. However, that conclusion seems premature: the observations are consistent with the possibility of *both* hormonal factors *and* the presence of an older brother having an effect (especially if the latter influences the former). This study

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also found no correlation between experiencing same-sex attraction and having multiple older brothers, which had been reported in some earlier studies.⁴¹

Finally, Bearman and Brückner did not find evidence of significant genetic influence on sexual attraction. Significant influence would require that identical twins have significantly higher concordance rates for same-sex attraction than fraternal twins or non-twin siblings. But in the study, the rates were statistically similar: identical twins were 6.7% concordant, dizygotic pairs 7.2% concordant, and full siblings 5.5% concordant. The authors concluded that “it is more likely that any genetic influence, if present, can only be expressed in specific and circumscribed social structures.”⁴² Based on their data, they suggested the one observed social structure that might enable this genetic expression is the more limited “gender socialization associated with firstborn OS [opposite-sex] twin pairs.”⁴³ Thus, they inferred that their results “support the hypothesis that less gendered socialization in early childhood and preadolescence shapes subsequent same-sex romantic preferences.”⁴⁴ While the findings here are suggestive, further research is needed to confirm this hypothesis. The authors also argued that the higher concordance rates for same-sex attraction reported in previous studies may be unreliable due to methodological problems such as non-representative samples and small sample sizes. (It should be noted, however, that these remarks were published prior to the study by Långström and colleagues discussed above, which uses a study design that does not appear to have these limitations.)

To reconcile the somewhat mixed data on heritability, we could hypothesize that attraction to the same sex may have a stronger heritable component as people age—that is, when researchers attempt to measure sexual orientation later in life (as in the 2010 study by Långström and colleagues) than when measured earlier in life. Heritability estimates can change depending on the age at which a trait is measured because changes in the environmental factors that might influence variation in the trait may vary for individuals at different ages, and because genetically influenced traits may become more fixed at a later stage in an individual’s development (height, for instance, becomes fixed in early adulthood). This hypothesis is also suggested by findings, discussed below, that same-sex attraction may be more fluid in adolescence than in later stages of adulthood.

In contrast to the studies just summarized, psychiatrist Kenneth S. Kendler and colleagues conducted a large twin study using a probability sample of 794 twin pairs and 1,380 non-twin siblings.⁴⁵ Based on concordance rates for sexual orientation (defined in this study as self-iden-

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tification based on attraction), the authors state that their results “suggest that genetic factors may provide an important influence on sexual orientation.”⁴⁶ The study does not, however, appear to be sufficiently powerful to draw strong conclusions about the degree of genetic influence on sexuality: only 19 of 324 identical twin pairs had any non-heterosexual member, with 6 of the 19 pairs concordant; 15 of 240 same-sex fraternal twin pairs had any non-heterosexual member, with 2 of the 15 pairs concordant. Because only 8 twin pairs were concordant for non-heterosexuality, the study’s ability to draw substantively significant comparisons between identical and fraternal twins (or between twins and non-twin siblings) is limited.

Overall, these studies suggest that (depending on how homosexuality is defined) in anywhere from 6% to 32% of cases, both members of an identical twin pair would be homosexual if at least one member is. Since some twin studies found higher concordance rates in identical twins than in fraternal twins or non-twin siblings, there may be genetic influences on sexual desire and behavioral preferences. One needs to bear in mind that identical twins typically have even more similar environments—early attachment experiences, peer relationships, and the like—than fraternal twins or non-twin siblings. Because of their similar appearances and temperaments, for example, identical twins may be more likely than fraternal twins or other siblings to be treated similarly. So some of the higher concordance rates may be attributable to environmental factors rather than genetic factors. In any case, if genes do play a role in predisposing people toward certain sexual desires or behaviors, these studies make clear that genetic influences cannot be the whole story.

Summarizing the studies of twins, we can say that there is no reliable scientific evidence that sexual orientation is determined by a person’s genes. But there is evidence that genes play a role in influencing sexual orientation. So the question “Are gay people born that way?” requires clarification. There is virtually no evidence that anyone, gay or straight, is “born that way” if that means their sexual orientation was genetically determined. But there is some evidence from the twin studies that certain genetic profiles probably increase the likelihood the person later identifies as gay or engages in same-sex sexual behavior.

Future twin studies on the heritability of sexual orientation should include analyses of larger samples or meta-analyses or other systematic reviews to overcome the limited sample size and statistical power of some of the existing studies, and analyses of heritability rates across different dimensions of sexuality (such as attraction, behavior, and identity) to

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overcome the imprecisions of the ambiguous concept of sexual orientation and the limits of studies that look at only one of these dimensions of sexuality.

Molecular Genetics

In examining the question whether, and perhaps to what extent, there may be genetic contributions to homosexuality, we have so far looked at studies that employ methods of classical genetics to estimate the heritability of a trait like sexual orientation but that do not identify particular genes that may be associated with the trait.⁴⁷ But genetics can also be studied using what are often called molecular methods that provide estimates of which particular genetic variations are associated with traits, whether physical or behavioral.

One early attempt to identify a more specific genetic basis for homosexuality was a 1993 study by geneticist Dean Hamer and colleagues of 40 pairs of homosexual brothers.⁴⁸ By examining the family history of homosexuality for these individuals, they identified a possible linkage between homosexuality in males and genetic markers on the Xq28 region of the X chromosome. Attempts to replicate this influential study's results have had mixed results: George Rice and colleagues attempted and failed to replicate Hamer's findings,⁴⁹ though in 2015 Alan R. Sanders and colleagues were able to replicate Hamer's original findings using a larger population size of 409 male twin pairs of homosexual brothers, and to find additional genetic linkage sites.⁵⁰ (Since the effect was small, however, the genetic marker would not be a good predictor of sexual orientation.)

Genetic linkage studies like the ones discussed above are able to identify particular regions of chromosomes that may be associated with a trait by looking at patterns of inheritance. Today, one of the chief methods for inferring which genetic variants are associated with a trait is the genome-wide association study, which uses DNA sequencing technologies to identify particular differences in DNA that may be associated with a trait. Scientists examine millions of genetic variants in large numbers of individuals who have a particular trait, as well as individuals who do not have the trait, and compare the frequency of genetic variants among those who do and do not have the trait. Specific genetic variants that occur more frequently among those who have than those who do not have the trait are inferred to have some association with that trait. Genome-wide association studies have become popular in recent years, yet few such scientific studies have found significant associations of genetic variants with sexual

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orientation. The largest attempt to identify genetic variants associated with homosexuality, a study of over 23,000 individuals from the 23andMe database presented at the American Society of Human Genetics annual meeting in 2012, found no linkages reaching genome-wide significance for same-sex sexual identity for males or females.⁵¹

So, again, the evidence for a genetic basis for homosexuality is inconsistent and inconclusive, which suggests that, though genetic factors explain some of the variation in sexual orientation, the genetic contribution to this trait is not likely to be strong and even less likely to be decisive.

As is often true of human behavioral tendencies, there may be genetic contributions to the tendency toward homosexual inclinations or behaviors. Phenotypic expression of genes is usually influenced by environmental factors—different environments may lead to different phenotypes even for the same genes. So even if there are genetic factors that contribute to homosexuality, an individual's sexual attractions or preferences may also be influenced by a number of environmental factors, such as social stressors, including emotional, physical, or sexual abuse. Looking to developmental, environmental, experiential, social, or volitional factors will be necessary to arrive at a fuller picture of how sexual interests, attractions, and desires develop.

The Limited Role of Genetics

Lay readers might note at this point that even at the purely biological level of genetics, the shopworn “nature vs. nurture” debates regarding human psychology have been abandoned by scientists, who recognize that no credible hypothesis can be offered for any particular traits that would be determined either purely by genetics or the environment. The growing field of epigenetics, for example, demonstrates that even for relatively simple traits, gene expression itself can be influenced by innumerable other external factors that can shape the functioning of genes.⁵² This is even more relevant when it comes to the relationship between genes and complex traits like sexual attraction, drives, and behaviors.

These gene-environment relationships are complex and multidimensional. Non-genetic developmental factors and environmental experiences may be sculpted, in part, by genetic factors working in subtle ways. For example, social geneticists have documented the indirect role of genes in peer-aligned behaviors, such that an individual's physical appearance could influence whether a particular social group will include or exclude that individual.⁵³

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Contemporary geneticists know that genes can influence a person's range of interests and motivations, therefore indirectly affecting behavior. While genes may in this way incline a person to certain behaviors, compelling behavior directly, independently of a wide range of other factors, seems less plausible. They may influence behavior in more subtle ways, depending on external environmental stimuli (for instance, peer pressure, suggestion, and behavioral rewards) in conjunction with psychological factors and physical makeup. Dean Hamer, whose work on the possible role of genetics in homosexuality was examined above, explained some of the limitations of behavioral genetics in a 2002 article in *Science*: "The real culprit [of lack of progress in behavioral genetics] is the assumption that the rich complexity of human thought and emotion can be reduced to a simple, linear relation between individual genes and behaviors.... This oversimplified model, which underlies most current research in behavior genetics, ignores the critical importance of the brain, the environment, and gene expression networks."⁵⁴

The genetic influences affecting any complex human behavior—whether sexual behaviors, or interpersonal interactions—depend in part on individuals' life experiences as they mature. Genes constitute only one of the many key influences on behavior in addition to environmental influences, personal choices, and interpersonal experiences. The weight of evidence to date strongly suggests that the contribution of genetic factors is modest. We can say with confidence that genes are not the sole, essential cause of sexual orientation; there is evidence that genes play a modest role in contributing to the development of sexual attractions and behaviors but little evidence to support a simplistic "born that way" narrative concerning the nature of sexual orientation.

The Influence of Hormones

Another area of research relevant to the hypothesis that people are born with dispositions toward different sexual orientations involves prenatal hormonal influences on physical development and subsequent male- or female-typical behaviors in early childhood. For ethical and practical reasons, the experimental work in this field is carried out in non-human mammals, which limits how this research can be generalized to human cases. However, children who are born with disorders of sexual development (DSD) serve as a population in which to examine the influence of genetic and hormonal abnormalities on the subsequent development of non-typical sexual identity and sexual orientation.

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Hormones responsible for sexual differentiation are generally thought to exert on the developing fetus either *organizational* effects—which produce permanent changes in the wiring and sensitivity of the brain, and thus are considered largely irreversible—or *activating* effects, which occur later in an individual’s life (at puberty, and into adulthood).⁵⁵ Organizational hormones may prime the fetal systems (including the brain) structurally, and set the stage for sensitivity to hormones presenting at puberty and beyond, when the hormone will then “activate” systems which were “organized” prenatally.

Periods of peak response to the hormonal environment are thought to occur during gestation. For example, testosterone is thought to influence the male fetus maximally between weeks 8 and 24, and then again at birth, until about three months of age.⁵⁶ Estrogens are provided throughout gestation by the placenta and the mother’s blood system.⁵⁷ Studies in animals reveal there may even be multiple periods of sensitivity for a variety of hormones, that the presence of one hormone may influence the action of another hormone, and the sensitivity of the receptors for these hormones can influence their actions.⁵⁸ Sexual differentiation, alone, is a highly complex system.

Specific hormones of interest in this area of research are testosterone, dihydrotestosterone (a metabolite of testosterone, and more potent than testosterone), estradiol, progesterone, and cortisol. The generally accepted pathways of normal hormonal influence of development in utero are as follows. The typical pattern of sex differentiation in human fetuses begins with the differentiation of the sex organs into testes or ovaries, a process that is largely genetically controlled. Once these organs have differentiated, they produce specific hormones that determine development of external genitalia. This window of time in gestation is when hormones exert their phenotypic and neurological effects. Testosterone secreted by the testes contributes to the development of male external genitalia and affects neurological development in males;⁵⁹ it is the absence of testosterone in females which allows for the female pattern of external genitalia to develop.⁶⁰ Imbalances of testosterone or estrogen, as well as their presence or absence at specific critical periods of gestation, may cause disorders of sexual development. (Genetic or environmental effects can also lead to disorders of sexual development.)

Stress may also play some role in influencing the way hormones shape gonadal development, neurodevelopment, and subsequent sex-typical behaviors in early childhood.⁶¹ Cortisol is the main hormone associated

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with stress responses. It may originate from the mother, if she experiences severe stressors during her pregnancy, or from the fetus under stress.⁶² Elevated levels of cortisol may also occur from genetic defects.⁶³ One of the most extensively studied disorders of sexual development is congenital adrenal hyperplasia (CAH), which in females can result in genital virilization.⁶⁴ Over 90% of cases of CAH result from a mutation in a gene that codes for an enzyme that helps synthesize cortisol.⁶⁵ This results in an overproduction of cortisol precursors, some of which are converted into androgens (hormones associated with male sex development).⁶⁶ As a result, girls are born with some degree of virilization of their genitalia, depending on the severity of the genetic defect.⁶⁷ For severe cases of genital virilization, surgical intervention is sometimes performed to normalize the genitalia. Hormone therapies are also often administered to mitigate the effects of excess androgen production.⁶⁸ Females with CAH, who as fetuses were exposed to above-average levels of androgens, are less likely to be exclusively heterosexual than females without CAH, and females with more severe forms of CAH are more likely to be non-heterosexual than females with milder forms of the condition.⁶⁹

Likewise, there are disorders of sexual development in genetic males affected by androgen insensitivity. In males with androgen insensitivity syndrome, the testes produce testosterone normally, but the receptors to testosterone are not functional.⁷⁰ The genitalia, at birth, appear to be female, and the child is usually raised as a female. The individual's endogenous testosterone is broken down into estrogen, such that the individual begins to develop female secondary sex characteristics.⁷¹ It does not become apparent that there is a problem until puberty, when the individual does not start menses appropriately.⁷² These patients generally prefer to continue life as females, and their sexual orientation does not differ from females having an XX genotype.⁷³ Studies have suggested that they are just as likely if not more likely to be exclusively interested in male partners than XX females.⁷⁴

There are other disorders of sexual development affecting some genetic males (i.e., with an XY genotype) in whom androgen deficiencies are a direct result of the lack of enzymes either to synthesize dihydrotestosterone from testosterone or to produce testosterone from its precursor hormone.⁷⁵ Individuals with these deficiencies are born with varied degrees of ambiguous genitalia, and are sometimes raised as girls. During puberty, however, these individuals often experience physical virilization, and must then decide whether to live as men or women. Peggy T. Cohen-Kettenis, a professor of gender development and psychopathology, found that 39 to

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64% of individuals with these deficiencies who are raised as girls change to live as men in adolescence and early adulthood, and she also reported that “the degree of external genital masculinization at birth does not seem to be related to gender role changes in a systematic way.”⁷⁶

The twin studies reviewed earlier may shed light on the role of maternal hormonal influences, since both identical and fraternal twins are exposed to similar maternal hormonal influences in utero. The relatively weak concordance rates in the twin studies suggest that prenatal hormones, like genetic factors, do not play a strongly determinative role in sexual orientation. Other attempts at finding significant hormonal influences on sexual development have likewise been mixed, and the salience of the findings is not yet clear. Since direct studies of prenatal hormonal influences on sexual development are methodologically difficult, some studies have tried to develop models whereby differences in prenatal hormonal exposure can be inferred indirectly—by measuring subtle morphological changes or by examining hormonal disorders that are present later during development.

For example, one rough proxy of prenatal testosterone levels used by researchers is the ratio between the length of the second finger (index finger) and the fourth finger (ring finger), which is commonly called the “2D:4D ratio.” Some evidence suggests that the ratio may be influenced by prenatal exposure to testosterone, such that in males higher levels of exposure to testosterone cause shorter index fingers relative to the ring finger (or having a low 2D:4D ratio), and vice versa.⁷⁷ According to one hypothesis, homosexual men may have a higher 2D:4D ratio (closer to the ratio found in females than in heterosexual males), while another hypothesis suggests the opposite, that homosexual men may be hypermasculinized by prenatal testosterone, resulting in a lower ratio than in heterosexual men. For women, the hypothesis for homosexuality that they have been hypermasculinized (lower ratio, higher testosterone) has also been proposed. Several studies comparing this trait in homosexually versus heterosexually identified men and women have shown mixed results.

A study published in *Nature* in 2000 found that in a sample of 720 California adults, the right-hand 2D:4D ratio of homosexual women was significantly more masculine (that is, the ratio was smaller) than that of heterosexual women and did not differ significantly from that of heterosexual men.⁷⁸ This study also found no significant difference in mean 2D:4D ratio between heterosexual and homosexual men. Another study that year, which used a relatively small sample of homosexual and heterosexual men from the United Kingdom, reported a lower 2D:4D (that

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is, more masculine) ratio in homosexual men.⁷⁹ A 2003 study using a London-based sample also found that homosexual men had a lower 2D:4D ratio than heterosexuals,⁸⁰ while two other studies with samples from California and Texas showed *higher* 2D:4D ratios for homosexual men.⁸¹

A 2003 twin study compared seven female monozygotic twin pairs discordant for homosexuality (one twin was lesbian) and five female monozygotic twin pairs concordant for homosexuality (both twins were lesbian).⁸² In the twin pairs discordant for sexual orientation, the individuals identifying as homosexual had significantly lower 2D:4D ratios than their twins, whereas the concordant twins showed no difference. The authors interpreted this result as suggesting that “low 2D:4D ratio is a result of differences in prenatal environment.”⁸³ Finally, a 2005 study of 2D:4D ratios in an Austrian sample of 95 homosexual and 79 heterosexual men found that the 2D:4D ratios of heterosexual men were not significantly different from those of homosexual men.⁸⁴ After reviewing the several studies on this trait, the authors conclude that “more data are essential before we can be sure whether there is a 2D:4D effect for sexual orientation in men when ethnic variation is controlled for.”⁸⁵

Much research has examined the effects of prenatal hormones on behavior and brain structure. Again, these results come primarily from studies of non-human primates, but the study of disorders of sexual development has provided helpful insights into the effects of hormones on sexual development in humans. Since hormonal influences typically occur during time-sensitive periods of development, when their effects manifest physically, it is reasonable to assume that organizational effects of these early, time-linked hormonal patterns are likely to direct aspects of neural development. Neuroanatomical connectivity and neurochemical sensitivities may be among such influences.

In 1983, Günter Dörner and colleagues performed a study investigating whether there is any relationship between maternal stress during pregnancy and later sexual identity of their children, interviewing two hundred men about stressful events that may have occurred to their mothers during their prenatal lives.⁸⁶ Many of these events occurred as a consequence of World War II. Of men who reported that their mothers had experienced moderately to severely stressful events during pregnancy, 65% were homosexual, 25% were bisexual, and 10% were heterosexual. (Sexual orientation was assessed using the Kinsey scale.) However, more recent studies have shown much smaller or no significant correlations.⁸⁷ In a 2002 prospective study on the relationship between sexual orientation and prenatal stress during the second and third trimesters, Hines

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and colleagues found that stress reported by mothers during pregnancy showed “only a small relationship” to male-typical behaviors in their daughters at the age of 42 months, “and no relationship at all” to female-typical behaviors in their sons.⁸⁸

In summary, some forms of prenatal hormone exposure, particularly CAH in females, are associated with differences in sexual orientation, while other factors are often important in determining the physical and psychological effects of those exposures. Hormonal conditions that contribute to disorders of sex development may contribute to the development of non-heterosexual orientations in some individuals, but this does not demonstrate that such factors explain the development of sexual attractions, desires, and behaviors in the majority of cases.

Sexual Orientation and the Brain

There have been several studies examining neurobiological differences between individuals who identify as heterosexual and those who identify as homosexual. This work began with neuroscientist Simon LeVay’s 1991 study that reported biological differences in the brains of gay men as compared to straight men—specifically, a difference in volume in a particular cell group of the interstitial nuclei of the anterior hypothalamus (INAH3).⁸⁹ Later work by psychiatrist William Byne and colleagues showed more nuanced findings: “In agreement with two prior studies... we found INAH3 to be sexually dimorphic, occupying a significantly greater volume in males than females. In addition, we determined that the sex difference in volume was attributable to a sex difference in neuronal number and not in neuronal size or density.”⁹⁰ The authors noted that, “Although there was a trend for INAH3 to occupy a smaller volume in homosexual men than in heterosexual men, there was no difference in the number of neurons within the nucleus based on sexual orientation.” They speculated that “postnatal experience” may account for the differences in volume in this region between homosexual and heterosexual men, though this would require further research to confirm.⁹¹ They also noted that the functional significance of sexual dimorphism in INAH3 is unknown. The authors conclude: “Based on the results of the present study as well as those of LeVay (1991), sexual orientation cannot be reliably predicted on the basis of INAH3 volume alone.”⁹² In 2002, psychologist Mitchell S. Lasco and colleagues published a study examining a different part of the brain—the anterior commissure—and found that there were no significant differences in that area based either on sex or sexual orientation.⁹³

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Other studies have since been conducted to ascertain structural or functional differences between the brains of heterosexual and homosexual individuals (using a variety of criteria to define these categories). Findings from several of these studies are summarized in a 2008 commentary published in the *Proceedings of the National Academy of Sciences*.⁹⁴ Research of this kind, however, does not seem to reveal much of relevance regarding the etiology or biological origins of sexual orientation. Due to inherent limitations, this research literature is fairly unremarkable. For example, in one study functional MRI was used to measure activity changes in the brain when pictures of men and women were shown to subjects, finding that viewing a female face produced stronger activity in the thalamus and orbitofrontal cortex of heterosexual men and homosexual women, whereas in homosexual men and heterosexual women these structures reacted more strongly to the face of a man.⁹⁵ That the brains of heterosexual women and homosexual men reacted distinctively to the faces of men, whereas the brains of heterosexual men and homosexual women reacted distinctively to the faces of women, is a finding that seems rather trivial with respect to understanding the etiology of homosexual attractions. In a similar vein, one study reported different responses to pheromones between homosexual and heterosexual men,⁹⁶ and a follow-up study showed a similar finding in homosexual compared to heterosexual women.⁹⁷ Another study showed differences in cerebral asymmetry and functional connectivity between homosexual and heterosexual subjects.⁹⁸

While findings of this kind may suggest avenues for future investigation, they do not move us much closer to an understanding of the biological or environmental determinants of sexual attractions, interests, preferences, or behaviors. We will say more about this below. For now, we will briefly illustrate a few of the inherent limitations in this area of research with the following hypothetical example. Suppose we were to study the brains of yoga teachers and compare them to the brains of bodybuilders. If we search long enough, we will eventually find statistically significant differences in some area of brain morphology or brain function between these two groups. But this would not imply that such differences determined the different life trajectories of the yoga teacher and the bodybuilder. The brain differences could have been the result, rather than the cause, of distinctive patterns of behavior or interests.⁹⁹ Consider another example. Suppose that gay men tend to have less body fat than straight men (as indicated by lower average scores on body mass indices). Even though body mass is, in part, determined by genetics, we could not claim based on this finding that there is some innate, genetic cause of both body

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mass and homosexuality at work. It could be the case, for instance, that being gay is associated with a diet that lowers body mass. These examples illustrate one of the common problems encountered in the popular interpretation of such research: the suggestion that the neurobiological pattern determines a particular behavioral expression.

With this overview of studies on biological factors that might influence sexual attraction, preferences, or desires, we can understand the rather strong conclusion by social psychologist Letitia Anne Peplau and colleagues in a 1999 review article: “To recap, more than 50 years of research has failed to demonstrate that biological factors are a major influence in the development of women’s sexual orientation.... Contrary to popular belief, scientists have not convincingly demonstrated that biology determines women’s sexual orientation.”¹⁰⁰ In light of the studies we have summarized here, this statement could also be made for research on male sexual orientation, however this concept is defined.

Misreading the Research

There are some significant built-in limitations to what the kind of empirical research summarized in the preceding sections can show. Ignoring these limitations is one of the main reasons the research is routinely misinterpreted in the public sphere. It may be tempting to assume, as we just saw with the example of brain structure, that if a particular biological profile is associated with some behavioral or psychological trait, then that biological profile *causes* that trait. This reasoning relies on a fallacy, and in this section we explain why, using concepts from the field of epidemiology. While some of these issues are rather technical in detail, we will try to explain them in a general way that is accessible to the non-specialist reader.

Suppose for the sake of illustration that one or more differences in a biological trait are found between homosexual and heterosexual men. That difference could be a discrete measure (call this D) such as presence of a genetic marker, or it could be a continuous measure (call this C) such as the average volume of a particular part of the brain.

Showing that a risk factor significantly increases the chances of a particular health outcome or a behavior might give us a clue to development of that health outcome or that behavior, but it does not provide evidence of causation. Indeed, it may not provide evidence of anything but the weakest of correlations. The inference is sometimes made that if it can be shown that gay men and straight men differ significantly in the

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probability that D is present (whether a gene, a hormonal factor, or something else), no matter how low that probability, then this finding suggests that being gay has a biological basis. But this inference is unwarranted. Doubling (or even tripling or quadrupling) the probability of a relatively rare trait can have little value in terms of predicting who will or will not identify as gay.

The same would be true for any continuous variable (C). Showing a significant difference at the mean or average for a given trait (such as the volume of a particular brain region) between men who identify as heterosexual and men who identify as homosexual does not suffice to show that this average difference contributes to the probability of identifying as heterosexual or homosexual. In addition to the reasons explained above, a significant difference at the means of two distributions can be consistent with a great deal of overlap between the distributions. That is, there may be virtually no separation in terms of distinguishing between some individual members of each group, and thus the measure would not provide much predictability for sexual orientation or preference.

Some of these issues could, in part, be addressed by additional methodological approaches, such as the use of a training sample or cross-validation procedures. A training sample is a small sample used to develop a model (or hypothesis); this model is then tested on a larger independent sample. This method avoids testing a hypothesis on the same data used to develop the hypothesis. Cross-validation includes procedures used to examine whether a statistically significant effect is really there or just due to chance. If one wants to show the result did not occur by chance (and if the sample is large), one can run the same tests on a random split of the relevant sample. After finding a difference in the prevalence of trait D or C between a gay sample and a straight sample, researchers could randomly split the gay sample into two groups and then show that these two groups do not differ regarding D or C. Suppose one finds five differences out of 100 comparing gay to straight men in the overall samples, then finds five differences out of 100 when comparing the split gay samples. This would cast additional doubt on the initial finding of a difference between the means of gay and straight individuals.

Sexual Abuse Victimization

Whereas the preceding discussion considered the part that biological factors might play in the development of sexual orientation, this section will summarize evidence that a particular environmental factor—childhood

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sexual abuse—is reported significantly more often among those who later identify as homosexual. The results presented below raise the question whether there is an association between sexual abuse, particularly in childhood, and later expressions of sexual attraction, behavior, or identity. If so, might child abuse increase the probability of having a non-heterosexual orientation?

Correlations, at least, have been found, as we will summarize below. But we should note first that they might be accounted for by one or more of the following conjectures:

1. Abuse might contribute to the development of non-heterosexual orientation.
2. Children with (signs of future) non-heterosexual tendencies might attract abusers, placing them at elevated risk.
3. Certain factors might contribute to *both* childhood sexual abuse and non-heterosexual tendencies (for instance, a dysfunctional family or an alcoholic parent).

It should be kept in mind that these three hypotheses are not mutually exclusive; all three, and perhaps others, might be operative. As we summarize the studies on this issue, we will try to evaluate each of these hypotheses in light of current scientific research.

Behavioral and community health professor Mark S. Friedman and colleagues conducted a 2011 meta-analysis of 37 studies from the United States and Canada examining sexual abuse, physical abuse, and peer victimization in heterosexuals as compared to non-heterosexuals.¹⁰¹ Their results showed that non-heterosexuals were on average 2.9 times more likely to report having been abused as children (under 18 years of age). In particular, non-heterosexual males were 4.9 times likelier—and non-heterosexual females, 1.5 times likelier—than their heterosexual counterparts to report sexual abuse. Non-heterosexual adolescents as a whole were 1.3 times likelier to indicate physical abuse by parents than their heterosexual peers, but gay and lesbian adolescents were only 0.9 times as likely (bisexuals were 1.4 times as likely). As for peer victimization, non-heterosexuals were 1.7 times likelier to report being injured or threatened with a weapon or being attacked.

The authors note that although they hypothesized that the rates of abuse would decrease as social acceptance of homosexuality rose, “disparities in prevalence rates of sexual abuse, parental physical abuse, and peer

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victimization between sexual minority and sexual nonminority youths did not change from the 1990s to the first decade of the 2000s.”¹⁰² While these authors cite authorities who claim that sexual abuse does not “cause individuals to become gay, lesbian, or bisexual,”¹⁰³ their data do not give evidence against the hypothesis that childhood sexual abuse might affect sexual orientation. On the other hand, the causal path could be in the opposite direction or bi-directional. The evidence does not refute or support this conjecture; the study’s design is not capable of shedding much light on the question of directionality.

The authors invoke a widely-cited hypothesis to explain the higher rates of sexual abuse among non-heterosexuals, the hypothesis that “sexual minority individuals are...more likely to be targeted for sexual abuse, as youths who are perceived to be gay, lesbian, or bisexual are more likely to be bullied by their peers.”¹⁰⁴ The two conjectures—that abuse is a cause and that it is a result of non-heterosexual tendencies—are not mutually exclusive: abuse may be a causal factor in the development of non-heterosexual attractions and desires, and at the same time non-heterosexual attractions, desires, and behaviors may increase the risk of being targeted for abuse.

Community health sciences professor Emily Faith Rothman and colleagues conducted a 2011 systematic review of the research investigating the prevalence of sexual assault against people who identify as gay, lesbian, or bisexual in the United States.¹⁰⁵ They examined 75 studies (25 of which used probability sampling) involving a total of 139,635 gay or bisexual (GB) men and lesbian or bisexual (LB) women, which measured the prevalence of victimization due to lifetime sexual assault (LSA), childhood sexual assault (CSA), adult sexual assault (ASA), intimate partner sexual assault (IPSA), and hate-crime-related sexual assault (HC). Although the study was limited by not having a heterosexual control group, it showed alarmingly high rates of sexual assault, including childhood sexual assault, for this population, as summarized in Table 1.

Using a multi-state probability-based sample in a 2013 study, psychologist Judith Anderson and colleagues compared differences in adverse childhood experiences—including dysfunctional households; physical, sexual, or emotional abuse; and parental discord—among self-identified homosexual, heterosexual, and bisexual adults.¹⁰⁶ They found that bisexuals had significantly higher proportions than heterosexuals of all adverse childhood experience factors, and that gays and lesbians had significantly higher proportions than heterosexuals of all these measures except parental separation or divorce. Overall, gays and lesbians had nearly 1.7 times,

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Table 1. Sexual Assault among Gay/Bisexual Men and Lesbian/Bisexual Women

GB Men (%)	LB Women (%)
CSA: 4.1–59.2 (median 22.7)	CSA: 14.9–76.0 (median 34.5)
ASA: 10.8–44.7 (median 14.7)	ASA: 11.3–53.2 (median 23.2)
LSA: 11.8–54.0 (median 30.4)	LSA: 15.6–85.0 (median 43.4)
IPSA: 9.5–57.0 (median 12.1)	IPSA: 3.0–45.0 (median 13.3)
HC: 3.0–19.8 (median 14.0)	HC: 1.0–12.3 (median 5.0)

and bisexuals 1.6 times, the heterosexual rate of adverse childhood experiences. The data for abuse are summarized in Table 2.

While this study, like some others we have discussed, may be limited by recall bias—that is, inaccuracies introduced by errors of memory—it has the merit of having a control group of self-identified heterosexuals to compare with self-identified gay/lesbian and bisexual cohorts. In their discussion of findings, the authors critique the hypothesis that childhood trauma has a causal relationship to homosexual preferences. Among their reasons for skepticism, they note that the vast majority of individuals who suffer childhood trauma do not become gay or bisexual, and that gender-nonconforming behavior may help explain the elevated rates of abuse. However, it is plausible from these and related results to hypothesize

Table 2. Adverse Childhood Experiences among Gays/Lesbians, Bisexuals, and Heterosexuals

Sexual Abuse (%)		
GLs	Bisexuals	Heterosexuals
29.7	34.9	14.8
Emotional Abuse (%)		
GLs	Bisexuals	Heterosexuals
47.9	48.4	29.6
Physical Abuse (%)		
GLs	Bisexuals	Heterosexuals
29.3	30.3	16.7

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that adverse childhood experiences may be a significant—but not a determinative—factor in developing homosexual preferences. Further studies are needed to see whether either or both hypotheses have merit.

A 2010 study by professor of social and behavioral sciences Andrea Roberts and colleagues examined sexual orientation and risk of post-traumatic stress disorder (PTSD) using data from a national epidemiological face-to-face survey of nearly 35,000 adults.¹⁰⁷ Individuals were placed into several categories: heterosexual with no same-sex attraction or partners (reference group); heterosexual with same-sex attraction but no same-sex partners; heterosexual with same-sex partners; self-identified gay/lesbian; and self-identified bisexual. Among those reporting exposure to traumatic events, gay and lesbian individuals as well as bisexuals had about twice the lifetime risk of PTSD compared to the heterosexual reference group. Differences were found in rates of childhood maltreatment and interpersonal violence: gays, lesbians, bisexuals, and heterosexuals with same-sex partners reported experiencing worse traumas during childhood and adolescence than the reference group. The findings are summarized in Table 3.

Similar patterns emerged in a 2012 study by psychologist Brendan Zietsch and colleagues that primarily focused on the distinct question of whether common causal factors could explain the association between sexual orientation—in this study defined as sexual preference—and depression.¹⁰⁸ In a community sample of 9,884 adult twins, the authors found that non-heterosexuals had significantly elevated prevalence of lifetime depression (odds ratio for males 2.8; odds ratio for females 2.7). As the authors point out, the data raised questions about whether higher rates of depression for non-heterosexuals could be explained, in their entirety, by the social stress hypothesis (the idea, discussed in depth in Part Two of this report, that social stress

Table 3. Childhood Exposure to Maltreatment or Interpersonal Violence (before Age 18)

Women	Men
49.2% of lesbians	31.5% of gays
51.2% of bisexuals	Approximately 32% of bisexuals ¹⁰⁹
40.9% of heterosexuals with same-sex partners	27.9% of heterosexuals with same-sex partners
21.2% of heterosexuals	19.8% of heterosexuals

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experienced by sexual minorities accounts for their elevated risks of poor mental health outcomes). Heterosexuals with a non-heterosexual twin had higher rates of depression (39%) than heterosexual twin pairs (31%), suggesting that genetic, familial, or other factors may play a role.

The authors note that “in both males and females, significantly higher rates of non-heterosexuality were found in participants who experienced childhood sexual abuse and in those with a risky childhood family environment.”¹¹⁰ Indeed, 41% of non-heterosexual males and 42% of non-heterosexual females reported childhood family dysfunction, compared to 24% and 30% of heterosexual males and females, respectively. And 12% of non-heterosexual males and 24% of non-heterosexual females reported sexual abuse before the age of 14, compared with 4% and 11% of heterosexual males and females, respectively. The authors are careful to emphasize that their findings should not be interpreted as disproving the social stress hypothesis, but suggest that there may be other factors at work. Their findings do, however, suggest there could be common etiological factors for depression and non-heterosexual preferences, as they found that genetic factors account for 60% of the correlation between sexual orientation and depression.¹¹¹

In a 2001 study, psychologist Marie E. Tomeo and colleagues noted that the previous literature had consistently found increased rates of reported childhood molestation in the homosexual population, with somewhere between 10% and 46% reporting that they had experienced childhood sexual abuse.¹¹² The authors found that 46% of homosexual men and 22% of homosexual women reported that they had been molested by a person of the same gender, as compared with 7% of heterosexual men and 1% of heterosexual women. Moreover, 38% of homosexual women interviewed did not identify as homosexual until after the abuse, while the authors report conflicting figures—68% in one part of the paper and (by inference) 32% in another—for the number of homosexual men who did not identify as homosexual until after the abuse. The sample for this study was relatively small, only 267 individuals; also, the “sexual contact” measure of abuse in the survey was somewhat vague, and the subjects were recruited from participants in gay pride events in California. But the authors state that “it is most unlikely that all the present findings apply only to homosexual persons who go to homosexual fairs and volunteer to participate in questionnaire research.”¹¹³

In 2010, psychologists Helen Wilson and Cathy S. Widom published a prospective 30-year follow-up study—one that looked at children who had experienced abuse or neglect between 1961 and 1971, and then followed up with those children after 30 years—to ascertain whether physical abuse, sexual abuse, or neglect in childhood increased the likelihood of same-sex

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sexual relationships later in life.¹¹⁴ An original sample of 908 abused and/or neglected children was matched with a non-maltreated control group of 667 individuals (matched for age, sex, race or ethnicity, and approximate socioeconomic status). Homosexuality was operationalized as anyone who had cohabited with a same-sex romantic partner or had a same-sex sexual partner, which made up 8% of the sample. Among these 8%, most individuals also reported having had opposite-sex partners, suggesting high rates of bisexuality or fluidity in sexual attractions or behaviors. The study found that those who reported histories of childhood sexual abuse were 2.8 times more likely to report having had same-sex sexual relationships, though the “relationship between childhood sexual abuse and same-sex sexual orientation was significant only for men.”¹¹⁵ This finding suggested that boys who are sexually abused may be more likely to establish both heterosexual and homosexual relationships.

The authors advised caution in interpreting this result, because the sample size of sexually abused men was small, but the association remained statistically significant when they controlled for total lifetime number of sexual partners and for engaging in prostitution. The study was also limited by a definition of sexual orientation that was not sensitive to how participants identified themselves. It may have failed to capture people with same-sex attractions but no same-sex romantic relationship history. The study had two notable methodological strengths. The prospective design is better suited for evaluating causal relationships than the typical retrospective design. Also, the childhood abuse recorded was documented when it occurred, thus mitigating recall bias.

Having examined the statistical association between childhood sexual abuse and later homosexuality, we turn to the question of whether the association suggests causation.

A 2013 analysis by health researcher Andrea Roberts and colleagues attempted to provide an answer to this question.¹¹⁶ The authors noted that while studies show 1.6 to 4 times more reported childhood sexual and physical abuse among gay and lesbian individuals than among heterosexuals, conventional statistical methods cannot demonstrate a strong enough statistical relationship to support the argument of causation. They argued that a sophisticated statistical method called “instrumental variables,” imported from econometrics and economic analysis, could increase the level of association.¹¹⁷ (The method is somewhat similar to the method of “propensity scores,” which is more sophisticated and more familiar to public health researchers.) The authors applied the method of instrumental variables to data collected from a nationally representative sample.

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They used three dichotomous measures of sexual orientation: any vs. no same-sex attraction; any vs. no lifetime same-sex sexual partners; and lesbian, gay, or bisexual vs. heterosexual self-identification. As in other studies, the data showed associations between childhood sexual abuse or maltreatment and all three dimensions of non-heterosexuality (attraction, partners, identity), with associations between sexual abuse and sexual identity being the strongest.

The authors' instrumental variable models suggested that early sexual abuse increased the predicted rate of same-sex attraction by 2.0 percentage points, same-sex partnering by 1.4 percentage points, and same-sex identity by 0.7 percentage points. The authors estimated the rate of homosexuality that might be attributable to sexual abuse "using effect estimates from conventional models" and found that on conventional effect estimates, "9% of same-sex attraction, 21% of any lifetime same-sex sexual partnering, and 23% of homosexual or bisexual identity was due to childhood sexual abuse."¹¹⁸ We should note that these correlations are cross-sectional: they compare groups of people to groups of people, rather than model the course of individuals over time. (A study design with a time-series analysis would give the strongest statistical support to the claim of causality.) Additionally, these results have been strongly criticized on methodological grounds for having made unjustified assumptions in the instrumental variables regression; a commentary by Drew H. Bailey and J. Michael Bailey claims, "Not only do Roberts et al.'s results fail to provide support for the idea that childhood maltreatment causes adult homosexuality, the pattern of differences between males and females is opposite what should be expected based on better evidence."¹¹⁹

Roberts and colleagues conclude their study with several conjectures to explain the epidemiological associations. They echo suggestions made elsewhere that sexual abuse perpetrated by men might cause boys to think they are gay or make girls averse to sexual contact with men. They also conjecture that sexual abuse might leave victims feeling stigmatized, which in turn might make them more likely to act in ways that are socially stigmatized (as by engaging in same-sex sexual relationships). The authors also point to the biological effects of maltreatment, citing studies that show that "quality of parenting" can affect chemical and hormonal receptors in children, and hypothesizing that this might influence sexuality "through epigenetic changes, particularly in the stria terminalis and the medial amygdala, brain regions that regulate social behavior."¹²⁰ They also mention the possibilities that emotional numbing caused by maltreatment may drive victims to seek out risky behaviors associated

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with same-sex sexuality, or that same-sex attractions and partnering may result from “the drive for intimacy and sex to repair depressed, stressed, or angry moods,” or from borderline personality disorder, which is a risk factor in individuals who have been maltreated.¹²¹

In short, while this study suggests that sexual abuse may sometimes be a causal contributor to having a non-heterosexual orientation, more research is needed to elucidate the biological or psychological mechanisms. Without such research, the idea that sexual abuse may be a causal factor in sexual orientation remains speculative.

Distribution of Sexual Desires and Changes Over Time

However sexual desires and interests develop, there is a related issue that scientists debate: whether sexual desires and attractions tend to remain fixed and unalterable across the lifespan of a person—or are fluid and subject to change over time but tend to become fixed after a certain age or developmental period. Advocates of the “born that way” hypothesis, as mentioned earlier, sometimes argue that a person is not only born with a sexual orientation but that that orientation is immutable; it is fixed for life.

There is now considerable scientific evidence that sexual desires, attractions, behaviors, and even identities can, and sometimes do, change over time. For findings in this area we can turn to the most comprehensive study of sexuality to date, the 1992 National Health and Social Life Survey conducted by the National Opinion Research Center at the University of Chicago (NORC).¹²² Two important publications have appeared using data from NORC’s comprehensive survey: *The Social Organization of Sexuality: Sexual Practices in the United States*, a large tome of data intended for the research community, and *Sex in America: A Definitive Survey*, a smaller and more accessible book summarizing the findings for the general public.¹²³ These books present data from a reliable probability sample of the American population between ages 18 and 59.

According to data from the NORC survey, the estimated prevalence of non-heterosexuality, depending on how it was operationalized, and on whether the subjects were male or female, ranged between roughly 1% and 9%.¹²⁴ The NORC studies added scientific respectability to sexual surveys, and these findings have been largely replicated in the United States and abroad. For example, the British National Survey of Sexual Attitudes and Lifestyles (Natsal) is probably the most reliable source of information on sexual behavior in that country—a study conducted every ten years since 1990.¹²⁵

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The NORC study also suggested ways in which sexual behaviors and identities can vary significantly under different social and environmental circumstances. The findings revealed, for example, a sizable difference in rates of male homosexual behavior among individuals who spent their adolescence in rural as compared to large metropolitan cities in America, suggesting the influence of social and cultural environments. Whereas only 1.2% of males who had spent their adolescence in a rural environment responded that they had had a male sexual partner in the year of the survey, those who had spent adolescence living in metropolitan areas were close to four times (4.4%) more likely to report that they had had such an encounter.¹²⁶ From these data one cannot infer differences between these environments in the prevalence of sexual interests or attractions, but the data do suggest differences in sexual behaviors. Also of note is that women who attended college were nine times more likely to identify as lesbians than women who did not.¹²⁷

Moreover, other population-based surveys suggest that sexual desire may be fluid for a considerable number of individuals, especially among adolescents as they mature through the early stages of adult development. In this regard, opposite-sex attraction and identity seem to be more stable than same-sex or bisexual attraction and identity. This is suggested by data from the National Longitudinal Study of Adolescent to Adult Health (the “Add Health” study discussed earlier). This prospective longitudinal study of a nationally representative sample of U.S. adolescents starting in grades 7–12 began during the 1994–1995 school year, and followed the cohort into young adulthood, with four follow-up interviews (referred to as Waves I, II, III, IV in the literature).¹²⁸ The most recent was in 2007–2008, when the sample was aged 24–32.

Same-sex or both-sex romantic attractions were quite prevalent in the study’s first wave, with rates of approximately 7% for the males and 5% for the females.¹²⁹ However, 80% of the adolescent males who had reported same-sex attractions at Wave I later identified themselves as exclusively heterosexual as young adults at Wave IV.¹³⁰ Similarly, for adolescent males who, at Wave I, reported romantic attraction to both sexes, over 80% of them reported no same-sex romantic attraction at Wave III.¹³¹ The data for the females surveyed were similar but less striking: for adolescent females who had both-sex attractions at Wave I, more than half reported exclusive attraction to males at Wave III.¹³²

J. Richard Udry, the director of Add Health for Waves I, II, and III,¹³³ was among the first to point out the fluidity and instability of romantic attraction between the first two waves. He reported that among boys who

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reported romantic attraction *only* to boys and *never* to girls at Wave I, 48% did so during Wave II; 35% reported no attraction to either sex; 11% reported exclusively same-sex attraction; and 6% reported attraction to both sexes.¹³⁴

Ritch Savin-Williams and Geoffrey Ream published a 2007 analysis of the data from Waves I–III of Add Health.¹³⁵ Measures used included whether individuals ever had a romantic attraction for a given sex, sexual behavior, and sexual identity. (The categories for sexual identity were 100% heterosexual, mostly heterosexual but somewhat same-sex attracted, bisexual, mostly homosexual but somewhat attracted to opposite sex, and 100% homosexual.) While the authors noted the “stability of opposite-sex attraction and behavior” between Waves I and III, they found a “high proportion of participants with same- and both-sex attraction and behavior that migrated into opposite-sex categories between waves.”¹³⁶ A much smaller proportion of those in the heterosexual categories, and a similar proportion of those without attraction, moved to non-heterosexual categories. The authors summarize: “All attraction categories other than opposite-sex were associated with a lower likelihood of stability over time. That is, individuals reporting any same-sex attractions were more likely to report subsequent shifts in their attractions than were individuals without any same-sex attractions.”¹³⁷

The authors also note the difficulties these data present for trying to define sexual orientation and to classify individuals according to such categories: “the critical consideration is whether having ‘any’ same-sex sexuality qualifies as nonheterosexuality. How much of a dimension must be present to tip the scales from one sexual orientation to another was not resolved with the present data, only that such decisions matter in terms of prevalence rates.”¹³⁸ The authors suggested that researchers could “for-sake the general notion of sexual orientation altogether and assess only those components relevant for the research question.”¹³⁹

Another prospective study by biostatistician Miles Ott and colleagues of 10,515 youth (3,980 males; 6,535 females) in 2013 showed findings on sexual orientation change in adolescents consistent with the findings of the Add Health data, again suggesting fluidity and plasticity of same-sex attractions among many adolescents.¹⁴⁰

A few years after the Add Health data were originally published, the *Archives of Sexual Behavior* published an article by Savin-Williams and Joyner that critiqued the Add Health data on sexual attraction change.¹⁴¹ Before outlining their critique, Savin-Williams and Joyner summarize the key Add Health findings: “in the approximately 13 years between Waves

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I and IV, regardless of whether the measure was identical across waves (romantic attraction) or discrepant in words but not in theory (romantic attraction and sexual orientation identity), approximately 80% of adolescent boys and half of adolescent girls who expressed either partial or exclusive same-sex romantic attraction at Wave I ‘turned’ heterosexual (opposite-sex attraction or exclusively heterosexual identity) as young adults.”¹⁴² The authors propose three hypotheses to explain these discrepancies:

- (1) gay adolescents going into the closet during their young adult years;
- (2) confusion regarding the use and meaning of romantic attraction as a proxy for sexual orientation; and (3) the existence of mischievous adolescents who played a ‘jokester’ role by reporting same-sex attraction when none was present.¹⁴³

Savin-Williams and Joyner reject the first hypothesis but find support for the second and the third. With respect to the second hypothesis, they question the use of romantic attraction to operationalize sexual identity:

To help us assess whether the construct/measurement issue (romantic attraction versus sexual orientation identity) was driving results, we compared the two constructs at Wave IV....Whereas over 99% of young adults with opposite-sex romantic attraction identified as heterosexual or mostly heterosexual and 94% of those with same-sex romantic attraction identified as homosexual or mostly homosexual, 33% of both-sex attracted men identified as heterosexual (just 6% of both-sex attracted women identified as heterosexual). These data indicated that young adult men and women generally understood the meaning of romantic attraction to the opposite- or same-sex to imply a particular (and consistent) sexual orientation identity, with one glaring exception—a substantial subset of young adult men who, despite their stated both-sex romantic attraction, identified as heterosexual.

Regarding the third hypothesis for explaining the Add Health data, Savin-Williams and Joyner note that surveys of adolescents sometimes yield unusual or distorted results due to adolescents who do not respond truthfully. The Add Health survey, they observe, had a significant number of unusual responders. For example, several hundred adolescents reported in the Wave I questionnaire that they had an artificial limb, whereas in later at-home interviews, only two of those adolescents reported having an artificial limb.¹⁴⁴ Adolescent boys who went from nonheterosexual in Wave I to heterosexual in Wave IV were significantly less likely to report

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having filled out the Wave I questionnaire honestly; these boys also displayed other significant differences, such as lower grade point averages. Additionally, like consistently heterosexual boys, boys who were inconsistent between Waves I and IV were more popular in their school with boys than girls, whereas consistently nonheterosexual boys were more popular with girls. These and other data¹⁴⁵ led the authors to conclude that “boys who emerged from a gay or bisexual adolescence to become a heterosexual young adulthood were, by-and-large, heterosexual adolescents who were either confused and did not understand the measure of romantic attraction or jokesters who decided, for reasons we were not able to detect, to dishonestly report their sexuality.”¹⁴⁶ However, the authors were not able to estimate the proportion of inaccurate responders, which would have helped evaluate the explanatory power of the hypotheses.

Later in 2014, the *Archives of Sexual Behavior* published a critique of the Savin-Williams and Joyner explanation of Add Health data by psychologist Gu Li and colleagues.¹⁴⁷ Along with criticizing the methodology of Savin-Williams and Joyner, these authors argued that the data were consistent with a scenario in which some nonheterosexual adolescents went “back into the closet” in later years as a possible reaction to social stress. (We will examine the effects of social stress on mental health in LGBT populations in Part Two of this report.) They also claimed that “it makes little sense to use responses to Wave IV sexual identity to validate or invalidate responses to Waves I or IV romantic attractions when these aspects of sexual orientation may not align in the first place.”¹⁴⁸ Regarding the jokester hypothesis, these authors pose this difficulty: “Although some participants might be ‘jokesters,’ and we as researchers should be cautious of problems associated with self-report surveys whenever analyzing and interpreting data, it is unclear why the ‘jokesters’ would answer questions about delinquency honestly, but not questions about their sexual orientation.”¹⁴⁹

Savin-Williams and Joyner published a response to the critique in the same issue of the journal.¹⁵⁰ Responding to the criticism that their comparison of Wave IV self-reported sexual identity to Wave I self-reported romantic attractions was unsound, Savin-Williams and Joyner claimed that the results were quite similar if one used attraction as the Wave IV measure. They also deemed it highly unlikely that a large proportion of the respondents who were classified as nonheterosexuals in Wave I and heterosexuals in Wave IV went “back into the closet,” because the proportion of individuals in adolescence and young adulthood who are “out of the closet” usually increases over time.¹⁵¹

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The following year, the *Archives of Sexual Behavior* published another response to Savin-Williams and Joyner by psychologist Sabra Katz-Wise and colleagues, which argued that Savin-Williams and Joyner's "approach to identifying 'dubious' sexual minority youth is inherently flawed."¹⁵² They wrote that "romantic attraction and sexual orientation identity are two distinct dimensions of sexual orientation that may not be concordant, even at a single time point."¹⁵³ They also claimed that "even if Add Health had assessed the same facets of sexual orientation at all waves, it would still be incorrect to infer 'dubious' sexual minorities from changes on the same dimension of sexual orientation, because these changes may reflect sexual fluidity."¹⁵⁴

Unfortunately, the Add Health study does not appear to contain the data that would allow an assessment to determine which, if any, of these interpretations is likely to be correct. It may well be the case that a combination of factors contributed to the differences between the Wave I and Wave IV data. For example, there may have been some adolescents who responded to the Wave I sexual attraction questions inaccurately, some openly nonheterosexual adolescents who later went "back into the closet," and some adolescents who experienced nonheterosexual attractions before Wave I that largely disappeared by Wave IV. Other prospective study designs that track specific individuals across adolescent and adult development may shed further light on these issues.

While ambiguities in defining and characterizing sexual desire and orientation make changes in sexual desire difficult to study, data from these large, population-based national studies of randomly sampled individuals do suggest that all three dimensions of sexuality—affect, behavior, and identity—may change over time for some people. It is unclear, and current research does not address, whether and to what extent factors subject to volitional control—choice of sexual partners or sexual behaviors, for example—may influence such changes through conditioning and other mechanisms that are characterized in the behavioral sciences.

Several researchers have suggested that sexual orientation and attractions may be especially plastic for women.¹⁵⁵ For example, Lisa Diamond argued in her 2008 book *Sexual Fluidity* that "women's sexuality is fundamentally more fluid than men's, permitting greater variability in its development and expression over the life course," based on research by her and many others.¹⁵⁶

Diamond's longitudinal five-year interviews of women in sexual relationships with other women also shed light on the problems with the concept of sexual orientation. In many cases, the women in her study

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reported not so much setting out to form a lesbian sexual relationship but rather experiencing a gradual growth of affective intimacy with a woman that eventually led to sexual involvement. Some of these women rejected the labels of “lesbian,” “straight,” or “bisexual” as being inconsistent with their lived experience.¹⁵⁷ In another study, Diamond calls into question the utility of the concept of sexual orientation, especially as it applies to females.¹⁵⁸ She points out that if the neural basis of parent-child attachment—including attachment to one’s mother—forms at least part of the basis for romantic attachments in adulthood, then it would not be surprising for a woman to experience romantic feelings for another woman without necessarily wanting to be sexually intimate with her. Diamond’s research indicates that these kinds of relationships form more often than we typically recognize, especially among women.

Some researchers have also suggested that men’s sexuality is more fluid than it was previously thought. For example, Diamond presented a 2014 conference paper, based on initial results from a survey of 394 people, entitled “I Was Wrong! Men Are Pretty Darn Sexually Fluid, Too!”¹⁵⁹ Diamond based this conclusion on a survey of men and women between the ages of 18 and 35, which asked about their sexual attractions and self-described identities at different stages of their lives. The survey found that 35% of self-identified gay men reported experiencing opposite-sex attractions in the past year, and 10% of self-identified gay men reported opposite-sex sexual behavior during the same period. Additionally, nearly as many men transitioned at some time in their life from gay to bisexual, queer, or unlabeled identity as did men from bisexual to gay identity.

In a 2012 review article entitled “Can We Change Sexual Orientation?” published in the *Archives of Sexual Behavior*, psychologist Lee Beckstead wrote, “Although their sexual behavior, identity, and attractions may change throughout their lives, this may not indicate a change in sexual orientation...but a change in awareness and an expansion of sexuality.”¹⁶⁰ It is difficult to know how to interpret this claim—that sexual behavior, identity, and attractions may change but that this does not necessarily indicate a change in sexual orientation. We have already analyzed the inherent difficulties of defining sexual orientation, but however one chooses to define this construct, it seems that the definition would somehow be tied to sexual behavior, identity, or attraction. Perhaps we can take Beckstead’s claim here as one more reason to consider dispensing with the construct of sexual orientation in the context of social science research, as it seems that whatever it might represent, it is only loosely or inconsistently tied to empirically measurable phenomena.

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Given the possibility of changes in sexual desire and attraction, which research suggests is not uncommon, any attempt to infer a stable, innate, and fixed identity from a complex and often shifting *mélange* of inner fantasies, desires, and attractions—sexual, romantic, aesthetic, or otherwise—is fraught with difficulties. We can imagine, for example, a sixteen-year-old boy who becomes infatuated with a young man in his twenties, developing fantasies centered around the other’s body and build, or perhaps on some of his character traits or strengths. Perhaps one night at a party the two engage in physical intimacy, catalyzed by alcohol and by the general mood of the party. This young man then begins an anguished process of introspection and self-exploration aimed at finding the answer to the enigmatic question, “Does this mean I’m gay?”

Current research from the biological, psychological, and social sciences suggests that this question, at least as it is framed, makes little sense. As far as science can tell us, there is nothing “there” for this young man to discover—no fact of nature to uncover or to find buried within himself. What his fantasies, or his one-time liaison, “really mean” is subject to any number of interpretations: that he finds the male figure beautiful, that he was lonely and feeling rejected the night of the party and responded to his peer’s attentions and affections, that he was intoxicated and influenced by the loud music and strobe lights, that he does have a deep-seated sexual or romantic attraction to other men, and so on. Indeed, psychodynamic interpretations of such behaviors citing unconscious motivational factors and inner conflicts, many of them interesting, most impossible to prove, can be spun endlessly.

What we can say with more confidence is that this young man had an experience encompassing complex feelings, or that he engaged in a sexual act conditioned by multiple complex factors, and that such fantasies, feelings, or associated behaviors may (or may not) be subject to change as he grows and develops. Such behaviors could become more habitual with repetition and thus more stable, or they may extinguish and recur rarely or never. The research on sexual behaviors, sexual desire, and sexual identity suggests that both trajectories are real possibilities.

Conclusion

The concept of sexual orientation is unusually ambiguous compared to other psychological traits. Typically, it refers to at least one of three things: attractions, behaviors, or identity. Additionally, we have seen that sexual orientation often refers to several other things as well: belonging

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to a certain community, fantasies (as distinct in some respects from attractions), longings, strivings, felt needs for certain forms of companionship, and so on. It is important, then, that researchers are clear about which of these domains are being studied, and that we keep in mind the researchers' specified definitions when we interpret their findings.

Furthermore, not only can the term "sexual orientation" be understood in several different senses, most of the senses are themselves complex concepts. Attraction, for example, could refer to arousal patterns, or to romantic feelings, or to desires for company, or other things; and each of these things can be present either sporadically and temporarily or pervasively and long-term, either exclusively or not, either in a deep or shallow way, and so forth. For this reason, even specifying one of the basic senses of orientation (attraction, behavior, or identity) is insufficient for doing justice to the richly varied phenomenon of human sexuality.

In this part we have criticized the common assumption that sexual *desires*, *attractions*, or *longings* reveal some innate and fixed feature of our biological or psychological constitution, a fixed sexual *identity* or *orientation*. Furthermore, we may have some reasons to doubt the common assumption that in order to live happy and flourishing lives, we must somehow discover this innate fact about ourselves that we call *sexuality* or *sexual orientation*, and invariably express it through particular patterns of sexual behavior or a particular life trajectory. Perhaps we ought instead to consider what sorts of behaviors—whether in the sexual realm or elsewhere—tend to be conducive to health and flourishing, and what kinds of behaviors tend to undermine a healthy and flourishing life.

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Part One: Sexual Orientation

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109. The exact figure is not reported in the text for reasons the authors do not specify.

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114. Helen W. Wilson and Cathy Spatz Widom, “Does Physical Abuse, Sexual Abuse, or Neglect in Childhood Increase the Likelihood of Same-sex Sexual Relationships and Cohabitation? A Prospective 30-year Follow-up,” *Archives of Sexual Behavior* 39, no. 1 (2010): 63–74, <http://dx.doi.org/10.1007/s10508-008-9449-3>.

115. *Ibid.*, 70.

116. Andrea L. Roberts, M. Maria Glymour, and Karestan C. Koenen, “Does Maltreatment in Childhood Affect Sexual Orientation in Adulthood?,” *Archives of Sexual Behavior* 42, no. 2 (2013): 161–171, <http://dx.doi.org/10.1007/s10508-012-0021-9>.

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119. Drew H. Bailey and J. Michael Bailey, “Poor Instruments Lead to Poor Inferences: Comment on Roberts, Glymour, and Koenen (2013),” *Archives of Sexual Behavior* 42, no. 8 (2013): 1649–1652, <http://dx.doi.org/10.1007/s10508-013-0101-5>.

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123. Edward O. Laumann *et al.*, *The Social Organization of Sexuality: Sexual Practices in the United States* (Chicago: University of Chicago Press, 1994); Robert T. Michael *et al.*, *Sex in America: A Definitive Survey* (New York: Warner Books, 1994).

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126. See Table 8.1 in Laumann *et al.*, *The Social Organization of Sexuality*, 304.

127. This figure is calculated from Table 8.2 in Laumann *et al.*, *The Social Organization of Sexuality*, 305.

128. For more information on the study design of Add Health, see Kathleen Mullan Harris *et al.*, “Study Design,” The National Longitudinal Study of Adolescent to Adult Health, <http://www.cpc.unc.edu/projects/addhealth/design>. Some studies based on Add Health data use Arabic numerals rather than Roman numerals to label the waves; when describing or quoting from those studies, we stick with the Roman numerals.

129. See Table 1 in Ritch C. Savin-Williams and Kara Joyner, “The Dubious Assessment of Gay, Lesbian, and Bisexual Adolescents of Add Health,” *Archives of Sexual Behavior* 43, no. 3 (2014): 413–422, <http://dx.doi.org/10.1007/s10508-013-0219-5>.

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134. J. Richard Udry and Kim Chantala, “Risk Factors Differ According to Same-Sex and Opposite-Sex Interest,” *Journal of Biosocial Science* 37, no. 04 (2005): 481–497, <http://dx.doi.org/10.1017/S0021932004006765>.

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136. *Ibid.*, 388.

137. *Ibid.*, 389.

138. *Ibid.*, 392–393.

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140. Miles Q. Ott *et al.*, “Repeated Changes in Reported Sexual Orientation Identity Linked to Substance Use Behaviors in Youth,” *Journal of Adolescent Health* 52, no. 4 (2013): 465–472, <http://dx.doi.org/10.1016/j.jadohealth.2012.08.004>.

141. Savin-Williams and Joyner, “The Dubious Assessment of Gay, Lesbian, and Bisexual

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Adolescents of Add Health.”

142. *Ibid.*, 416.

143. *Ibid.*, 414.

144. For more analysis of inaccurate responders in the Add Health surveys, see Xitao Fan *et al.*, “An Exploratory Study about Inaccuracy and Invalidity in Adolescent Self-Report Surveys,” *Field Methods* 18, no. 3 (2006): 223–244, <http://dx.doi.org/10.1177/152822X06289161>.

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146. Savin-Williams and Joyner, “The Dubious Assessment of Gay, Lesbian, and Bisexual Adolescents of Add Health,” 420.

147. Gu Li, Sabra L. Katz-Wise, and Jerel P. Calzo, “The Unjustified Doubt of Add Health Studies on the Health Disparities of Non-Heterosexual Adolescents: Comment on Savin-Williams and Joyner (2014),” *Archives of Sexual Behavior*, 43 no. 6 (2014): 1023–1026, <http://dx.doi.org/10.1007/s10508-014-0313-3>.

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153. *Ibid.*, 15.

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156. Lisa M. Diamond, *Sexual Fluidity* (Cambridge, Mass.: Harvard University Press, 2008), 52.

157. Lisa M. Diamond, “Was It a Phase? Young Women’s Relinquishment of Lesbian/Bisexual Identities Over a 5-Year Period,” *Journal of Personality and Social Psychology* 84, no. 2 (2003): 352–364, <http://dx.doi.org/10.1037/0022-3514.84.2.352>.

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158. Diamond, “What Does Sexual Orientation Orient?,” 173–192.

159. This conference paper was summarized in Denizet-Lewis, “The Scientific Quest to Prove Bisexuality Exists.”

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Part Two

Sexuality, Mental Health Outcomes, and Social Stress

Compared to the general population, non-heterosexual and transgender subpopulations have higher rates of mental health problems such as anxiety, depression, and suicide, as well as behavioral and social problems such as substance abuse and intimate partner violence. The prevailing explanation in the scientific literature is the social stress model, which posits that social stressors—such as stigmatization and discrimination—faced by members of these subpopulations account for the disparity in mental health outcomes. Studies show that while social stressors do contribute to the increased risk of poor mental health outcomes for these populations, they likely do not account for the entire disparity.

Many of the issues surrounding sexual orientation and gender identity remain controversial among researchers, but there is general agreement on the observation at the heart of Part Two: lesbian, gay, bisexual, and transgender (LGBT) subpopulations are at higher risk, compared to the general population, of numerous mental health problems. Less certain are the causes of that increased risk and thus the social and clinical approaches that may help to ameliorate it. In this part we review some of the research documenting the increased risk, focusing on papers that are data-based with sound methodology, and that are widely cited in the scientific literature.

A robust and growing body of research examines the relationships between sexuality or sexual behaviors and mental health status. The first half of this part discusses the associations of sexual identities or behaviors with psychiatric disorders (such as mood disorders, anxiety disorders, and adjustment disorders), suicide, and intimate partner violence. The second half explores the reasons for the elevated risks of these outcomes among non-heterosexual and transgender populations, and considers what social science research can tell us about one of the most prevalent ways of explaining these risks, the social stress model. As we will see, social stressors such as harassment and stigma likely explain some but not all of the elevated mental health risks for these populations. More research

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is needed to understand the causes of and potential solutions for these important clinical and public health issues.

Some Preliminaries

We turn first to the evidence for the statistical links between sexual identities or behaviors and mental health outcomes. Before summarizing the relevant research, we should mention the criteria used in selecting the studies reviewed. In an attempt to distill overall findings of a large body of research, each section begins by summarizing the most extensive and reliable meta-analyses—papers that compile and analyze the statistical data from the published research literature. For some areas of research, no comprehensive meta-analyses have been conducted, and in these areas we rely on review articles that summarize the research literature without going into quantitative analyses of published data. In addition to reporting these summaries, we also discuss a few select studies that are of particular value because of their methodology, sample size, controls for confounding factors, or ways in which concepts such as heterosexuality or homosexuality are operationalized; and we discuss key studies published after the meta-analyses or review articles were published.

As we showed in Part One, explaining the exact biological and psychological origins of sexual desires and behaviors is a difficult scientific task, one that has not yet been and may never be satisfactorily completed. However, researchers can study the correlations between sexual behavior, attraction, or identity and mental health outcomes, though there may be—and often are found to be—differences between how sexual behavior, attraction, and identity relate to particular mental health outcomes. Understanding the scope of the health challenges faced by individuals who engage in particular sexual behaviors or experience certain sexual attractions is a necessary step in providing these individuals with the care they need.

Sexuality and Mental Health

In a 2008 meta-analysis of research on mental health outcomes for non-heterosexuals, University College London professor of psychiatry Michael King and colleagues concluded that gays, lesbians, and bisexuals face “higher risk of suicidal behaviour, mental disorder and substance misuse and dependence than heterosexual people.”¹ This survey of the literature examined papers published between January 1966 and April 2005 with data from 214,344 heterosexual and 11,971 non-heterosexual individuals.

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The large sample size allowed the authors to generate estimates that are highly reliable, as indicated by the relatively small confidence intervals.²

Compiling the risk ratios found in these papers, the authors estimated that lesbian, gay, and bisexual individuals had a 2.47 times higher lifetime risk than heterosexuals for suicide attempts,³ that they were about twice as likely to experience depression over a twelve-month period,⁴ and approximately 1.5 times as likely to experience anxiety disorders.⁵ Both non-heterosexual men and women were found to be at an elevated risk for substance abuse problems (1.51 times as likely),⁶ with the risk for non-heterosexual women especially high—3.42 times higher than for heterosexual women.⁷ Non-heterosexual men, on the other hand, were at a particularly high risk for suicide attempts: while non-heterosexual men and women together were at a 2.47 times greater risk of suicide attempts over their lifetimes, non-heterosexual men were found to be at a 4.28 times greater risk.⁸

These findings have been replicated in other studies, both in the United States and internationally, confirming a consistent and alarming pattern. However, there is considerable variation in the estimates of the increased risks of various mental health problems, depending on how researchers define terms such as “homosexual” or “non-heterosexual.” The findings from a 2010 study by Northern Illinois University professor of nursing and health studies Wendy Bostwick and colleagues examined associations of sexual orientation with mood and anxiety disorders among men and women who either identified as gay, lesbian, or bisexual, or who reported engaging in same-sex sexual behavior, or who reported feeling same-sex attractions. The study employed a large, U.S.-based random population sample, using data collected from the 2004–2005 wave of the National Epidemiologic Survey on Alcohol and Related Conditions, which was based on 34,653 interviews.⁹ In its sample, 1.4% of respondents identified as lesbian, gay, or bisexual; 3.4% reported some lifetime same-sex sexual behavior; and 5.8% reported non-heterosexual attractions.¹⁰

Women who identified as lesbian, bisexual, or “not sure” reported higher rates of lifetime mood disorders than women who identified as heterosexual: the prevalence was 44.4% in lesbians, 58.7% in bisexuals, and 36.5% in women unsure of their sexual identity, as compared to 30.5% in heterosexuals. A similar pattern was found for anxiety disorders, with bisexual women experiencing the highest prevalence, followed by lesbians and those unsure, and heterosexual women experiencing the lowest prevalence. Examining the data for women with different sexual *behavior* or sexual *attraction* (rather than identity), those reporting sexual behavior

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with or attractions to both men and women had a higher rate of lifetime disorders than women who reported exclusively heterosexual or homosexual behaviors or attractions, and women reporting exclusive same-sex sexual behavior or exclusive same-sex attraction in fact had the *lowest* rates of lifetime mood and anxiety disorders.¹¹

Men who identified as gay had more than double the prevalence of lifetime mood disorders compared to men who identified as heterosexual (42.3% vs. 19.8%), and more than double the rate of any lifetime anxiety disorder (41.2% vs. 18.6%), while those who identified as bisexual had a slightly lower prevalence of mood disorders (36.9%) and anxiety disorders (38.7%) than gay men. When looking at sexual attraction or behavior for men, those who reported sexual attraction to “mostly males” or sexual behavior with “both females and males” had the highest prevalence of lifetime mood disorders and anxiety disorders compared to other groups, while those reporting exclusively heterosexual attraction or behavior had the lowest prevalence of any group.

Other studies have found that non-heterosexual populations are at a higher risk of physical health problems in addition to mental health problems. A 2007 study by UCLA professor of epidemiology Susan Cochran and colleagues examined data from the California Quality of Life Survey of 2,272 adults to assess links between sexual orientation and self-reported physical health status, health conditions, and disability, as well as psychological distress among lesbians, gay men, bisexuals, and those they classified as “homosexually experienced heterosexual individuals.”¹² While the study, like most, was limited by the use of self-reporting of health conditions, it had several strengths: it studied a population-based sample; it separately measured identity and behavioral dimensions of sexual orientation; and it controlled for race (ethnicity), education, relationship status, and family income, among other factors.

While the authors of this study found a number of health conditions that appeared to have elevated prevalence among non-heterosexuals, after adjusting for demographic factors that are potential confounders the only group with significantly greater prevalence of non-HIV physical health conditions was bisexual women, who were more likely to have health problems than heterosexual women. Consistent with the 2010 study by Bostwick and colleagues, higher rates of psychological stress were reported by lesbians, bisexual women, gay men, and homosexually experienced heterosexual men, both before and after adjusting for demographic confounding. Among men, self-identified gay and homosexually experienced heterosexual respondents reported the highest rates of several health problems.

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Using the same California Quality of Life Survey, a 2009 study by UCLA professor of psychiatry and biobehavioral sciences Christine Grella and colleagues (including Cochran) examined the relationship between sexual orientation and receiving treatment for substance use or mental disorders.¹³ They used a population-based sample, with sexual minorities oversampled to provide more statistical power to detect group differences. The usage of treatment was classified according to whether or not respondents reported receiving treatment in the preceding twelve months for “emotional, mental health, alcohol or other drug problems.” Sexual orientation was operationalized by a combination of behavioral history and self-identification. For example, they grouped together as “gay/bisexual” or “lesbian/bisexual” both those who identified as gay, lesbian, or bisexual, and those who had reported same-sex sexual behaviors. They found that women who were lesbian or bisexual were most likely to have received treatment, followed by men who were gay or bisexual, then heterosexual women, with heterosexual men being the least likely group to have reported receiving treatment. Overall, more than twice as many LGB individuals, compared to heterosexuals, had reported receiving treatment in the past twelve months (48.5% compared to 22.5%). The pattern was similar for men and women; 42.5% of homosexual men, compared to 17.1% of heterosexual men, had reported receiving treatment, while 55.3% of lesbian and bisexual women and 27.1% of heterosexual women reported receiving treatment. (Bostwick and colleagues had found that women with exclusively same-sex attractions and behaviors had a lower prevalence of mood and anxiety disorders compared to heterosexual women. The difference in results could be due to the fact that Grella and colleagues grouped those who identified as lesbians together with those who identified as bisexuals or who reported same-sex sexual behavior.)

A 2006 study by Columbia University psychiatry professor Theodorus Sandfort and colleagues examined a representative, population-based sample from the second Dutch National Survey of General Practice, carried out in 2001, to assess links between self-reported sexual orientation and health status among 9,511 participants, of whom 0.9% were classified as bisexual and 1.5% as gay or lesbian.¹⁴ To operationalize sexual orientation, the researchers asked respondents about their sexual preference on a 5-point scale: exclusively women, predominantly women, equally men and women, predominantly men, and exclusively men. Only those who reported an equal preference for men and women were classified as bisexual, while men reporting predominant preferences for women, or women reporting a predominant preference for men were classified as heterosexual. They

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found that gay, lesbian, and bisexual respondents reported experiencing higher numbers of acute mental health problems and reported worse general mental health than heterosexuals. The results for physical health were mixed, however: lesbian and gay respondents reported experiencing more acute physical symptoms (such as headaches, back pain, or sore throats) over the past fourteen days, though they did not report experiencing two or more such symptoms any more than heterosexuals.

Lesbian and gay respondents were more likely to report chronic health problems, though bisexual men (that is, men who reported an equal sexual preference for men and women) were less likely to report chronic health problems and bisexual women were no more likely than heterosexual women to do so. The researchers did not find a statistically significant relationship between sexual orientation and overall physical health. After controlling for the possible confounding effects of mental health problems on the reporting of physical health problems, the researchers also found that the statistical effect of reporting a gay or lesbian sexual preference on chronic and acute physical conditions disappeared, though the effect of bisexual preference remained.

The Sandfort study defined sexual orientation in terms of preference or attraction without reference to behavior or self-identification, which makes it a challenge to compare its results to the results of studies that operationalize sexual orientation differently. For example, it is difficult to compare the findings of this study regarding bisexuals (defined as men or women who report an equal sexual preference for men and women) with the findings of other studies regarding “homosexually experienced heterosexual individuals” or those who are “unsure” of their sexual identity. As in most of these types of studies, the health assessments were self-reported, which may make the results somewhat unreliable. But this study also has several strengths: it used a large and representative sample of a country’s population, as opposed to the convenience samples that are sometimes used for these kinds of studies, and this sample included a sufficient number of gays and lesbians for their data to be treated in separate groups in the study’s statistical analyses. Only three people in the sample reported HIV infection, so this did not appear to be a potential confounding factor, though HIV could have been underreported.

In an effort to summarize findings in this area, we can cite the 2011 report from the Institute of Medicine (IOM), *The Health of Lesbian, Gay, Bisexual, and Transgender People*.¹⁵ This report is an extensive review of scientific literature citing hundreds of studies that examine the health status of LGBT populations. The authors are scientists who are well versed

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in these issues (although we wish there had been more involvement of experts in psychiatry). The report reviews findings on physical and mental health in childhood, adolescence, early and middle adulthood, and late adulthood. Consistent with the studies cited above, this report reviews evidence showing that, compared with heterosexual youth, LGB youth are at a higher risk of depression, as well as suicide attempts and suicidal ideation. They are also more likely to experience violence and harassment and to be homeless. LGB individuals in early or middle adulthood are more prone to mood and anxiety disorders, depression, suicidal ideation, and suicide attempts.

The IOM report shows that, like LGB youth, LGB adults—and women in particular—appear to be likelier than heterosexuals to smoke, use or abuse alcohol, and abuse other drugs. The report cites a study¹⁶ that found that self-identified non-heterosexuals used mental health services more often than heterosexuals, and another¹⁷ that found that lesbians used mental health services at higher rates than heterosexuals.

The IOM report notes that “more research has focused on gay men and lesbians than on bisexual and transgender people.”¹⁸ The relatively few studies focusing on transgender populations show high rates of mental disorders, but the use of nonprobability samples and the lack of non-transgender controls call into question the validity of the studies.¹⁹ Although some studies have suggested that the use of hormone treatments may be associated with negative physical health outcomes among transgender populations, the report notes that the relevant research has been “limited” and that “no clinical trials on the subject have been conducted.”²⁰ (Health outcomes for transgender individuals will be further discussed below in this part and also in Part Three.)

The IOM report claims that the evidence that LGBT populations have worse mental and physical health outcomes is not fully conclusive. To support this claim, the IOM report cites a 2001 study²¹ of mental health in 184 sister pairs in which one sister was lesbian and the other heterosexual. The study found no significant differences in rates of mental health problems, and found significantly higher self-esteem in the lesbian sisters. The IOM report also cites a 2003 study²² that found no significant differences between heterosexual and gay or bisexual men in general happiness, perceived health, and job satisfaction. Acknowledging these caveats and the studies that do not support the general trend, the vast majority of studies cited in the report point to a generally higher risk of poor mental health status in LGBT populations compared to heterosexual populations.

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Sexuality and Suicide

The association between sexual orientation and suicide has strong scientific support. This association merits particular attention, since among all the mental health risks, the increased risk of suicide is the most concerning, owing in part to the fact that the evidence is robust and consistent, and in part to the fact that suicide is so devastating and tragic for the person, family, and community. A better understanding of the risk factors for suicide could allow us, quite literally, to save lives.²³

Sociologist and suicide researcher Ann Haas and colleagues published an extensive review article in 2011 based on the results of a 2007 conference sponsored by the Gay and Lesbian Medical Association, the American Foundation for Suicide Prevention, and the Suicide Prevention Resource Center.²⁴ They also examined studies reported since the 2007 conference. For the purposes of their report, the authors defined sexual orientation as “sexual self-identification, sexual behavior, and sexual attraction or fantasy.”²⁵

Haas and colleagues found the association between homosexual or bisexual orientation and suicide attempts to be well supported by data. They noted that population-based surveys of U.S. adolescents since the 1990s indicate that suicide attempts are two to seven times more likely in high school students who identify as LGB, with sexual orientation being a stronger predictor in males than females. They reviewed data from New Zealand that suggested that LGB individuals were six times more likely to have attempted suicide. They cited health-related surveys of U.S. men and Dutch men and women showing same-sex behavior linked to higher risk of suicide attempts. Studies cited in the report show that lesbian or bisexual women are likelier, on average, to experience suicidal ideation, that gay or bisexual men are more likely, on average, to attempt suicide, and that lifetime suicide attempts among non-heterosexuals are greater in men than in women.

Examining studies that looked at rates of mental disorders in relation to suicidal behavior, Haas and colleagues discussed a New Zealand study²⁶ showing that gay people reporting suicide attempts had higher rates of depression, anxiety, and conduct disorder. Large-scale health surveys suggested that rates of substance abuse are up to one third higher for the LGB subpopulation. Combined worldwide studies showed up to 50% higher rates of mental disorders and substance abuse among persons self-identifying in surveys as lesbian, gay, or bisexual. Lesbian or bisexual women showed higher levels of substance abuse, while gay or bisexual men had higher rates of depression and panic disorder.

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Haas and colleagues also examined transgender populations, noting that scant information is available about transgender suicides but that the existing studies indicate a dramatic increased risk of completed suicide. (These findings are noted here but examined in more detail in Part Three.) A 1997 clinical study²⁷ estimated elevated risks of suicide for Dutch male-to-female transsexual individuals on hormone therapy, but found no significant differences in overall mortality. A 1998 international review of 2,000 persons receiving sex-reassignment surgery identified 16 possible suicides, an “alarmingly high rate of 800 suicides for every 100,000 post-surgery transsexuals.”²⁸ In a 1984 study, a clinical sample of transgender individuals requesting sex-reassignment surgery showed suicide attempt rates between 19% and 25%.²⁹ And a large sample of 40,000 mostly U.S. volunteers completing an Internet survey in 2000 found transgender persons to report higher rates of suicide attempts than any group except lesbians.³⁰

Finally, the review by Haas and colleagues suggests that it is not clear which aspects of sexuality (identity, attraction, behavior) are most closely linked with the risk of suicidal behavior. The authors cite a 2010 study³¹ showing that adolescents identifying as heterosexual while reporting same-sex attraction or behavior did not have significantly higher suicide rates than other self-identified heterosexuals. They also cite the large national survey of U.S. adults conducted by Wendy Bostwick and colleagues (discussed earlier),³² which showed mood and anxiety disorders—key risk factors for suicidal behavior—more closely related to sexual self-identity than to behavior or attraction, especially for women.

A more recent critical review of existing studies of suicide risk and sexual orientation was presented by Austrian clinical psychologist Martin Plöderl and colleagues.³³ This review rejects several hypotheses developed to account for the increased suicide risk among non-heterosexuals, including biases in self-reporting and failures to measure suicide attempts accurately. The review argues that methodological improvements in studies since 1997 have provided control groups, better representativeness of study samples, and more clarity in defining both suicide attempts and sexual orientation.

The review mentions a 2001 study³⁴ by Ritch Savin-Williams, a Cornell University professor of developmental psychology, that reported no statistically significant difference between heterosexual and LGB youths after eliminating false-positive reports of suicide attempts and blaming a “‘suffering suicidal’ script” for leading to an over-reporting of suicidal behavior among gay youths. Plöderl and colleagues argue, however, that

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the Savin-Williams study's finding that there was no statistically significant difference between the suicide rates of LGB and heterosexual youths might be attributable to the small sample size, which yielded low statistical power.³⁵ The later work has not replicated this finding. Subsequent questionnaire or interview-based studies with stricter definitions of suicide attempts have found significantly increased rates of suicide attempts among non-heterosexuals. Several large-scale surveys of young people have found that the elevated risk of reported suicidal behavior increased with the severity of the attempts.³⁶ Finally, according to Plöderl and colleagues, comparing results of questionnaires with clinical interviews indicates that homosexual youth are less likely to over-report suicide attempts in surveys than heterosexual youth.

Plöderl and colleagues concluded that among psychiatric patients, homosexual or bisexual populations are over-represented in "serious suicide attempts," and that sexual orientation is one of the strongest predictors of suicide. Similarly, in nonclinical population-based studies, non-heterosexual status is found to be one of the strongest predictors of suicide attempts. The authors note:

The most exhaustive collation of published and unpublished international studies on the association of suicide attempts and sexual orientation with different methodologies has produced a very consistent picture: nearly all studies found increased incidences of self-reported suicide attempts among sexual minorities.³⁷

In acknowledging the challenges of all such research, the authors suggest that "the major problem remains as to where one draws the line between a heterosexual or non-heterosexual orientation."³⁸

A 1999 study by Richard Herrell and colleagues analyzed 103 middle-aged male twin pairs from the Vietnam Era Twin Registry in Hines, Illinois, in which one twin, but not the other, reported having a male sex partner after the age of 18.³⁹ The study adopted several measures of suicidality and controlled for potential confounding factors such as substance abuse or depression. It found a "substantially increased lifetime prevalence of suicidal symptoms" in male twins who had sex with men compared with co-twins who did not, independent of the potential confounding effects of drug and alcohol abuse.⁴⁰ Though it is a relatively small study and relied on self-reporting for both same-sex behaviors and suicidal thoughts or behaviors, it is notable for using a probability sample (which eliminates selection bias), and for using the co-twin control method (which reduces the effects of genetics, age, race, and the like).

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The study looked at middle-aged men; what the implications might be for adolescents is not clear.

In a 2011 study, Robin Mathy and colleagues analyzed the impact of sexual orientation on suicide rates in Denmark during the first twelve years after the legalization of same-sex registered domestic partnerships (RDPs) in that country, using data from death certificates issued between 1990 and 2001 as well as Danish census population estimates.⁴¹ The researchers found that the age-adjusted suicide rate for same-sex RDP men was nearly eight times the rate for men in heterosexual marriages, and nearly twice the rate for men who had never married. For women, RDP status had a small, statistically insignificant effect on suicide mortality risk, and the authors conjectured that the impact of HIV status on the health of gay men might have contributed to this difference between the results for men and women. The study is limited by the fact that RDP status is an indirect measure of sexual orientation or behavior, and does not include those gays and lesbians who are not in a registered domestic partnership; the study also excluded individuals under the age of 18. Finally, the absolute number of individuals with current or past RDP status was relatively small, which may limit the study's conclusions.

Professor of pediatrics Gary Remafedi and colleagues published a 1991 study that looked at 137 males age 14–21 who self-identified as gay (88%) or bisexual (12%). Remafedi and colleagues attempted, with a case-controlled approach, to examine which factors for this population were most predictive of suicide.⁴² Compared to those who did not attempt suicide, those who did were significantly more likely to label themselves and identify publicly as bisexual or homosexual at younger ages, report sexual abuse, and report illicit drug use. The authors noted that the likelihood of a suicide attempt “diminished with advancing age at the time of bisexual or homosexual self-labeling.” Specifically, “with each year’s delay in self-identification, the odds of a suicide attempt declined by more than 80%.”⁴³ This study is limited by using a relatively small nonprobability sample, though the authors note that its result comports with their previous finding⁴⁴ of an inverse relationship between psychosocial problems and the age at which one identifies as homosexual.

In a 2010 study, Plöderl and colleagues solicited self-reported suicide attempts among 1,382 Austrian adults to confirm existing evidence that homosexual and bisexual individuals are at higher risk.⁴⁵ To sharpen the results, the authors developed more rigorous definitions of “suicide attempts” and assessed multiple dimensions of sexual orientation, distinguishing among sexual fantasies, preferred partners, self-identification,

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recent sexual behavior, and lifetime sexual behavior. This study found an increased risk for suicide attempts for sexual minorities along all dimensions of sexual orientation. For women, the risk increases were largest for those with homosexual behaviors; for men, they were largest for homosexual or bisexual behavior in the previous twelve months and self-identification as homosexual or bisexual. Those reporting being unsure of their identity reported the highest percentage of suicide attempts (44%), although this group was small, comprising less than 1% of participants.

A 2016 meta-analysis by University of Toronto graduate student Travis Salway Hottes and colleagues aggregated data from thirty cross-sectional studies on suicide attempts that together included 21,201 sexual minority adults.⁴⁶ These studies used either population-based sampling or community-based sampling. Since each sampling method has its own strengths and potential biases,⁴⁷ the researchers wanted to examine any differences in the rates of attempted suicide between the two sampling types. Of the LGB respondents to population-based surveys, 11% reported having attempted suicide at least once, compared to 4% of heterosexual respondents to these surveys.⁴⁸ Of the LGB respondents to community-based surveys, 20% reported having attempted suicide.⁴⁹ Statistical analysis showed that the difference in the sampling methods accounted for 33% of the variation in the suicide figures reported by the studies.

The research on sexuality and the risk of suicide suggests that those who identify as gay, lesbian, bisexual, or transgender, or those who experience same-sex attraction or engage in same-sex sexual behavior are at substantially increased risk of suicidal ideation, suicide attempts, and completed suicide. In the section later in Part Two on the social stress model, we will examine—and raise questions about—one set of arguments put forward to explain these findings. Given the tragic consequences of inadequate or incomplete information in these matters and its effect on public policy and clinical care, more research into the reasons for elevated suicide risk among sexual minorities is desperately needed.

Sexuality and Intimate Partner Violence

Several studies have examined the differences between rates of intimate partner violence (IPV) in same-sex couples and opposite-sex couples. The research literature examines rates of IPV *victimization* (being subjected to violence by a partner) and rates of IPV *perpetration* (committing violence against a partner). In addition to physical and sexual violence, some studies also examine psychological violence, which comprises verbal attacks,

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threats, and similar forms of abuse. The weight of evidence indicates that the rate of intimate partner violence is significantly higher among same-sex couples.

In 2014, London School of Hygiene and Tropical Medicine researcher Ana Buller and colleagues conducted a systematic review of 19 studies (with a meta-analysis of 17 of these studies) examining associations between intimate partner violence and health among men who have sex with men.⁵⁰ Combining the available data, they found that the pooled lifetime prevalence of any IPV was 48% (estimates from the studies were quite heterogeneous, ranging from 32% to 82%). For IPV within the previous five years, pooled prevalence was 32% (estimates ranging from 16% to 51%). IPV victimization was associated with increased rates of substance use (pooled odds ratio of 1.9), positive HIV status (pooled odds ratio of 1.5), and increased rates of depressive symptoms (pooled odds ratio of 1.5). IPV perpetration was also associated with increased rates of substance use (pooled odds ratio of 2.0). An important limitation of this meta-analysis was that the number of studies it included was relatively small. Also, the heterogeneity of the studies' results may undermine the precision of the meta-analysis. Further, most of the reviewed studies used convenience samples rather than probabilistic samples, and they used the word "partner" without distinguishing long-term relationships from casual encounters.

English psychologists Sabrina Nowinski and Erica Bowen conducted a 2012 review of 54 studies on the prevalence and correlates of intimate partner violence victimization among heterosexual and gay men.⁵¹ The studies showed rates of IPV victimization for gay men ranging from 15% to 51%. Compared to heterosexual men, the review reports, "it appears that gay men experienced more total and sexual IPV, slightly less physical IPV, and similar levels of psychological IPV."⁵² The authors also report that according to estimates of IPV prevalence over the most recent twelve months, gay men "experienced less physical, psychological and sexual IPV" than heterosexual men, though the relative lack of twelve-month estimates may make this result unreliable. The authors note that "one of the most worrying findings is the prevalence of severe sexual coercion and abuse in male same-gender relationships,"⁵³ citing a 2005 study⁵⁴ on IPV in HIV-positive gay men. Nowinski and Bowen found positive HIV status to be associated with IPV in both gay and heterosexual relationships. An important limitation of their review is the fact that many of the same-sex IPV studies they examined were based on small convenience samples.

Catherine Finneran and Rob Stephenson of Emory University in 2012 conducted a systematic review of 28 studies examining IPV among men

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who have sex with men.⁵⁵ Every study in the review estimated rates of IPV for gay men that were similar to or higher than those for all women regardless of sexual orientation. The authors conclude that “the emergent evidence reviewed here demonstrates that IPV—psychological, physical, and sexual—occurs in male-male partnerships at alarming rates.”⁵⁶ Physical IPV victimization was reported most frequently, with rates ranging from 12% to 45%.⁵⁷ The rate of sexual IPV victimization ranged from 5% to 31%, with 9 out of 19 studies reporting rates over 20%. Psychological IPV victimization was recorded in six studies, with rates ranging from 5% to 73%.⁵⁸ Perpetration of physical IPV was reported in eight studies, with rates ranging from 4% to 39%. Rates of perpetration of sexual IPV ranged from 0.7% to 28%; four of the five studies reviewed reported rates of 9% or more. Only one study measured perpetration of psychological violence, and the estimated prevalence was 78%. Lack of consistent research design among the studies examined (for example, some differences regarding the exact definition of IPV, the correlates of IPV examined, and the recall periods used to measure violence) makes it impossible to calculate a pooled prevalence estimate, which would be useful given the lack of a national probability-based sample.

A 2013 study by UCLA’s Naomi Goldberg and Ilan Meyer used a large probability sample of almost 32,000 individuals from the California Health Interview Survey to assess differences in intimate partner violence between various cohorts: heterosexual; self-identified gay, lesbian, and bisexual individuals; and men who have sex with men but did not identify as gay or bisexual, and women who have sex with women but did not identify as lesbian or bisexual.⁵⁹ All three LGB groups had greater lifetime and one-year prevalence of intimate partner violence than the heterosexual group, but this difference was only statistically significant for bisexual women and gay men. Bisexual women were more likely to have experienced lifetime IPV (52% of bisexual women vs. 22% of heterosexual women and 32% of lesbians) and to have experienced IPV in the preceding year (27% of bisexuals vs. 5% of heterosexuals and 10% of lesbians). For men, all three non-heterosexual groups had higher rates of lifetime and one-year IPV, but this was only statistically significant for gay men, who were more likely to have experienced IPV over a lifetime (27% of gay men vs. 11% of heterosexual men and 19.6% of bisexual men) and over the preceding year (12% of gay men vs. 5% of heterosexual men and 9% of bisexual men). The authors also tested whether binge drinking and psychological distress could explain the higher prevalence of IPV victimization in gay men and bisexual women; controlling for these

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variables revealed that they did not. This study is limited by the fact that other potentially confounding psychological variables (besides drinking and distress) were not controlled for, statistically or otherwise, and may have accounted for the findings.

To estimate the prevalence of battering victimization among gay partners, AIDS-prevention researcher Gregory Greenwood and colleagues published a 2002 study based on telephone interviews with a probability-based sample of 2,881 men who have sex with men (MSM) in four cities from 1996 to 1998.⁶⁰ Of those interviewed, 34% reported experiencing psychological or symbolic abuse, 22% reported physical abuse, and 5% reported sexual abuse. Overall, 39% reported some type of battering victimization, and 18% reported more than one type of battering in the previous five years. Men younger than 40 were significantly more likely than men over 60 to report battering violence. The authors conclude that “the prevalence of battering within the context of intimate partner relationships was very high” among their sample of men who have sex with men, and that since lifetime rates are usually higher than those for a five-year recall, “it is likely that a substantially greater number of MSM than of heterosexual men have experienced lifetime victimization.”⁶¹ The five-year prevalence of physical battering among this sample of urban MSM was also “significantly higher” than the annual rate of severe violence (3%) or total violence (12%) experienced in a representative sample of heterosexual women living with men, suggesting that the estimates of battering victimization for MSM in this study “are higher than or comparable to those reported for heterosexual women.”⁶² This study was limited by its use of a sample from four cities, so it is not clear how well the results generalize to non-urban settings.

Transgender Health Outcomes

The research literature for mental health outcomes in transgender individuals is more limited than the research on mental health outcomes in LGB populations. Because people identifying as transgender make up a very small proportion of the population, large population-based surveys and studies of such individuals are difficult if not impossible to conduct. Nevertheless, the limited available research strongly suggests that transgender people have increased risks of poor mental health outcomes. It appears that the rates of co-occurring substance use disorders, anxiety disorders, depression, and suicide tend to be higher for transgender people than for LGB individuals.

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In 2015, Harvard pediatrics professor and epidemiologist Sari Reisner and colleagues conducted a retrospective matched-pair cohort study of mental health outcomes for 180 transgender subjects aged 12–29 years (106 female-to-male and 74 male-to-female), matched to non-transgender controls based on gender identity.⁶³ Transgender youth had an elevated risk of depression (50.6% vs. 20.6%)⁶⁴ and anxiety (26.7% vs. 10.0%).⁶⁵ Transgender youth also had higher risk of suicidal ideation (31.1% vs. 11.1%),⁶⁶ suicide attempts (17.2% vs. 6.1%),⁶⁷ and self-harm without lethal intent (16.7% vs. 4.4%)⁶⁸ relative to the matched controls. A significantly greater proportion of transgender youth accessed inpatient mental health care (22.8% vs. 11.1%)⁶⁹ and outpatient mental health care (45.6% vs. 16.1%)⁷⁰ services. No statistically significant differences in mental health status were observed when comparing female-to-male transgender individuals to the male-to-female transgender individuals after adjusting for age, race/ethnicity, and hormone use.

This study had the merit of including individuals who presented to a community-based health clinic, and who thus were not identified solely as meeting the diagnostic criteria for gender identity disorder in the fourth edition of the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)*, and were not selected from a population of patients presenting to a clinic for treatment of gender identity issues. However, Reisner and colleagues note that their study has the limitations typically found in the retrospective chart review study design, such as incomplete documentation and variation in the quality of information recorded by medical professionals.

A report from the American Foundation for Suicide Prevention and the Williams Institute, a think tank for LGBT issues at the UCLA School of Law, summarized findings on suicide attempts among transgender and gender-nonconforming adults from a large national sample of over 6,000 individuals.⁷¹ This constitutes the largest study of transgender and gender-nonconforming adults to date, though it used a convenience sample rather than a population-based sample. (Large population-based samples are nearly impossible given the low overall prevalence in the general population of transgendered individuals.) Summarizing the major findings of this study, the authors write:

The prevalence of suicide attempts among respondents to the National Transgender Discrimination Survey (NTDS), conducted by the National Gay and Lesbian Task Force and National Center for Transgender Equality, is 41 percent, which vastly exceeds the 4.6

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percent of the overall U.S. population who report a lifetime suicide attempt, and is also higher than the 10–20 percent of lesbian, gay and bisexual adults who report ever attempting suicide.⁷²

The authors note that “respondents who said they had received transition-related health care or wanted to have it someday were more likely to report having attempted suicide than those who said they did not want it,” however, “the survey did not provide information about the timing of reported suicide attempts in relation to receiving transition-related health care, which precluded investigation of transition-related explanations for these patterns.”⁷³ The survey data suggested associations between suicide attempts, co-occurring mental health disorders, and experiences of discrimination or mistreatment, although the authors note some limitations of these outcomes: “The survey data did not allow us to determine a direct causal relationship between experiencing rejection, discrimination, victimization, or violence, and lifetime suicide attempts,” although they did find evidence that stressors interacted with mental health factors “to produce a marked vulnerability to suicidal behavior in transgender and gender non-conforming individuals.”⁷⁴

A 2001 study by Kristen Clements-Nolle and colleagues of 392 male-to-female and 123 female-to-male transgender persons found that 62% of the male-to-female and 55% of the female-to-male transgender persons were depressed at the time of the study, and 32% of each population had attempted suicide.⁷⁵ The authors note: “The prevalence of suicide attempts among male-to-female and female-to-male transgender persons in our study was much higher than that found in US household probability samples and a population-based sample of adult men reporting same-sex partners.”⁷⁶

Explanations for the Poor Health Outcomes: The Social Stress Model

The greater prevalence of mental health problems in LGBT subpopulations is a cause for concern, and policymakers and clinicians should strive to reduce these risks. But to know what kinds of measures will help ameliorate them we must better understand their causes. At this time, the medical and social strategies for helping non-heterosexual populations in the United States are quite limited, and this may be due in part to the relatively limited explanations for the poor mental health outcomes offered by social scientists and psychologists.

Despite the limits of the scientific understanding of why non-heterosexual subpopulations are more likely to have such poor mental

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health outcomes, much of the public effort to ameliorate these problems is motivated by a particular hypothesis called the *social stress model*. This model posits that discrimination, stigmatization, and other similar stresses contribute to poor mental health outcomes among sexual minorities. An implication of the social stress model is that reducing these stresses would ameliorate the mental health problems experienced by sexual minorities.

Sexual minorities face distinct social challenges such as stigma, overt discrimination and harassment, and, often, struggle with reconciling their sexual behaviors and identities with the norms of their families and communities. In addition, they tend to be subject to challenges similar to those of some other minority populations, arising from marginalization by or conflict with the larger part of society in ways that may adversely impact their health.⁷⁷ Many researchers classify these various challenges under the concept of *social stress* and believe that social stress contributes to the generally higher rates of mental health problems among LGBT subpopulations.⁷⁸

In attempting to account for the mental health disparities between heterosexuals and non-heterosexuals, researchers occasionally refer to a social or minority stress *hypothesis*.⁷⁹ However, it is more accurate to refer to a social or minority stress *model*, because the postulated connection between social stress and mental health is more complex and less precise than anything that could be stated as a single hypothesis.⁸⁰ The term *stress* can have a number of meanings, ranging from a description of a physiological condition to a mental or emotional state of anger or anxiety to a difficult social, economic, or interpersonal situation. More questions arise when one thinks about various kinds of *stressors* that may disproportionately affect mental health in minority populations. We will discuss some of these aspects of the social stress model after a concise overview of the model as it has been presented in recent literature on LGBT mental health.

The social stress model attempts to explain why non-heterosexual people have, on average, higher incidences of poor mental health outcomes than the rest of the population. It does not put forth a complete explanation for the disparities between non-heterosexuals and heterosexuals, and it does not explain the mental health problems of a particular patient. Rather, it describes social factors that might directly or indirectly influence the health risks for LGBT people, which may only become apparent at a population level. Some of these factors may also influence heterosexuals, but LGBT people are probably disproportionately exposed to them.

In an influential 2003 article on the social stress model, psychiatric epidemiologist and sexual orientation law expert Ilan Meyer distinguished between *distal* and *proximate* minority stressors. Distal stressors do not

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depend on the individual's "perceptions or appraisals," and thus "can be seen as independent of personal identification with the assigned minority status."⁸¹ For instance, if a man who was perceived to be gay by an employer was fired on that basis, this would be a distal stressor, since the stressful event of discrimination would have had nothing to do with whether the man actually identified as gay, but only with someone else's attitude and perception. Distal stressors tend to reflect social circumstances rather than the individual's reaction to those circumstances. Proximate stressors, in contrast, are more subjective and are closely related to the individual's self-identity as lesbian, gay, bisexual, or transgender. An example of a proximate stressor would be when a young woman personally identifies as being a lesbian, and chooses to hide that identity from her family members out of fear of disapproval, or because of an internal sense of shame. The effects of proximate stressors such as this one are highly dependent on the individual's self-understanding and unique social circumstances. In this section we describe the types of stressors postulated in the social stress model, starting at the distal and proceeding to the most proximate stressors, and examine some of the empirical evidence that has been offered on the links between the stressors and mental health outcomes.

Discrimination and prejudice events. Overt acts of mistreatment, ranging from violence to harassment and discrimination, are categorized together by researchers as "prejudice events." These are thought to be significant stressors for non-heterosexual populations.⁸² Surveys of LGBT subpopulations have found that they tend to experience these kinds of prejudice events more frequently than the general population.⁸³

The available evidence indicates that prejudice events likely contribute to mental health problems. A 1999 study by UC Davis professor of psychology Gregory Herek and colleagues using survey data from 2,259 LGB individuals in Sacramento found that self-identified lesbians and gays who experienced a bias crime in the preceding five years—a crime, such as assault, theft, or vandalism, motivated by the actual or perceived sexual identity of the victim—reported significantly higher levels of depressive symptoms, traumatic stress symptoms, and anxiety than lesbians and gays who had not experienced a bias crime over that same period.⁸⁴ Additionally, lesbians and gays who reported being the victims of bias crimes in the last five years showed significantly higher levels of depressive and traumatic stress symptoms than individuals who experienced non-bias crimes in the same period (though the two groups did not display significant differences in anxiety). Comparable significant correlations were not found for

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self-identified bisexuals, who constituted a much smaller portion of the survey respondents. The study also found that lesbians and gays subject to bias crimes were significantly more likely than other respondents to report feelings of vulnerability and a decreased sense of personal mastery or agency. Corroborating these findings on the harmful impact of bias crimes was a 2001 study by Northeastern University social scientist Jack McDevitt and colleagues that examined aggravated assaults using data from the Boston Police Department.⁸⁵ They found that bias crime victims tended to experience the effects of victimization more intensely and for a longer period of time than non-bias crime victims. (The study looked at bias-motivated assaults in general, rather than restricting its analysis to assaults motivated by LGBT bias, though a substantial portion of the subjects did experience assaults motivated by their non-heterosexual status.)

Similar patterns also appear among non-heterosexual adolescents, for whom maltreatment is particularly high.⁸⁶ In a 2011 study, University of Arizona social and behavioral scientist Stephen T. Russell and colleagues analyzed a survey of 245 young LGBT adults that retrospectively assessed school victimization due to actual or perceived LGBT status between the ages of 13 and 19. They found strong correlations between school victimization and poor mental health as young adults.⁸⁷ Victimization was assessed by asking yes-or-no questions, such as, “During my middle or high school years, while at school, I was pushed, shoved, slapped, hit, or kicked by someone who wasn’t just kidding around,” followed by a question of how often these events were related to the respondent’s sexual identity. Respondents who reported high levels of school victimization due to their sexual identity were 2.6 times more likely to report depression as young adults and 5.6 times more likely to report that they had attempted suicide, compared to those who reported low levels of victimization. These differences were highly statistically significant, though the study is potentially limited by its use of retrospective surveys to measure incidents of victimization. A study by professor of social work Joanna Almeida and colleagues, which relied on the 2006 Boston Youth Survey (a biennial survey of high school students in Boston public schools), found that perceptions of having been victimized due to LGBT status accounted for increased symptoms of depression among LGBT students. For male LGBT students, but not females, the study also found a positive correlation between victimization and suicidal thoughts and self-harm.⁸⁸

Differences in compensation suggest discrimination in the workplace, which can have both direct and indirect effects on mental health. M. V. Lee Badgett, a professor of economics at the University of Massachusetts,

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Amherst, analyzed data collected between 1989 and 1991 in the General Social Survey and found that non-heterosexual male employees received significantly lower compensation (11% to 27%) than heterosexuals, even after controlling for experience, education, occupation, and other factors.⁸⁹ According to a 2009 review by Badgett,⁹⁰ nine studies from the 1990s and early 2000s “consistently show that gay and bisexual men earned 10% to 32% less than heterosexual men,” and that differences in occupation cannot account for much of the wage disparity. Researchers have also found that non-heterosexual women earn more than heterosexual women,⁹¹ which may suggest either that patterns of discrimination differ for men and women, or that there are other factors associated with non-heterosexual behavior and self-identification in men and women influencing their respective earnings, such as a lower rate of child-rearing or being the family primary wage earner.

There is evidence that suggests that wage disparities can help explain some population-level disparities in mental health outcomes,⁹² though it is difficult to tell if differences in mental health help explain the differences in wages. A 1999 study⁹³ by Craig Waldo on the relationship between workplace heterosexism—defined as negative social attitudes toward non-heterosexuals—and stress-related outcomes in 287 LGB individuals found that LGB individuals who experienced heterosexism in the workplace “exhibited higher levels of psychological distress and health-related problems, as well as decreased satisfaction with several aspects of their jobs.” The cross-sectional data used by many of these studies make it impossible to infer causality, though both prospective studies and qualitative analyses of the impact of unemployment on mental health suggest that at least some of the correlations are likely accounted for by the psychological and material effects of unemployment.⁹⁴

Stigma. Sociologists have for many years documented a range of adverse effects of stigma on individuals, ranging from issues with self-esteem to academic achievement.⁹⁵ Stigma is typically regarded as an attribute attaching to a person that reduces that person’s worth to others in a particular social context.⁹⁶ These negative evaluations are in many cases widely shared among a cultural group and become the basis for excluding or differentially treating stigmatized individuals. For example, mental illness can become stigmatized when it is regarded as a character flaw in mentally ill people. One reason why stigma serves an important role in the social stress model is that it can be invoked as an explanation even in the absence of particular events of discrimination or maltreatment. For

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example, stigmatization of depression may take place when a depressed person conceals the depression on the expectation that friends and family members will regard it as a character flaw. Even when this concealment is successful, and there is therefore no actual discrimination or mistreatment by the individual's friends or family, anxiety over the attitudes others may have can affect the depressed person's emotional and mental well-being.

Researchers have found associations between the risk of poor mental health and stigma toward certain populations, though there has been little empirical research on the mental health effects of stigma on LGBT people in particular. Stigma is not easy to define or operationalize, making it a difficult and vague concept for empirical social scientists to study. Nevertheless, researchers have attempted to work with the concept using surveys of self-perceived devaluation by others and have found correlations between experiences of stigma and the risk of poor mental health status. One highly cited 1997 study by sociologist and epidemiologist Bruce Link and colleagues on the connection between stigma and mental health found a "strong and enduring" negative effect of stigma on the mental well-being of men who were suffering from a mental disorder and substance abuse.⁹⁷ In this study, the effects of stigma appeared to persist even after the men had received largely successful treatment for their original mental and substance abuse problems. The study found significant correlations between certain stigma variables—self-reported experiences of devaluation and rejection—and depressive symptoms before and after treatment, suggesting that the effects of stigma are relatively long-lasting. This might simply indicate that people with depressive symptoms tend to report more stigma, but if that were the case, one would have expected reports of stigma to decline over the course of the treatment program, as depression did. However, since stigma reports stayed constant, the authors concluded that stigma must have had a causal role in shaping depressive symptoms. It is worth noting that this study found stigma variables to account uniquely for around 10% or slightly more of the variance in depressive symptoms—in other words, stigma had a minor effect on depressive symptoms, though such an effect might manifest itself in significant ways on a population level. Some other researchers have suggested that the effects of stigma are usually minor and transitory; for example, Vanderbilt sociologist Walter Gove argued that for the "vast majority of cases the stigma [experienced by mental patients] appears to be transitory and does not appear to pose a severe problem."⁹⁸

Researchers have relatively recently begun pursuing both empirical and theoretical work⁹⁹ on how stigma affects the mental health of LGBT

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people, though there has been some controversy over the magnitude and duration of effects due to stigma. Some of the controversy may stem from the difficulty of defining and quantifying stigma as well as the variations in stigma across different social contexts. A 2013 study by Columbia University medical psychologist Walter Bockting and colleagues on mental health in 1,093 transgender people found a positive correlation between psychological distress and both enacted and felt stigma, which were measured using survey questions.¹⁰⁰ A 2003 study¹⁰¹ by clinical psychologist Robin Lewis and colleagues of predictors of depressive symptoms in 201 LGB individuals found that stigma consciousness was significantly associated with depressive symptoms, where stigma consciousness was assessed using a ten-item questionnaire that assessed “the degree to which one expects to be judged on the basis of a stereotype.”¹⁰² However, depressive symptoms are often associated with negative cognition about the self, the world, and the future, and this may contribute to the subjective perception of stigmatization among individuals suffering from depression.¹⁰³ A 2011 study¹⁰⁴ by Bostwick that also used measures of stigma consciousness and depressive symptoms found a modest positive correlation between stigma scores and depressive symptoms in bisexual women, although the study was limited by having a relatively small sample size. However, a 2003 longitudinal study¹⁰⁵ of Norwegian adolescents by psychologist Lars Wichstrøm and colleague found that sexual orientation was associated with poor mental health status after accounting for a variety of psychological risk factors, including self-worth. While this study did not directly consider stigma as a risk factor, it suggests that psychological factors such as stigma consciousness alone likely cannot fully account for the disparities in mental health between heterosexuals and non-heterosexuals. Additionally, it is important to note that due to the cross-sectional design of these studies, causal inferences cannot be supported by the data—different kinds of data and more evidence would be needed to support conclusions about causal relationships. In particular, it is impossible to prove through these studies that stigma leads to poor mental health, as opposed to, for example, poor mental health leading people to report higher levels of stigma, or a third factor being responsible for both poor mental health and higher levels of stigma.

Concealment. Stigma may affect non-heterosexual individuals’ decisions about whether to disclose or conceal their sexual orientation. LGBT people may decide to conceal their sexual orientation to protect themselves against possible bias or discrimination, to avoid a sense of shame, or to

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avoid a potential conflict between their social role and sexual desires or behaviors.¹⁰⁶ Particular contexts in which LGBT people may be more likely to conceal their sexual orientation include school, work, and other places in which they feel that disclosure could negatively affect the way that people regard them.

There is a large amount of evidence from psychological research indicating that concealment of an important aspect of one's identity may have adverse mental health consequences. In general, expressing one's emotions and sharing important aspects of one's life with others play large roles in maintaining mental health.¹⁰⁷ Recent decades have seen a growing body of research on the relationships between concealment and disclosure and mental health in LGBT subpopulations.¹⁰⁸ For example, a 2007 study¹⁰⁹ by Belle Rose Ragins and colleagues of workplace concealment and disclosure in 534 LGB individuals found that fear of disclosing was associated with psychological strain and other outcomes such as job satisfaction. However, the study also challenged the notion that disclosure leads to positive psychological and social outcomes, since employees' disclosure was not significantly associated with most of the outcome variables. The authors interpret this result by saying that "this study suggests that concealment may be a necessary and adaptive decision in an unsupportive or hostile environment, thus underscoring the importance of social context."¹¹⁰ Due to the relatively rapid changes in social acceptance of same-sex marriage and of same-sex relationships more broadly in recent decades,¹¹¹ it is possible that some of the research on the psychological effects of concealment and disclosure is outdated, because in general there may now be less pressure for those identifying as LGB to conceal their identities.

Testing the model. One of the implications of the social stress model is that reducing the amount of discrimination, prejudice, and stigmatization of sexual minorities would help reduce the rates of mental health problems for these populations. Some jurisdictions have sought to reduce these social stressors by passing anti-discrimination and hate-crime laws. If such policies are in fact successful at reducing these stressors then they could be expected to reduce the rates of mental health problems in LGB populations to the extent that the social stress model accurately accounts for the causes of these problems. So far, studies have not been designed in such a way that could allow them to test conclusively the hypothesis that social stress accounts for the high rates of poor mental health outcomes in non-heterosexual populations, but there is research that provides some data on a testable implication of the social stress model.

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A 2009 study by sociomedical scientist Mark Hatzenbuehler and colleagues investigated the association between psychiatric morbidity in LGB populations and two state-level policies that pertained to these populations: hate-crime laws that did not include sexual orientation as a protected category, and laws prohibiting employment discrimination based on sexual orientation.¹¹² The study used data on mental health outcomes from Wave 2 of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), a nationally representative sample of 34,653 civilian, non-institutionalized adults, and measuring psychiatric disorders according to *DSM-IV* criteria.¹¹³ Wave 2 of NESARC took place in 2004–2005. Of the sample, 577 respondents identified as lesbian, gay, or bisexual. The analysis of the data showed that LGB individuals living in states with no hate-crime laws and no non-discrimination laws tended to have higher odds of psychiatric morbidity (compared to LGB individuals in states with one or two protective laws), but the analysis found statistically significant correlations only for dysthymia (a less severe but more persistent form of depression), generalized anxiety disorder, and post-traumatic stress disorder, while the correlations between seven other psychiatric conditions investigated were not found to be statistically significant. No epidemiological inferences can be made due to the nature of the data, suggesting the need for more studies on this and similar topics.

Hatzenbuehler and colleagues attempted to improve on this cross-sectional study by doing a prospective study, published in 2010, this time examining changes in psychiatric morbidity over the period in which certain states passed constitutional amendments defining marriage as a union between one man and one woman—amendments that were described by the study’s authors as “bans on gay marriage.”¹¹⁴ The authors examined differences in psychiatric morbidity between Wave 1 of NESARC, which took place in 2001–2002, and Wave 2, which coincided with the 2004 and 2005 state-constitutional amendments. They observed that the prevalence in mood disorders in LGB respondents living in states that passed marriage amendments increased by 36.6% between Waves 1 and 2. Mood disorders for LGB respondents living in states that did not pass marriage amendments decreased by 23.6%, though this change was not statistically significant. The prevalence of certain disorders increased both in states that passed such amendments and in states that did not. Generalized anxiety disorder, for example, increased in both, but by a much larger and statistically significant magnitude in states that passed marriage amendments. Hatzenbuehler and colleagues found that drug-use disorders increased more in states that did *not* pass marriage amendments,

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and the increase was statistically significant only for those states. (Total substance abuse disorders increased in both cases, by a roughly similar amount.) As with the earlier cross-sectional study, for the majority of the psychiatric conditions investigated there were no significant correlations between the conditions and the social policies that were hypothesized to have an influence on mental health outcomes.

Some of the limitations of the study's findings noted by the authors include the following: healthier LGB respondents may have moved out of the states that would eventually pass marriage amendments into the states that would not; sexual orientation was only assessed during Wave 2 of NESARC, and there is some fluidity to sexual identity that may have led to misclassification of some LGB respondents; and the sample size of LGB respondents living in states that passed marriage amendments was relatively small, limiting the statistical power of the study.

One hypothesized causal mechanism for the change in mental health variables associated with the marriage amendments is that the public debate surrounding the amendments may have elevated the stress experienced by non-heterosexuals—a hypothesis that was put forward by psychologist Sharon Scales Rostosky and colleagues in a study of the attitudes of LGB adults in states that passed marriage amendments in 2006.¹¹⁵ The survey data collected during this study showed that LGB respondents living in states that passed marriage amendments in 2006 had higher levels of various kinds of psychological distress, including stress and depressive symptoms. The study also found that participation in LGBT activism during the election season was associated with increased psychological distress. It may be that part of the psychological distress recorded by this survey, which included perceived stress, depressive symptoms (but not diagnoses of depressive disorders), and what the researchers called “amendment-related affect,” may have simply reflected the typical feelings of advocates when they experience political defeat on an issue that they care passionately about. Other key limitations of the study were its cross-sectional design and its reliance on volunteers for the survey (in contrast to the previous study by Hatzenbuehler and colleagues). The survey methodology may also have biased the results—the researchers advertised on websites and through listserv e-mail announcements that they were looking for survey respondents for a study on “attitudes and experiences of LGB...individuals regarding the debate” over gay marriage. As with many forms of convenience sampling, individuals with strong attitudes regarding the issues under investigation in the survey may have been more likely to respond.

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As for the effects of particular policies, the evidence is equivocal at best. The 2009 study by Hatzenbuehler and colleagues demonstrated significant correlations between the risk of some (though not all) mental health problems in the LGB subpopulation and state policies on hate crime and employment protections. Even for the aspects of mental health that this study found to be correlated with hate-crime or employment-protection policies, the study was unable to show an epidemiological relationship between policies and health outcomes.

Conclusion

The social stress model probably accounts for some of the poor mental health outcomes experienced by sexual minorities, though the evidence supporting the model is limited, inconsistent and incomplete. Some of the central concepts of the model, such as stigmatization, are not easily operationalized. There is evidence linking some forms of mistreatment, stigmatization, and discrimination to some of the poor mental health outcomes experienced by non-heterosexuals, but it is far from clear that these factors account for all of the disparities between the heterosexual and non-heterosexual populations. Those poor mental health outcomes may be mitigated to some extent by reducing social stressors, but this strategy is unlikely to eliminate all of the disparities in mental health status between sexual minorities and the wider population. Other factors, such as the elevated rates of sexual abuse victimization among the LGBT population discussed in Part One, may also account for some of these mental health disparities, as research has consistently shown that “survivors of childhood sexual abuse are significantly at risk of a wide range of medical, psychological, behavioral, and sexual disorders.”¹¹⁶

Just as it does a disservice to non-heterosexual subpopulations to ignore or downplay the statistically higher risks of negative mental health outcomes they face, so it does them a disservice to misattribute the causes of these elevated risks, or to ignore other potential factors that may be at work. Assuming that a single model can explain all of the mental health risks faced by non-heterosexuals can mislead clinicians and therapists charged with helping this vulnerable subpopulation. The social stress model deserves further research, but should not be assumed to offer a complete explanation of the causes of mental health disparities if clinicians and policymakers want to adequately address the mental health challenges faced by the LGBT community. More research is needed to explore the causes of, and solutions to, these important public health challenges.

Part Two: Sexuality, Mental Health Outcomes, and Social Stress

1. Michael King *et al.*, “A systematic review of mental disorder, suicide, and deliberate self harm in lesbian, gay and bisexual people,” *BMC Psychiatry* 8 (2008): 70, <http://dx.doi.org/10.1186/1471-244X-8-70>.

2. The researchers who performed this meta-analysis initially found 13,706 papers by searching academic and medical research databases, but after excluding duplicates and other spurious search results examined 476 papers. After further excluding uncontrolled studies, qualitative papers, reviews, and commentaries, the authors found 111 data-based papers, of which they excluded 87 that were not population-based studies, or that failed to employ psychiatric diagnoses, or that used poor sampling. The 28 remaining papers relied on 25 studies (some of the papers examined data from the same studies), which King and colleagues evaluated using four quality criteria: (1) whether or not random sampling was used; (2) the representativeness of the study (measured by survey response rates); (3) whether the sample was drawn from the general population or from some more limited subset, such as university students; and (4) sample size. However, only one study met all four criteria. Acknowledging the inherent limitations and inconsistencies of sexual orientation concepts, the authors included information on how those concepts were operationalized in the studies analyzed—whether in terms of same-sex attraction (four studies), same-sex behavior (thirteen studies), self-identification (fifteen studies), score above zero on the Kinsey scale (three studies), two different definitions of sexual orientation (nine studies), three different definitions (one study). Eighteen of the studies used a specific time frame for defining the sexuality of their subjects. The studies were also grouped into whether or not they focused on lifetime or twelve-month prevalence, and whether the authors analyzed outcomes for LGB populations separately or collectively.

3. 95% confidence interval: 1.87–3.28.

4. 95% confidence interval: 1.69–2.48.

5. 95% confidence interval: 1.23–1.92.

6. 95% confidence interval: 1.23–1.86.

7. 95% confidence interval: 1.97–5.92.

8. 95% confidence interval: 2.32–7.88.

9. Wendy B. Bostwick *et al.*, “Dimensions of Sexual Orientation and the Prevalence of Mood and Anxiety Disorders in the United States,” *American Journal of Public Health* 100, no. 3 (2010): 468–475, <http://dx.doi.org/10.2105/AJPH.2008.152942>.

10. *Ibid.*, 470.

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11. The difference in health outcomes between women who identify as lesbians and women who report exclusive same-sex sexual behaviors or attractions is a good illustration of how the differences between sexual identity, behavior, and attraction matter.
 12. Susan D. Cochran and Vickie M. Mays, “Physical Health Complaints Among Lesbians, Gay Men, and Bisexual and Homosexually Experienced Heterosexual Individuals: Results From the California Quality of Life Survey,” *American Journal of Public Health* 97, no. 11 (2007): 2048–2055, <http://dx.doi.org/10.2105/AJPH.2006.087254>.
 13. Christine E. Grella *et al.*, “Influence of gender, sexual orientation, and need on treatment utilization for substance use and mental disorders: Findings from the California Quality of Life Survey,” *BMC Psychiatry* 9, no. 1 (2009): 52, <http://dx.doi.org/10.1186/1471-244X-9-52>.
 14. Theo G. M. Sandfort *et al.*, “Sexual Orientation and Mental and Physical Health Status: Findings from a Dutch Population Survey,” *American Journal of Public Health* 96, (2006): 1119–1125, <http://dx.doi.org/10.2105%2FAJPH.2004.058891>.
 15. Robert Graham *et al.*, Committee on Lesbian, Gay, Bisexual, and Transgender Health Issues and Research Gaps and Opportunities, Institute of Medicine, *The Health of Lesbian, Gay, Bisexual, and Transgender People: Building a Foundation for Better Understanding* (Washington, D.C.: The National Academies Press, 2011), <http://dx.doi.org/10.17226/13128>.
 16. Susan D. Cochran, J. Greer Sullivan, and Vickie M. Mays, “Prevalence of Mental Disorders, Psychological Distress, and Mental Health Services Use Among Lesbian, Gay, and Bisexual Adults in the United States,” *Journal of Consulting and Clinical Psychology* 71, no. 1 (2007): 53–61, <http://dx.doi.org/10.1037/0022-006X.71.1.53>.
 17. Lisa A. Razzano, Alicia Matthews, and Tonda L. Hughes, “Utilization of Mental Health Services: A Comparison of Lesbian and Heterosexual Women,” *Journal of Gay & Lesbian Social Services* 14, no. 1 (2002): 51–66, http://dx.doi.org/10.1300/J041v14n01_03.
 18. Robert Graham *et al.*, *The Health of Lesbian, Gay, Bisexual, and Transgender People*, 4.
 19. *Ibid.*, 190, see also 258–259.
 20. *Ibid.*, 211.
 21. Esther D. Rothblum and Rhonda Factor, “Lesbians and Their Sisters as a Control Group: Demographic and Mental Health Factors,” *Psychological Science* 12, no. 1 (2001): 63–69, <http://dx.doi.org/10.1111/1467-9280.00311>.
 22. Stephen M. Horowitz, David L. Weis, and Molly T. Laflin, “Bisexuality, Quality of Life, Lifestyle, and Health Indicators,” *Journal of Bisexuality* 3, no. 2 (2003): 5–28, http://dx.doi.org/10.1300/J159v03n02_02.
 23. By way of context, it may be worth noting that in the United States, the overall suicide rate has risen in recent years: “From 1999 through 2014, the age-adjusted suicide rate in the United States increased 24%, from 10.5 to 13.0 per 100,000 population, with the pace of increase greater after 2006.” Sally C. Curtin, Margaret Warner, and Holly Hedegaard, “Increase in suicide in the United States, 1999–2014,” National Center for
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Health Statistics, NCHS data brief no. 241 (April 22, 2016), <http://www.cdc.gov/nchs/products/databriefs/db241.htm>.

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25. *Ibid.*, 13.

26. David M. Fergusson, L. John Horwood, and Annette L. Beautrais, “Is Sexual Orientation Related to Mental Health Problems and Suicidality in Young People?,” *Archives of General Psychiatry* 56, no. 10 (1999): 876–880, <http://dx.doi.org/10.1001/archpsyc.56.10.876>.

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Part Three

Gender Identity

The concept of biological sex is well defined, based on the binary roles that males and females play in reproduction. By contrast, the concept of gender is not well defined. It is generally taken to refer to behaviors and psychological attributes that tend to be typical of a given sex. Some individuals identify as a gender that does not correspond to their biological sex. The causes of such cross-gender identification remain poorly understood. Research investigating whether these transgender individuals have certain physiological features or experiences in common with the opposite sex, such as brain structures or atypical prenatal hormone exposures, has so far been inconclusive. Gender dysphoria—a sense of incongruence between one’s biological sex and one’s gender, accompanied by clinically significant distress or impairment—is sometimes treated in adults by hormones or surgery, but there is little scientific evidence that these therapeutic interventions have psychological benefits. Science has shown that gender identity issues in children usually do not persist into adolescence or adulthood, and there is little scientific evidence for the therapeutic value of puberty-delaying treatments. We are concerned by the increasing tendency toward encouraging children with gender identity issues to transition to their preferred gender through medical and then surgical procedures. There is a clear need for more research in these areas.

As described in Part One, there is a widely held belief that *sexual orientation* is a well-defined concept, and that it is innate and fixed in each person—as it is often put, gay people are “born that way.” Another emerging and related view is that *gender identity*—the subjective, internal sense of being a man or a woman (or some other gender category)—is also fixed at birth or at a very early age and can diverge from a person’s biological sex. In the case of children, this is sometimes articulated by saying that a little boy may be trapped in a little girl’s body, or vice versa.

In Part One we argued that scientific research does not give much support to the hypothesis that sexual orientation is innate and fixed. We will argue here, similarly, that there is little scientific evidence that gender identity is fixed at birth or at an early age. Though biological sex is innate, and gender identity and biological sex are related in complex ways, they

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are not identical; gender is sometimes defined or expressed in ways that have little or no biological basis.

Key Concepts and Their Origins

To clarify what is meant by “gender” and “sex,” we begin with a widely used definition, here quoted from a pamphlet published by the American Psychological Association (APA):

Sex is assigned at birth, refers to one’s biological status as either male or female, and is associated primarily with physical attributes such as chromosomes, hormone prevalence, and external and internal anatomy. *Gender* refers to the socially constructed roles, behaviors, activities, and attributes that a given society considers appropriate for boys and men or girls and women. These influence the ways that people act, interact, and feel about themselves. While aspects of biological sex are similar across different cultures, aspects of gender may differ.¹

This definition points to the obvious fact that there are social norms for men and women, norms that vary across different cultures and that are not simply determined by biology. But it goes further in holding that gender is wholly “socially constructed”—that it is detached from biological sex. This idea has been an important part of a feminist movement to reform or eliminate traditional gender roles. In the classic feminist book *The Second Sex* (1949), Simone de Beauvoir wrote that “one is not born, but becomes a woman.”² This notion is an early version of the now familiar distinction between sex as a biological designation and gender as a cultural construct: though one is born, as the APA explains, with the “chromosomes, hormone prevalence, and external and internal anatomy” of a female, one is socially conditioned to take on the “roles, behaviors, activities, and attributes” of a woman.

Developments in feminist theory in the second half of the twentieth century further solidified the position that gender is socially constructed. One of the first to use the term “gender” as distinct from sex in the social-science literature was Ann Oakley in her 1972 book, *Sex, Gender and Society*.³ In the 1978 book *Gender: An Ethnomethodological Approach*, psychology professors Suzanne Kessler and Wendy McKenna argued that “gender is a social construction, that a world of two ‘sexes’ is a result of the socially shared, taken for granted methods which members use to construct reality.”⁴

Anthropologist Gayle Rubin expresses a similar view, writing in 1975 that “Gender is a socially imposed division of the sexes. It is a product of

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the social relations of sexuality.”⁵ According to her argument, if it were not for this social imposition, we would still have males and females but not “men” and “women.” Furthermore, Rubin argues, if traditional gender roles are socially constructed, then they can also be *deconstructed*, and we can eliminate “obligatory sexualities and sex roles” and create “an androgynous and genderless (though not sexless) society, in which one’s sexual anatomy is irrelevant to who one is, what one does, and with whom one makes love.”⁶

The relationship between gender theory and the deconstruction or overthrowing of traditional gender roles is made even clearer in the works of the influential feminist theorist Judith Butler. In works such as *Gender Trouble: Feminism and the Subversion of Identity* (1990)⁷ and *Undoing Gender* (2004)⁸ Butler advances what she describes as “performativity theory,” according to which being a woman or man is not something that one *is* but something that one *does*. “Gender is neither the causal result of sex nor as seemingly fixed as sex,” as she put it.⁹ Rather, gender is a constructed status radically independent from biology or bodily traits, “a free floating artifice, with the consequence that *man* and *masculine* might just as easily signify a female body as a male one, and *woman* and *feminine* a male body as easily as a female one.”¹⁰

This view, that gender and thus gender identity are fluid and plastic, and not necessarily binary, has recently become more prominent in popular culture. An example is Facebook’s move in 2014 to include 56 new ways for users to describe their gender, in addition to the options of male and female. As Facebook explains, the new options allow the user to “feel comfortable being your true, authentic self,” an important part of which is “the expression of gender.”¹¹ Options include *agender*, several *cis-* and *trans-* variants, *gender fluid*, *gender questioning*, *neither*, *other*, *pangender*, and *two-spirit*.¹²

Whether or not Judith Butler was correct in describing traditional gender roles of men and women as “performative,” her theory of gender as a “free-floating artifice” does seem to describe this new taxonomy of gender. As these terms multiply and their meanings become more individualized, we lose any common set of criteria for defining what gender distinctions mean. If gender is entirely detached from the binary of biological sex, gender could come to refer to any distinctions in behavior, biological attributes, or psychological traits, and each person could have a gender defined by the unique combination of characteristics the person possesses. This *reductio ad absurdum* is offered to present the possibility that defining gender too broadly could lead to a definition that has little meaning.

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Alternatively, gender identity could be defined in terms of sex-typical traits and behaviors, so that being a boy means behaving in the ways boys typically behave—such as engaging in rough-and-tumble play and expressing an interest in sports and liking toy guns more than dolls. But this would imply that a boy who plays with dolls, hates guns, and refrains from sports or rough-and-tumble play might be considered to be a girl, rather than simply a boy who represents an exception to the typical patterns of male behavior. The ability to recognize exceptions to sex-typical behavior relies on an understanding of maleness and femaleness that is independent of these stereotypical sex-appropriate behaviors. The underlying basis of maleness and femaleness is the distinction between the reproductive roles of the sexes; in mammals such as humans, the female gestates offspring and the male impregnates the female. More universally, the male of the species fertilizes the egg cells provided by the female of the species. This conceptual basis for sex roles is binary and stable, and allows us to distinguish males from females on the grounds of their reproductive systems, even when these individuals exhibit behaviors that are not typical of males or females.

To illustrate how reproductive roles define the differences between the sexes even when behavior appears to be atypical for the particular sex, consider two examples, one from the diversity of the animal kingdom, and one from the diversity of human behavior. First, we look at the emperor penguin. Male emperor penguins provide more care for eggs than do females, and in this sense, the male emperor penguin could be described as more maternal than the female.¹³ However, we recognize that the male emperor penguin is not in fact female but rather that the species represents an exception to the general, but not universal, tendency among animals for females to provide more care than males for offspring. We recognize this because sex-typical behaviors like parental care do not define the sexes; the individual's role in sexual reproduction does.

Even other sex-typical biological traits, such as chromosomes, are not necessarily helpful for defining sex in a universal way, as the penguin example further illustrates. As with other birds, the genetics of sex determination in the emperor penguin is different than the genetics of sex determination in mammals and many other animals. In humans, males have XY chromosomes and females have XX chromosomes; that is, males have a unique sex-determining chromosome that they do not share with females, while females have two copies of a chromosome that they share with males. But in birds, it is females, not males, that have and pass on the sex-specific chromosome.¹⁴ Just as the observation that

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male emperor penguins nurture their offspring more than their partners did not lead zoologists to conclude that the egg-laying member of the emperor penguin species was in fact the male, the discovery of the ZW sex-determination system in birds did not lead geneticists to challenge the age-old recognition that hens are females and roosters are males. The only variable that serves as the fundamental and reliable basis for biologists to distinguish the sexes of animals is their role in reproduction, not some other behavioral or biological trait.

Another example that, in this case, only appears to be non-sex-typical behavior is that of Thomas Beatie, who made headlines as a man who gave birth to three children between 2008 and 2010.¹⁵ Thomas Beatie was born a woman, Tracy Lehuanani LaGondino, and underwent a surgical and legal transition to living as a man before deciding to have children. Because the medical procedures he underwent did not involve the removal of his ovaries or uterus, Beatie was capable of bearing children. The state of Arizona recognizes Thomas Beatie as the father of his three children, even though, biologically, he is their mother. Unlike the case of the male emperor penguin's ostensibly maternal, "feminine" parenting behavior, Beatie's ability to have children does not represent an exception to the normal inability of males to bear children. The labeling of Beatie as a man despite his being biologically female is a personal, social, and legal decision that was made without any basis in biology; nothing whatsoever in biology suggests Thomas Beatie is a male.

In biology, an organism is male or female if it is structured to perform one of the respective roles in reproduction. This definition does not require any arbitrary measurable or quantifiable physical characteristics or behaviors; it requires understanding the reproductive system and the reproduction process. Different animals have different reproductive systems, but sexual reproduction occurs when the sex cells from the male and female of the species come together to form newly fertilized embryos. It is these reproductive roles that provide the conceptual basis for the differentiation of animals into the biological categories of male and female. There is no other widely accepted biological classification for the sexes.

But this definition of the biological category of sex is not universally accepted. For example, philosopher and legal scholar Edward Stein maintains that infertility poses a crucial problem for defining sex in terms of reproductive roles, writing that defining sex in terms of these roles would define "infertile males as females."¹⁶ Since an infertile male cannot play the reproductive role for which males are structured, and an infertile

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female cannot play the reproductive role for which females are structured, according to this line of thinking, defining sex in terms of reproductive roles would not be appropriate, as infertile males would be classified as females, and infertile females as males. Nevertheless, while a reproductive system structured to serve a particular reproductive role may be impaired in such a way that it cannot perform its function, the system is still recognizably structured for that role, so that biological sex can still be defined strictly in terms of the structure of reproductive systems. A similar point can be made about heterosexual couples who choose not to reproduce for any of a variety of reasons. The male and female reproductive systems are generally clearly recognizable, regardless of whether or not they are being used for purposes of reproduction.

The following analogy illustrates how a system can be recognized as having a particular purpose, even when that system is dysfunctional in a way that renders it incapable of carrying out its purpose: Eyes are complex organs that function as processors of vision. However, there are numerous conditions affecting the eye that can impair vision, resulting in blindness. The eyes of the blind are still recognizably organs structured for the function of sight. Any impairments that result in blindness do not affect the purpose of the eye—any more than wearing a blindfold—but only its function. The same is true for the reproductive system. Infertility can be caused by many problems. However, the reproductive system continues to exist for the purpose of begetting children.

There are individuals, however, who are biologically “intersex,” meaning that their sexual anatomy is ambiguous, usually for reasons of genetic abnormalities. For example, the clitoris and penis are derived from the same embryonic structures. A baby may display an abnormally large clitoris or an abnormally small penis, causing its biological sex to be difficult to determine long after birth.

The first academic article to use the term “gender” appears to be the 1955 paper by the psychiatry professor John Money of Johns Hopkins on the treatment of “intersex” children (the term then used was “hermaphrodites”).¹⁷ Money posited that gender identity, at least for these children, was fluid and that it could be constructed. In his mind, making a child identify with a gender only required constructing sex-typical genitalia and creating a gender-appropriate environment for the child. The chosen gender for these children was often female—a decision that was not based on genetics or biology, nor on the belief that these children were “really” girls, but, in part, on the fact that at the time it was easier surgically to construct a vagina than it was to construct a penis.

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The most widely known patient of Dr. Money was David Reimer, a boy who was not born with an intersex condition but whose penis was damaged during circumcision as an infant.¹⁸ David was raised by his parents as a girl named Brenda, and provided with both surgical and hormonal interventions to ensure that he would develop female-typical sex characteristics. However, the attempt to conceal from the child what had happened to him was not successful—he self-identified as a boy, and eventually, at the age of 14, his psychiatrist recommended to his parents that they tell him the truth. David then began the difficult process of reversing the hormonal and surgical interventions that had been performed to feminize his body. But he continued to be tormented by his childhood ordeal, and took his own life in 2004, at the age of 38.

David Reimer is just one example of the harm wrought by theories that gender identity can socially and medically be reassigned in children. In a 2004 paper, William G. Reiner, a pediatric urologist and child and adolescent psychiatrist, and John P. Gearhart, a professor of pediatric urology, followed up on the sexual identities of 16 genetic males affected by cloacal exstrophy—a condition involving a badly deformed bladder and genitals. Of the 16 subjects, 14 were assigned female sex at birth, receiving surgical interventions to construct female genitalia, and were raised as girls by their parents; 6 of these 14 later chose to identify as males, while 5 continued to identify as females and 2 declared themselves males at a young age but continued to be raised as females because their parents rejected the children's declarations. The remaining subject, who had been told at age 12 that he was born male, refused to discuss sexual identity.¹⁹ So the assignment of female sex persisted in only 5 of the 13 cases with known results.

This lack of persistence is some evidence that the assignment of sex through genital construction at birth with immersion into a “gender-appropriate” environment is not likely to be a successful option for managing the rare problem of genital ambiguity from birth defects. It is important to note that the ages of these individuals at last follow-up ranged from 9 to 19, so it is possible that some of them may have subsequently changed their gender identities.

Reiner and Gearhart's research indicates that gender is not arbitrary; it suggests that a biological male (or female) will probably not come to identify as the opposite gender after having been altered physically and immersed into the corresponding gender-typical environment. The plasticity of gender appears to have a limit.

What is clear is that biological sex is not a concept that can be reduced to, or artificially assigned on the basis of, the type of external genitalia

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alone. Surgeons are becoming more capable of constructing artificial genitalia, but these “add-ons” do not change the biological sex of the recipients, who are no more capable of playing the reproductive roles of the opposite biological sex than they were without the surgery. Nor does biological sex change as a function of the environment provided for the child. No degree of supporting a little boy in converting to be considered, by himself and others, to be a little girl makes him biologically a little girl. The scientific definition of biological sex is, for almost all human beings, clear, binary, and stable, reflecting an underlying biological reality that is not contradicted by exceptions to sex-typical behavior, and cannot be altered by surgery or social conditioning.

In a 2004 article summarizing the results of research related to inter-sex conditions, Paul McHugh, the former chief of psychiatry at Johns Hopkins Hospital (and the coauthor of this report), suggested:

We in the Johns Hopkins Psychiatry Department eventually concluded that human sexual identity is mostly built into our constitution by the genes we inherit and the embryogenesis we undergo. Male hormones sexualize the brain and the mind. Sexual dysphoria—a sense of disquiet in one’s sexual role—naturally occurs amongst those rare males who are raised as females in an effort to correct an infantile genital structural problem.²⁰

We now turn our attention to transgender individuals—children and adults—who choose to identify as a gender different from their biological sex, and explore the meaning of gender identity in this context and what the scientific literature tells us about its development.

Gender Dysphoria

While biological sex is, with very few exceptions, a well-defined, binary trait (male versus female) corresponding to how the body is organized for reproduction, *gender identity* is a more subjective attribute. For most people, their own gender identity is probably not a significant concern; most biological males identify as boys or men, and most biological females identify as girls or women. But some individuals experience an incongruence between their biological sex and their gender identity. If this struggle causes them to seek professional help, then the problem is classified as “gender dysphoria.”

Some male children raised as females, as described in Reiner and colleagues’ 2004 study, came to experience problems with their gender

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identity when their subjective sense of being boys conflicted with being identified and treated as girls by their parents and doctors. The biological sex of the boys was not in question (they had an XY genotype), and the cause of gender dysphoria lay in the fact that they were genetically male, came to identify as male, but had been assigned female gender identities. This suggests that gender identity can be a complex and burdensome issue for those who choose (or have others choose for them) a gender identity opposite their biological sex.

But the cases of gender dysphoria that are the subject of much public debate are those in which individuals come to identify as genders different from those based on their biological sex. These people are usually identified, and describe themselves, as “transgender.”*

According to the fifth edition of the American Psychiatric Association’s *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*, gender dysphoria is marked by “incongruence between one’s experienced/expressed gender and assigned gender,” as well as “clinically significant distress or impairment in social, occupational, or other important areas of functioning.”²¹

It is important to clarify that gender dysphoria is not the same as gender nonconformity or gender identity disorder. Gender nonconformity describes an individual who behaves in a manner contrary to the gender-specific norms of his or her biological sex. As the *DSM-5* notes, most transvestites, for instance, are not transgender—men who dress as women typically do not identify themselves as women.²² (However, certain forms of transvestitism can be associated with late-onset gender dysphoria.²³)

Gender identity disorder, an obsolete term from an earlier version of the *DSM* that was removed in its fifth edition, was used as a psychiatric diagnosis. If we compare the diagnostic criteria for gender dysphoria (the current term) and gender identity disorder (the former term), we see that both require the patient to display “a marked incongruence between one’s

* A note on terminology: In this report, we generally use the term *transgender* to refer to persons for whom there is an incongruity between the gender identity they understand themselves to possess and their biological sex. We use the term *transsexual* to refer to individuals who have undergone medical interventions to transform their appearance to better correspond with that of their preferred gender. The most familiar colloquial term used to describe the medical interventions that transform the appearance of transgender individuals may be “sex change” (or, in the case of surgery, “sex-change operation”), but this is not commonly used in the scientific and medical literature today. While no simple terms for these procedures are completely satisfactory, in this report we employ the commonly used terms *sex reassignment* and *sex-reassignment surgery*, except when quoting a source that uses “gender reassignment” or some other term.

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experienced/expressed gender and assigned gender.”²⁴ The key difference is that a diagnosis of gender dysphoria requires the patient additionally to experience a “clinically significant distress or impairment in social, occupational, or other important areas of functioning” associated with these incongruent feelings.²⁵ Thus the major set of diagnostic criteria used in contemporary psychiatry does not designate all transgender individuals as having a psychiatric disorder. For example, a biological male who identifies himself as a female is not considered to have a psychiatric disorder unless the individual is experiencing significant psychosocial distress at the incongruence. A diagnosis of gender dysphoria may be part of the criteria used to justify sex-reassignment surgery or other clinical interventions. Furthermore, a patient who has had medical or surgical modifications to express his or her gender identity may still suffer from gender dysphoria. It is the nature of the struggle that defines the disorder, not the fact that the expressed gender differs from the biological sex.

There is no scientific evidence that all transgender people have gender dysphoria, or that they are all struggling with their gender identities. Some individuals who are not transgender—that is, who do not identify as a gender that does not correspond with their biological sex—might nonetheless struggle with their gender identity; for example, girls who behave in some male-typical ways might experience various forms of distress without ever coming to identify as boys. Conversely, individuals who do identify as a gender that does not correspond with their biological sex may not experience clinically significant distress related to their gender identity. Even if only, say, 40% of individuals who identify as a gender that does not correspond with their biological sex experience significant distress related to their gender identity, this would constitute a public health issue requiring clinicians and others to act to support those with gender dysphoria, and hopefully, to reduce the rate of gender dysphoria in the population. There is no evidence to suggest that the other 60% in this hypothetical—that is, the individuals who identify as a gender that does not correspond with their biological sex but who do not experience significant distress—would require clinical treatment.

The *DSM*’s concept of subjectively “experiencing” one’s gender as incongruent from one’s biological sex may require more critical scrutiny and possibly modification. The exact definition of gender dysphoria, however well-intentioned, is somewhat vague and confusing. It does not account for individuals who self-identify as transgender but do not experience dysphoria associated with their gender identity and who seek psychiatric care for functional impairment for problems unrelated to their

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gender identity, such as anxiety or depression. They may then be mislabeled as having gender dysphoria simply because they have a desire to be identified as a member of the opposite gender, when they have come to a satisfactory resolution, subjectively, with this incongruence and may be depressed for reasons having nothing to do with their gender identity.

The *DSM-5* criteria for a diagnosis of gender dysphoria in children are defined in a “more concrete, behavioral manner than those for adolescents and adults.”²⁶ This is to say that some of the diagnostic criteria for gender dysphoria in children refer to behaviors that are stereotypically associated with the opposite gender. Clinically significant distress is still necessary for a diagnosis of gender dysphoria in children, but some of the other diagnostic criteria include, for instance, a “strong preference for the toys, games, or activities stereotypically used or engaged in by the other gender.”²⁷ What of girls who are “tomboys” or boys who are not oriented toward violence and guns, who prefer quieter play? Should parents worry that their tomboy daughter is really a boy stuck in a girl’s body? There is no scientific basis for believing that playing with toys typical of boys defines a child as a boy, or that playing with toys typical of girls defines a child as a girl. The *DSM-5* criterion for diagnosing gender dysphoria by reference to gender-typical toys is unsound; it appears to ignore the fact that a child could display an *expressed* gender—manifested by social or behavioral traits—incongruent with the child’s biological sex but without *identifying* as the opposite gender. Furthermore, even for children who do identify as a gender opposite their biological sex, diagnoses of gender dysphoria are simply unreliable. The reality is that they may have psychological difficulties in accepting their biological sex as their gender. Children can have difficulty with the expectations associated with those gender roles. Traumatic experiences can also cause a child to express distress with the gender associated with his or her biological sex.

Gender identity problems can also arise with intersex conditions (the presence of ambiguous genitalia due to genetic abnormalities), which we discussed earlier. These disorders of sex development, while rare, can contribute to gender dysphoria in some cases.²⁸ Some of these conditions include complete androgen insensitivity syndrome, where individuals with XY (male) chromosomes lack receptors for male sex hormones, leading them to develop the secondary sex characteristics of females, rather than males (though they lack ovaries, do not menstruate, and are consequently sterile).²⁹ Another hormonal disorder of sex development that can lead to individuals developing in ways that are not typical of their genetic sex include congenital adrenal hyperplasia, a condition that can

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masculinize XX (female) fetuses.³⁰ Other rare phenomena such as genetic mosaicism³¹ or chimerism,³² where some cells in the individual's bodies contain XX chromosomes and others contain XY chromosomes, can lead to considerable ambiguity in sex characteristics, including individuals who possess both male and female gonads and sex organs.

While there are many cases of gender dysphoria that are not associated with these identifiable intersex conditions, gender dysphoria may still represent a different type of intersex condition in which the primary sex characteristics such as genitalia develop normally while secondary sex characteristics associated with the brain develop along the lines of the opposite sex. Controversy exists over influences determining the nature of neurological, psychological, and behavioral sex differences. The emerging consensus is that there may be some differences in patterns of neurological development in- and ex-utero for men and women.³³ Therefore, in theory, transgender individuals could be subject to conditions allowing a more female-type brain to develop within a genetic male (having the XY chromosomal patterns), and vice versa. However, as we will show in the next section, the research supporting this idea is quite minimal.

As a way of surveying the biological and social science research on gender dysphoria, we can list some of the important questions. Are there biological factors that influence the development of a gender identity that does not correspond with one's biological sex? Are some individuals born with a gender identity different from their biological sex? Is gender identity shaped by environmental or nurturing conditions? How stable are choices of gender identity? How common is gender dysphoria? Is it persistent across the lifespan? Can a little boy who thinks he is a little girl change over the course of his life to regard himself as male? If so, how often can such people change their gender identities? How would someone's gender identity be measured scientifically? Does self-understanding suffice? Does a biological girl become a gender boy by believing, or at least stating, she is a little boy? Do people's struggles with a sense of incongruity between their gender identity and biological sex persist over the life course? Does gender dysphoria respond to psychiatric interventions? Should those interventions focus on affirming the gender identity of the patient or take a more neutral stance? Do efforts to hormonally or surgically modify an individual's primary or secondary sex characteristics help resolve gender dysphoria? Does modification create further psychiatric problems for some of those diagnosed with gender dysphoria, or does it typically resolve existing psychiatric problems? We broach a few of these critical questions in the following sections.

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Gender and Physiology

Robert Sapolsky, a Stanford professor of biology who has done extensive neuroimaging research, suggested a possible neurobiological explanation for cross-gender identification in a 2013 *Wall Street Journal* article, “Caught Between Male and Female.” He asserted that recent neuroimaging studies of the brains of transgender adults suggest that they may have brain structures more similar to their gender identity than to their biological sex.³⁴ Sapolsky bases this assertion on the fact that there are differences between male and female brains, and while the differences are “small and variable,” they “probably contribute to the sex differences in learning, emotion and socialization.”³⁵ He concludes: “The issue isn’t that sometimes people believe they are of a different gender than they actually are. Remarkably, instead, it’s that sometimes people are born with bodies whose gender is different from what they actually are.”³⁶ In other words, he claims that some people can have a female-type brain in a male body, or vice versa.

While this kind of neurobiological theory of cross-gender identification remains outside of the scientific mainstream, it has recently received scientific and popular attention. It provides a potentially attractive explanation for cross-gender identification, especially for individuals who are not affected by any known genetic, hormonal, or psychosocial abnormalities.³⁷ However, while Sapolsky may be right, there is fairly little support in the scientific literature for his contention. His neurological explanation for differences between male and female brains and those differences’ possible relevance to cross-gender identification warrant further scientific consideration.

There are many small studies that attempt to define causal factors of the experience of incongruence between one’s biological sex and felt gender. These studies are described in the following pages, each pointing to an influence that may contribute to the explanation for cross-gender identification.

Nancy Segal, a psychologist and geneticist, researched two case studies of identical twins discordant for female-to-male (FtM) transsexualism.³⁸ Segal notes that, according to another, earlier study that conducted nonclinical interviews with 45 FtM transsexuals, 60% suffered some form of childhood abuse, with 31% experiencing sexual abuse, 29% experiencing emotional abuse, and 38% physical abuse.³⁹ However, this earlier study did not include a control group and was limited by its small sample size, making it difficult to extract significant interactions, or generalizations, from the data.

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Segal's own first case study was of a 34-year-old FtM twin, whose identical twin sister was married and the mother of seven children.⁴⁰ Several stressful events had occurred during the twins' mother's pregnancy, and they were born five weeks prematurely. When they were eight years old, their parents divorced. The FtM twin exhibited gender-nonconforming behavior early and it persisted throughout childhood. She became attracted to other girls in junior high school and as a teenager attempted suicide several times. She reported physical abuse and emotional abuse at the hand of her mother. The twins were raised in a Mormon household, in which transsexuality was not tolerated.⁴¹ The twin sister had never questioned her gender identity but did experience some depression. For Segal, the FtM twin's gender nonconformity and abuse in childhood were factors that contributed to gender dysphoria; the other twin was not subject to the same stressors in childhood, and did not develop issues around her gender identity. Segal's second case study also concerned identical twins with one twin transitioning from female to male.⁴² This FtM twin had early-onset nonconforming behaviors and attempted suicide as a young adult. At age 29 she underwent reassignment surgery, was well supported by family, met a woman, and married. As in the first case, the other twin was reportedly always secure in her female gender identity.

Segal speculates that each set of twins may have had uneven prenatal androgen exposures (though her study did not offer evidence to support this)⁴³ and concludes that "Transsexualism is unlikely to be associated with a major gene, but is likely to be associated with multiple genetic, epigenetic, developmental and experiential influences."⁴⁴ Segal is critical of the notion that the maternal abuse experienced by the FtM twin in her first case study may have played a causal role in the twin's "atypical gender identification" since the abuse "apparently *followed*" the twin's gender-atypical behaviors—though Segal acknowledges "it is possible that this abuse reinforced his already atypical gender identification."⁴⁵ These case studies, while informative, are not scientifically strong, and do not provide direct evidence for any causal hypotheses about the origins of atypical gender identification.

A source of more information—but also inadequate to make direct causal inferences—is a case analysis by Mayo Clinic psychiatrists J. Michael Bostwick and Kari A. Martin of an intersex individual born with ambiguous genitalia who was operated on and raised as a female.⁴⁶ By way of offering some background, the authors draw a distinction between gender identity disorder (an "inconsistency between perceived gender identity and phenotypic sex" that generally involves "no discernible neuroendocri-

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nological abnormality”⁴⁷), and intersexuality (a condition in which biological features of both sexes are present). They also provide a summary and classification scheme of the various types of intersex disorders. After a thorough discussion of the various intersex developmental issues that can lead to a disjunction between the brain and body, the authors acknowledge that “Some adult patients with severe dysphoria—transsexuals—have neither history nor objective findings supporting a known biological cause of brain-body disjunction.”⁴⁸ These patients require thorough medical and psychiatric attention to avoid gender dysphoria.

After this helpful summary, the authors state that “Absent psychosis or severe character pathology, patients’ subjective assertions are presently the most reliable standards for delineating core gender identity.”⁴⁹ But it is not clear how we could consider subjective assertions more reliable in establishing gender identity, unless gender identity is defined as a completely subjective phenomenon. The bulk of the article is devoted to describing the various objectively discernible and identifiable ways in which one’s identity as a male or female is imprinted on the nervous and endocrine system. Even when something goes wrong with the development of external genitalia, individuals are more likely to act in accordance with their chromosomal and hormonal makeup.⁵⁰

In 2011, Giuseppina Rametti and colleagues from various research centers in Spain used MRI to study the brain structures of 18 FtM transsexuals who exhibited gender nonconformity early in life and experienced sexual attraction to females prior to hormone treatment.⁵¹ The goal was to learn whether their brain features corresponded more to their biological sex or to their sense of gender identity. The control group consisted of 24 male and 19 female heterosexuals with gender identities conforming to their biological sex. Differences were noted in the white matter microstructure of specific brain areas. In untreated FtM transsexuals, that structure was more similar to that of heterosexual males than to that of heterosexual females in three of four brain areas.⁵² In a complementary study, Rametti and colleagues compared 18 MtF transsexuals to 19 female and 19 male heterosexual controls.⁵³ These MtF transsexuals had white matter tract averages in several brain areas that fell between the averages of the control males and the control females. The values, however, were typically closer to the males (that is, to those that shared their biological sex) than to the females in most areas.⁵⁴ In controls the authors found that, as expected, the males had greater amounts of gray and white matter and higher volumes of cerebrospinal fluid than control females. The MtF transsexual brain volumes

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were all similar to those of male controls and significantly different from those of females.⁵⁵

Overall, the findings of these studies by Rametti and colleagues do not sufficiently support the notion that transgender individuals have brains more similar to their preferred gender than to the gender corresponding with their biological sex. Both studies are limited by small sample sizes and lack of a prospective hypothesis—both analyzed the MRI data to find the gender differences and then looked to see where the data from transgender subjects fit.

Whereas both of these MRI studies looked at brain *structure*, a functional MRI study by Emiliano Santarnecchi and colleagues from the University of Siena and the University of Florence looked at brain *function*, examining gender-related differences in spontaneous brain activity during the resting state.⁵⁶ The researchers compared a single FtM individual (declared cross-gender since childhood), and control groups of 25 males and 25 females, with regard to spontaneous brain activity. The FtM individual demonstrated a “brain activity profile more close to his biological sex than to his desired one,” and based in part on this result the authors concluded that “untreated FtM transsexuals show a functional connectivity profile comparable to female control subjects.”⁵⁷ With a sample size of one, this study’s statistical power is virtually zero.

In 2013, Hsaio-Lun Ku and colleagues from various medical centers and research institutes in Taiwan also conducted functional brain imaging studies. They compared the brain activity of 41 transsexuals (21 FtMs, 20 MtFs) and 38 matched heterosexual controls (19 males and 19 females).⁵⁸ Arousal response of each cohort while viewing neutral as compared to erotic films was compared between groups. All of the transsexuals in the study reported sexual attractions to members of their natal, biological sex, and exhibited more sexual arousal than heterosexual controls when viewing erotic films that depicted sexual activity between subjects sharing their biological sex. A “selfness” score was also incorporated into the study, in which the researchers asked participants to “rate the degree to which you identify yourself as the male or female in the film.”⁵⁹ The transsexuals in the study identified with those of their preferred gender more than the controls identified with those of their biological gender, in both erotic films and neutral films. The heterosexual controls did not identify themselves with either males or females in either of the film types. Ku and colleagues claim to have demonstrated characteristic brain patterns for sexual attraction as related to biological sex but did not make meaningful neurobiological gender-identity comparisons among the three cohorts. In

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addition, they reported findings that transsexuals demonstrated psychosocial maladaptive defensive styles.

A 2008 study by Hans Berglund and colleagues from Sweden's Karolinska Institute and Stockholm Brain Institute used PET and fMRI scans to compare brain-area activation patterns in 12 MtF transgendered individuals who were sexually attracted to women with those of 12 heterosexual women and 12 heterosexual men.⁶⁰ The first set of subjects took no hormones and had not undergone sex-reassignment surgery. The experiment involved smelling odorous steroids thought to be female pheromones, and other sexually neutral odors such as lavender oil, cedar oil, eugenol, butanol, and odorless air. The results were varied and mixed between the groups for the various odors, which should not be surprising, since *post hoc* analyses usually lead to contradictory findings.

In summary, the studies presented above show inconclusive evidence and mixed findings regarding the brains of transgender adults. Brain-activation patterns in these studies do not offer sufficient evidence for drawing sound conclusions about possible associations between brain activation and sexual identity or arousal. The results are conflicting and confusing. Since the data by Ku and colleagues on brain-activation patterns are not universally associated with a particular sex, it remains unclear whether and to what extent neurobiological findings say anything meaningful about gender identity. It is important to note that regardless of their findings, studies of this kind cannot support any conclusion that individuals come to identify as a gender that does not correspond to their biological sex because of an innate, biological condition of the brain.

The question is not simply whether there are differences between the brains of transgender individuals and people identifying with the gender corresponding to their biological sex, but whether gender identity is a fixed, innate, and biological trait, even when it does not correspond to biological sex, or whether environmental or psychological causes contribute to the development of a sense of gender identity in such cases. Neurological differences in transgender adults might be the consequence of biological factors such as genes or prenatal hormone exposure, or of psychological and environmental factors such as childhood abuse, or they could result from some combination of the two. There are no serial, longitudinal, or prospective studies looking at the brains of cross-gender identifying children who develop to later identify as transgender adults. Lack of this research severely limits our ability to understand causal relationships between brain morphology, or functional activity, and the later development of gender identity different from biological sex.

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More generally, it is now widely recognized among psychiatrists and neuroscientists who engage in brain imaging research that there are inherent and ineradicable methodological limitations of *any* neuroimaging study that simply associates a particular trait, such as a certain behavior, with a particular brain morphology.⁶¹ (And when the trait in question is not a concrete behavior but something as elusive and vague as “gender identity,” these methodological problems are even more serious.) These studies cannot provide statistical evidence nor show a plausible biological mechanism strong enough to support *causal connections* between a brain feature and the trait, behavior, or symptom in question. To support a conclusion of causality, even epidemiological causality, we need to conduct prospective longitudinal panel studies of a fixed set of individuals across the course of sexual development if not their lifespan.

Studies like these would use serial brain images at birth, in childhood, and at other points along the developmental continuum, to see whether brain morphology findings were there from the beginning. Otherwise, we cannot establish whether certain brain features caused a trait, or whether the trait is innate and perhaps fixed. Studies like those discussed above of individuals who already exhibit the trait are incapable of distinguishing between *causes* and *consequences* of the trait. In most cases transgender individuals have been acting and thinking for years in ways that, through learned behavior and associated neuroplasticity, may have produced brain changes that could differentiate them from other members of their biological or natal sex. The only definitive way to establish epidemiological causality between a brain feature and a trait (especially one as complex as gender identity) is to conduct prospective, longitudinal, preferably randomly sampled and population-based studies.

In the absence of such prospective longitudinal studies, large representative population-based samples with adequate statistical controls for confounding factors may help narrow the possible causes of a behavioral trait and thereby increase the probability of identifying a neurological cause.⁶² However, because the studies conducted thus far use small convenience samples, none of them is especially helpful for narrowing down the options for causality. To obtain a better study sample, we would need to include neuroimaging in large-scale epidemiological studies. In fact, given the small number of transgender individuals in the general population,⁶³ the studies would need to be prohibitively large to attain findings that would reach statistical significance.

Moreover, if a study found significant differences between these groups—that is, a number of differences higher than what would be

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expected by chance alone—these differences would refer to the average in a population of each group. Even if these two *groups* differed significantly for all 100 measurements, it would not necessarily indicate a biological difference among *individuals* at the extremes of the distribution. Thus, a randomly selected transgender individual and a randomly selected non-transgender individual might not differ on any of these 100 measurements. Additionally, since the probability that a randomly selected person from the general population will be transgender is quite small, statistically significant differences in the sample means are not sufficient evidence to conclude that a particular measurement is predictive of whether the person is transgender or not. If we measured the brain of an infant, toddler, or adolescent and found this individual to be closer to one cohort than another on these measures, it would not imply that this individual would grow up to identify as a member of that cohort. It may be helpful to keep this caveat in mind when interpreting research on transgender individuals.

In this context, it is important to note that there are no studies that demonstrate that any of the biological differences being examined have predictive power, and so all interpretations, usually in popular outlets, claiming or suggesting that a statistically significant difference between the brains of people who are transgender and those who are not is the cause of being transgendered or not—that is to say, that the biological differences determine the differences in gender identity—are unwarranted.

In short, the current studies on associations between brain structure and transgender identity are small, methodologically limited, inconclusive, and sometimes contradictory. Even if they were more methodologically reliable, they would be insufficient to demonstrate that brain structure is a cause, rather than an effect, of the gender-identity behavior. They would likewise lack predictive power, the real challenge for any theory in science.

For a simple example to illustrate this point, suppose we had a room with 100 people in it. Two of them are transgender and all others are not. I pick someone at random and ask you to guess the person's gender identity. If you know that 98 out of 100 of the individuals are not transgender, the safest bet would be to guess that the individual is not transgender, since that answer will be correct 98% of the time. Suppose, then, that you have the opportunity to ask questions about the neurobiology and about the natal sex of the person. Knowing the biology only helps in predicting whether the individual is transgender if it can improve on the original guess that the person is not transgender. So if knowing a characteristic of the individual's brain does not improve the ability to predict what group the patient belongs to, then the fact that the two groups differ at the mean is almost irrelevant.

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Improving on the original prediction is very difficult for a rare trait such as being transgender, because the probability of that prediction being correct is already very high. If there really were a clear difference between the brains of transgender and non-transgender individuals, akin to the biological differences between the sexes, then improving on the original guess would be relatively easy. Unlike the differences between the sexes, however, there are no biological features that can reliably identify transgender individuals as different from others.

The consensus of scientific evidence overwhelmingly supports the proposition that a physically and developmentally normal boy or girl is indeed what he or she appears to be at birth. The available evidence from brain imaging and genetics does not demonstrate that the development of gender identity as different from biological sex is innate. Because scientists have not established a solid framework for understanding the causes of cross-gender identification, ongoing research should be open to psychological and social causes, as well as biological ones.

Transgender Identity in Children

In 2012, the *Washington Post* featured a story by Petula Dvorak, “Transgender at five,”⁶⁴ about a girl who at the age of 2 years began insisting that she was a boy. The story recounts her mother’s interpretation of this behavior: “Her little girl’s brain was different. Jean [her mother] could tell. She had heard about transgender people, those who are one gender physically but the other gender mentally.” The story recounts this mother’s distressed experiences as she began researching gender identity problems in children and came to understand other parents’ experiences:

Many talked about their painful decision to allow their children to publicly transition to the opposite gender—a much tougher process for boys who wanted to be girls. Some of what Jean heard was reassuring: Parents who took the plunge said their children’s behavior problems largely disappeared, schoolwork improved, happy kid smiles returned. But some of what she heard was scary: children taking puberty blockers in elementary school and teens embarking on hormone therapy before they’d even finished high school.⁶⁵

The story goes on to describe how the sister, Moyin, of the transgender child Tyler (formerly Kathryn) made sense of her sibling’s identity:

Tyler’s sister, who’s 8, was much more casual about describing her transgender sibling. “It’s just a boy mind in a girl body,” Moyin

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explained matter-of-factly to her second-grade classmates at her private school, which will allow Tyler to start kindergarten as a boy, with no mention of Kathryn.⁶⁶

The remarks from the child's sister encapsulate the popular notion regarding gender identity: transgender individuals, or children who meet the diagnostic criteria for gender dysphoria, are simply "a boy mind in a girl body," or vice versa. This view implies that gender identity is a persistent and innate feature of human psychology, and it has inspired a gender-affirming approach to children who experience gender identity issues at an early age.

As we have seen above in the overview of the neurobiological and genetic research on the origins of gender identity, there is little evidence that the phenomenon of transgender identity has a biological basis. There is also little evidence that gender identity issues have a high rate of persistence in children. According to the *DSM-5*, "In natal [biological] males, persistence [of gender dysphoria] has ranged from 2.2% to 30%. In natal females, persistence has ranged from 12% to 50%."⁶⁷ Scientific data on persistence of gender dysphoria remains sparse due to the very low prevalence of the disorder in the general population, but the wide range of findings in the literature suggests that there is still much that we do not know about why gender dysphoria persists or desists in children. As the *DSM-5* entry goes on to note, "It is unclear if children 'encouraged' or supported to live socially in the desired gender will show higher rates of persistence, since such children have not yet been followed longitudinally in a systematic manner."⁶⁸ There is a clear need for more research in these areas, and for parents and therapists to acknowledge the great uncertainty regarding how to interpret the behavior of these children.

Therapeutic Interventions in Children

With the uncertainty surrounding the diagnosis of and prognosis for gender dysphoria in children, therapeutic decisions are particularly complex and difficult. Therapeutic interventions for children must take into account the probability that the children may outgrow cross-gender identification. University of Toronto researcher and therapist Kenneth Zucker believes that family and peer dynamics can play a significant role in the development and persistence of gender-nonconforming behavior, writing that

it is important to consider both predisposing and perpetuating factors that might inform a clinical formulation and the development of

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a therapeutic plan: the role of temperament, parental reinforcement of cross-gender behavior during the sensitive period of gender identity formation, family dynamics, parental psychopathology, peer relationships and the multiple meanings that might underlie the child's fantasy of becoming a member of the opposite sex.⁶⁹

Zucker worked for years with children experiencing feelings of gender incongruence, offering psychosocial treatments to help them embrace the gender corresponding with their biological sex—for instance, talk therapy, parent-arranged play dates with same-sex peers, therapy for co-occurring psychopathological issues such as autism spectrum disorder, and parent counseling.⁷⁰

In a follow-up study by Zucker and colleagues of children treated by them over the course of thirty years at the Center for Mental Health and Addiction in Toronto, they found that gender identity disorder persisted in only 3 of the 25 girls they had treated.⁷¹ (Zucker's clinic was closed by the Canadian government in 2015.⁷²)

An alternative to Zucker's approach that emphasizes affirming the child's preferred gender identity has become more common among therapists.⁷³ This approach involves helping the children to self-identify even more with the gender label they prefer at the time. One component of the gender-affirming approach has been the use of hormone treatments for adolescents in order to delay the onset of sex-typical characteristics during puberty and alleviate the feelings of dysphoria the adolescents will experience as their bodies develop sex-typical characteristics that are at odds with the gender with which they identify. There is relatively little evidence for the therapeutic value of these kinds of puberty-delaying treatments, but they are currently the subject of a large clinical study sponsored by the National Institutes of Health.⁷⁴

While epidemiological data on the outcomes of medically delayed puberty is quite limited, referrals for sex-reassignment hormones and surgical procedures appear to be on the rise, and there is a push among many advocates to proceed with sex reassignment at younger ages. According to a 2013 article in *The Times* of London, the United Kingdom saw a 50% increase in the number of children referred to gender dysphoria clinics from 2011 to 2012, and a nearly 50% increase in referrals among adults from 2010 to 2012.⁷⁵ Whether this increase can be attributed to rising rates of gender confusion, rising sensitivity to gender issues, growing acceptance of therapy as an option, or other factors, the increase itself is concerning, and merits further scientific inquiry into the family dynamics

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and other potential problems, such as social rejection or developmental issues, that may be taken as signs of childhood gender dysphoria.

A study of psychological outcomes following puberty suppression and sex-reassignment surgery, published in the journal *Pediatrics* in 2014 by child and adolescent psychiatrist Annelou L. C. de Vries and colleagues, suggested improved outcomes for individuals after receiving these interventions, with well-being improving to a level similar to that of young adults from the general population.⁷⁶ This study looked at 55 transgender adolescents and young adults (22 MtF and 33 FtM) from a Dutch clinic who were assessed three times: before the start of puberty suppression (mean age: 13.6 years), when cross-sex hormones were introduced (mean age: 16.7 years), and at least one year after sex-reassignment surgery (mean age: 20.7 years). The study did not provide a matched group for comparison—that is, a group of transgender adolescents who did not receive puberty-blocking hormones, cross-sex hormones, and/or sex-reassignment surgery—which makes comparisons of outcomes more difficult.

In the study cohort, gender dysphoria improved over time, body image improved on some measures, and overall functioning improved modestly. Due to the lack of a matched control group it is unclear whether these changes are attributable to the procedures or would have occurred in this cohort without the medical and surgical interventions. Measures of anxiety, depression, and anger showed some improvements over time, but these findings did not reach statistical significance. While this study suggested some improvements over time in this cohort, particularly the reported subjective satisfaction with the procedures, detecting significant differences would require the study to be replicated with a matched control group and a larger sample size. The interventions also included care from a multidisciplinary team of medical professionals, which could have had a beneficial effect. Future studies of this kind would ideally include long-term follow-ups that assess outcomes and functioning beyond the late teens or early twenties.

Therapeutic Interventions in Adults

The potential that patients undergoing medical and surgical sex reassignment may want to return to a gender identity consistent with their biological sex suggests that reassignment carries considerable psychological and physical risk, especially when performed in childhood, but also in adulthood. It suggests that the patients' pre-treatment beliefs about an ideal post-treatment life may sometimes go unrealized.

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In 2004, Birmingham University's Aggressive Research Intelligence Facility (Arif) assessed the findings of more than one hundred follow-up studies of post-operative transsexuals.⁷⁷ An article in *The Guardian* summarized the findings:

Arif...concludes that none of the studies provides conclusive evidence that gender reassignment is beneficial for patients. It found that most research was poorly designed, which skewed the results in favour of physically changing sex. There was no evaluation of whether other treatments, such as long-term counselling, might help transsexuals, or whether their gender confusion might lessen over time. Arif says the findings of the few studies that have tracked significant numbers of patients over several years were flawed because the researchers lost track of at least half of the participants. The potential complications of hormones and genital surgery, which include deep vein thrombosis and incontinence respectively, have not been thoroughly investigated, either. "There is huge uncertainty over whether changing someone's sex is a good or a bad thing," says Dr Chris Hyde, director of Arif. "While no doubt great care is taken to ensure that appropriate patients undergo gender reassignment, there's still a large number of people who have the surgery but remain traumatized—often to the point of committing suicide."⁷⁸

The high level of uncertainty regarding various outcomes after sex-reassignment surgery makes it difficult to find clear answers about the effects on patients of reassignment surgery. Since 2004, there have been other studies on the efficacy of sex-reassignment surgery, using larger sample sizes and better methodologies. We will now examine some of the more informative and reliable studies on outcomes for individuals receiving sex-reassignment surgery.

As far back as 1979, Jon K. Meyer and Donna J. Reter published a longitudinal follow-up study on the overall well-being of adults who underwent sex-reassignment surgery.⁷⁹ The study compared the outcomes of 15 people who received surgery with those of 35 people who requested but did not receive surgery (14 of these individuals eventually received surgery later, resulting in three cohorts of comparison: operated, not-operated, and operated later). Well-being was quantified using a scoring system that assessed psychiatric, economic, legal, and relationship outcome variables. Scores were determined by the researchers after performing interviews with the subjects. Average follow-up time was approximately five years for subjects who had sex change surgery, and about two years for those subjects who did not.

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Compared to their condition before surgery, the individuals who had undergone surgery appeared to show some improvement in well-being, though the results had a fairly low level of statistical significance. Individuals who had no surgical intervention did display a statistically significant improvement at follow-up. However, there was no statistically significant difference between the two groups' scores of well-being at follow-up. The authors concluded that "sex reassignment surgery confers no objective advantage in terms of social rehabilitation, although it remains subjectively satisfying to those who have rigorously pursued a trial period and who have undergone it."⁸⁰ This study led the psychiatry department at Johns Hopkins Medical Center (JHMC) to discontinue surgical interventions for sex changes for adults.⁸¹

However, the study has important limitations. Selection bias was introduced in the study population, because the subjects were drawn from those individuals who sought sex-reassignment surgery at JHMC. In addition, the sample size was small. Also, the individuals who did not undergo sex-reassignment surgery but presented to JHMC for it did not represent a true control group. Random assignment of the surgical procedure was not possible. Large differences in the average follow-up time between those who underwent surgery and those who did not further reduces any capacity to draw valid comparisons between the two groups. Additionally, the study's methodology was also criticized for the somewhat arbitrary and idiosyncratic way it measured the well-being of its subjects. Cohabitation or any form of contact with psychiatric services were scored as equally negative factors as having been arrested.⁸²

In 2011, Cecilia Dhejne and colleagues from the Karolinska Institute and Gothenburg University in Sweden published one of the more robust and well-designed studies to examine outcomes for persons who underwent sex-reassignment surgery. Focusing on mortality, morbidity, and criminality rates, the matched cohort study compared a total of 324 transsexual persons (191 MtFs, 133 FtMs) who underwent sex reassignment between 1973 and 2003 to two age-matched controls: people of the same sex as the transsexual person at birth, and people of the sex to which the individual had been reassigned.⁸³

Given the relatively low number of transsexual persons in the general population, the size of this study is impressive. Unlike Meyer and Reter, Dhejne and colleagues did not seek to evaluate the patient satisfaction after sex-reassignment surgery, which would have required a control group of transgender persons who desired to have sex-reassignment surgery but did not receive it. Also, the study did not compare outcome

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variables before and after sex-reassignment surgery; only outcomes after surgery were evaluated. We need to keep these caveats in mind as we look at what this study found.

Dhejne and colleagues found statistically significant differences between the two cohorts on several of the studied rates. For example, the postoperative transsexual individuals had an approximately three times higher risk for psychiatric hospitalization than the control groups, even after adjusting for prior psychiatric treatment.⁸⁴ (However, the risk of being hospitalized for substance abuse was not significantly higher after adjusting for prior psychiatric treatment, as well as other covariates.) Sex-reassigned individuals had nearly a three times higher risk of all-cause mortality after adjusting for covariates, although the elevated risk was significant only for the time period of 1973–1988.⁸⁵ Those undergoing surgery during this period were also at increased risk of being convicted of a crime.⁸⁶ Most alarmingly, sex-reassigned individuals were 4.9 times more likely to attempt suicide and 19.1 times more likely to die by suicide compared to controls.⁸⁷ “Mortality from suicide was strikingly high among sex-reassigned persons, including after adjustment for prior psychiatric morbidity.”⁸⁸

The study design precludes drawing inferences “as to the effectiveness of sex reassignment as a treatment for transsexualism,” although Dhejne and colleagues state that it is possible that “things might have been even worse without sex reassignment.”⁸⁹ Overall, post-surgical mental health was quite poor, as indicated especially by the high rate of suicide attempts and all-cause mortality in the 1973–1988 group. (It is worth noting that for the transsexuals in the study who underwent sex reassignment from 1989 to 2003, there were of course fewer years of data available at the time the study was conducted than for those transsexuals from the earlier period. The rates of mortality, morbidity, and criminality in the later group may in time come to resemble the elevated risks of the earlier group.) In summary, this study suggests that sex-reassignment surgery may not rectify the comparatively poor health outcomes associated with transgender populations in general. Still, because of the limitations of this study mentioned above, the results also cannot establish that sex-reassignment surgery causes poor health outcomes.

In 2009, Annette Kuhn and colleagues from the University Hospital and University of Bern in Switzerland examined post-surgery quality of life in 52 MtF and 3 FtM transsexuals fifteen years after sex-reassignment surgery.⁹⁰ This study found considerably lower general life satisfaction in post-surgical transsexuals as compared with females who had at least one

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pelvic surgery in the past. The postoperative transsexuals reported lower satisfaction with their general quality of health and with some of the personal, physical, and social limitations they experienced with incontinence that resulted as a side effect of the surgery. Again, inferences cannot be drawn from this study regarding the efficacy of sex-reassignment surgery due to the lack of a control group of transgender individuals who did not receive sex-reassignment surgery.

In 2010, Mohammad Hassan Murad and colleagues from the Mayo Clinic published a systematic review of studies on the outcomes of hormonal therapies used in sex-reassignment procedures, finding that there was “very low quality evidence” that sex reassignment via hormonal interventions “likely improves gender dysphoria, psychological functioning and comorbidities, sexual function and overall quality of life.”⁹¹ The authors identified 28 studies that together examined 1,833 patients who underwent sex-reassignment procedures that included hormonal interventions (1,093 male-to-female, 801 female-to-male).⁹² Pooling data across studies showed that, after receiving sex-reassignment procedures, 80% of patients reported improvement in gender dysphoria, 78% reported improvement in psychological symptoms, and 80% reported improvement in quality of life.⁹³ None of the studies included the bias-limiting measure of randomization (that is, in none of the studies were sex-reassignment procedures assigned randomly to some patients but not to others), and only three of the studies included control groups (that is, patients who were not provided the treatment to serve as comparison cases for those who did).⁹⁴ Most of the studies examined in Murad and colleagues’ review reported improvements in psychiatric comorbidities and quality of life, though notably suicide rates remained higher for individuals who had received hormone treatments than for the general population, despite reductions in suicide rates following the treatments.⁹⁵ The authors also found that there were some exceptions to reports of improvements in mental health and satisfaction with sex-reassignment procedures; in one study, 3 of 17 individuals regretted the procedure with 2 of these 3 seeking reversal procedures,⁹⁶ and four of the studies reviewed reported worsening quality of life, including continuing social isolation, lack of improvement in social relationships, and dependence on government welfare programs.⁹⁷

The scientific evidence summarized suggests we take a skeptical view toward the claim that sex-reassignment procedures provide the hoped-for benefits or resolve the underlying issues that contribute to elevated mental health risks among the transgender population. While we work to stop maltreatment and misunderstanding, we should also work to study

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and understand whatever factors may contribute to the high rates of suicide and other psychological and behavioral health problems among the transgender population, and to think more clearly about the treatment options that are available.

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53. Giuseppina Rametti *et al.*, “The microstructure of white matter in male to female transsexuals before cross-sex hormonal treatment. A DTI study,” *Journal of Psychiatric Research* 45, no. 7 (2011): 949–954, <http://dx.doi.org/10.1016/j.jpsychires.2010.11.007>.

54. *Ibid.*, 952.

55. *Ibid.*, 951.

56. Emiliano Santarnecchi *et al.*, “Intrinsic Cerebral Connectivity Analysis in an Untreated Female-to-Male Transsexual Subject: A First Attempt Using Resting-State fMRI,” *Neuroendocrinology* 96, no. 3 (2012): 188–193, <http://dx.doi.org/10.1159/000342001>.

57. *Ibid.*, 188.

58. Hsiao-Lun Ku *et al.*, “Brain Signature Characterizing the Body-Brain-Mind Axis of Transsexuals,” *PLOS ONE* 8, no. 7 (2013): e70808, <http://dx.doi.org/10.1371/journal.pone.0070808>.

59. *Ibid.*, 2.

60. Hans Berglund *et al.*, “Male-to-Female Transsexuals Show Sex-Atypical Hypothalamus Activation When Smelling Odorous Steroids,” *Cerebral Cortex* 18, no. 8 (2008): 1900–1908, <http://dx.doi.org/10.1093/cercor/bhm216>.

61. See, for example, Sally Satel and Scott D. Lilienfeld, *Brainwashed: The Seductive Appeal*

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of *Mindless Neuroscience*, (New York: Basic Books, 2013).

62. An additional clarification may be helpful with regard to research studies of this kind. Significant differences in the means of sample populations do not entail predictive power of any consequence. Suppose that we made 100 different types of brain measurements in cohorts of transgender and non-transgender individuals, and then calculated the means of each of those 100 variables for both cohorts. Statistical theory tells us that, due to mere chance, we can (on average) expect the two cohorts to differ significantly in the means of 5 of those 100 variables. This implies that if the significant differences are about 5 or fewer out of 100, these differences could easily be by chance and therefore we should not ignore the fact that 95 other measurements failed to find significant differences.

63. One recent paper estimates that 0.6% of the adult U.S. population is transgender. See Andrew R. Flores *et al.*, “How Many Adults Identify as Transgender in the United States?” (white paper), Williams Institute, UCLA School of Law, June 30, 2016, <http://williamsinstitute.law.ucla.edu/wp-content/uploads/How-Many-Adults-Identify-as-Transgender-in-the-United-States.pdf>.

64. Petula Dvorak, “Transgender at five,” *Washington Post*, May 19, 2012, https://www.washingtonpost.com/local/transgender-at-five/2012/05/19/gIQABfFkbU_story.html.

65. *Ibid.*

66. *Ibid.*

67. American Psychiatric Association, “Gender Dysphoria,” *DSM-5*, 455. Note: Although the quotation comes from the *DSM-5* entry for “gender dysphoria” and implies that the listed persistence rates apply to that precise diagnosis, the diagnosis of gender dysphoria was formalized by the *DSM-5*, so some of the studies from which the persistence rates were drawn may have employed earlier diagnostic criteria.

68. *Ibid.*, 455.

69. Kenneth J. Zucker, “Children with gender identity disorder: Is there a best practice?,” *Neuropsychiatrie de l’Enfance et de l’Adolescence* 56, no. 6 (2008): 363, <http://dx.doi.org/10.1016/j.neurenf.2008.06.003>.

70. Kenneth J. Zucker *et al.*, “A Developmental, Biopsychosocial Model for the Treatment of Children with Gender Identity Disorder,” *Journal of Homosexuality* 59, no. 2 (2012), <http://dx.doi.org/10.1080/00918369.2012.653309>. For an accessible summary of Zucker’s approach to treating gender dysphoria in children, see J. Michael Bailey, *The Man Who Would Be Queen: The Science of Gender-Bending and Transsexualism* (Washington, D.C.: Joseph Henry Press, 2003), 31–32.

71. Kelley D. Drummond *et al.*, “A follow-up study of girls with gender identity disorder,” *Developmental Psychology* 44, no. 1 (2008): 34–45, <http://dx.doi.org/10.1037/0012-1649.44.1.34>.

72. Jesse Singal, “How the Fight Over Transgender Kids Got a Leading Sex Researcher Fired,” *New York Magazine*, February 7, 2016, <http://nymag.com/scienceofus/2016/02/fight-over-trans-kids-got-a-researcher-fired.html>.

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73. See, for example, American Psychological Association, “Guidelines for Psychological Practice with Transgender and Gender Nonconforming People,” *American Psychologist* 70 no. 9, (2015): 832–864, <http://dx.doi.org/10.1037/a0039906>; and Marco A. Hidalgo *et al.*, “The Gender Affirmative Model: What We Know and What We Aim to Learn,” *Human Development* 56 (2013): 285–290, <http://dx.doi.org/10.1159/000355235>.

74. Sara Reardon, “Largest ever study of transgender teenagers set to kick off,” *Nature* 531, no. 7596 (2016): 560, <http://dx.doi.org/10.1038/531560a>.

75. Chris Smyth, “Better help urged for children with signs of gender dysphoria,” *The Times* (London), October 25, 2013, <http://www.thetimes.co.uk/tto/health/news/article3903783.ece>. According to the article, in 2012 “1,296 adults were referred to specialist gender dysphoria clinics, up from 879 in 2010. There are now [in 2013] 18,000 people in treatment, compared with 4,000 15 years ago. [In 2012] 208 children were referred, up from 139 the year before and 64 in 2008.”

76. Annelou L. C. de Vries *et al.*, “Young Adult Psychological Outcome After Puberty Suppression and Gender Reassignment,” *Pediatrics* 134, no. 4 (2014): 696–704, <http://dx.doi.org/10.1542/peds.2013-2958d>.

77. David Batty, “Mistaken identity,” *The Guardian*, July 30, 2004, <http://www.theguardian.com/society/2004/jul/31/health.socialcare>.

78. *Ibid.*

79. Jon K. Meyer and Donna J. Reter, “Sex Reassignment: Follow-up,” *Archives of General Psychiatry* 36, no. 9 (1979): 1010–1015, <http://dx.doi.org/10.1001/archpsyc.1979.01780090096010>.

80. *Ibid.*, 1015.

81. See, for instance, Paul R. McHugh, “Surgical Sex,” *First Things* (November 2004), <http://www.firstthings.com/article/2004/11/surgical-sex>.

82. Michael Fleming, Carol Steinman, and Gene Bocknek, “Methodological Problems in Assessing Sex-Reassignment Surgery: A Reply to Meyer and Reter,” *Archives of Sexual Behavior* 9, no. 5 (1980): 451–456, <http://dx.doi.org/10.1007/BF02115944>.

83. Cecilia Dhejne *et al.*, “Long-term follow-up of transsexual persons undergoing sex reassignment surgery: cohort study in Sweden,” *PLOS ONE* 6, no. 2 (2011): e16885, <http://dx.doi.org/10.1371/journal.pone.0016885>.

84. 95% confidence interval: 2.0–3.9.

85. 95% confidence interval: 1.8–4.3.

86. MtF transsexuals in the study’s 1973–1988 period showed a higher risk of crime compared to the female controls, suggesting that they maintain a male pattern for criminality. That study period’s FtM transsexuals, however, did show a higher risk of crime compared to the female controls, perhaps related to the effects of exogenous testosterone administration.

87. 95% confidence intervals: 2.9–8.5 and 5.8–62.9, respectively.

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88. *Ibid.*, 6.

89. *Ibid.*, 7.

90. Annette Kuhn *et al.*, “Quality of life 15 years after sex reassignment surgery for transsexualism,” *Fertility and Sterility* 92, no. 5 (2009): 1685–1689, <http://dx.doi.org/10.1016/j.fertnstert.2008.08.126>.

91. Mohammad Hassan Murad *et al.*, “Hormonal therapy and sex reassignment: a systematic review and meta-analysis of quality of life and psychosocial outcomes,” *Clinical Endocrinology* 72 (2010): 214–231, <http://dx.doi.org/10.1111/j.1365-2265.2009.03625.x>.

92. *Ibid.*, 215.

93. 95% confidence intervals: 68–89%, 56–94%, and 72–88%, respectively.

94. *Ibid.*

95. *Ibid.*, 216.

96. *Ibid.*

97. *Ibid.*, 228.

Conclusion

Accurate, replicable scientific research results can and do influence our personal decisions and self-understanding, and can contribute to the public discourse, including cultural and political debates. When the research touches on controversial themes, it is particularly important to be clear about precisely what science has and has not shown. For complex, complicated questions concerning the nature of human sexuality, there exists at best provisional scientific consensus; much remains unknown, as sexuality is an immensely complex part of human life that defies our attempts at defining all its aspects and studying them with precision.

For questions that are easier to study empirically, however, such as those concerning the rates of mental health outcomes for identifiable subpopulations of sexual minorities, the research does offer some clear answers: these subpopulations show higher rates of depression, anxiety, substance abuse, and suicide compared to the general population. One hypothesis, the social stress model—which posits that stigma, prejudice, and discrimination are the primary causes of higher rates of poor mental health outcomes for these subpopulations—is frequently cited as a way to explain this disparity. While non-heterosexual and transgender individuals are often subject to social stressors and discrimination, science has not shown that these factors alone account for the entirety, or even a majority, of the health disparity between non-heterosexual and transgender subpopulations and the general population. There is a need for extensive research in this area to test the social stress hypothesis and other potential explanations for the health disparities, and to help identify ways of addressing the health concerns present in these subpopulations.

Some of the most widely held views about sexual orientation, such as the “born that way” hypothesis, simply are not supported by science. The literature in this area does describe a small ensemble of biological differences between non-heterosexuals and heterosexuals, but those biological differences are not sufficient to predict sexual orientation, the ultimate test of any scientific finding. The strongest statement that science offers to explain sexual orientation is that some biological factors appear, to an unknown extent, to predispose some individuals to a non-heterosexual orientation.

The suggestion that we are “born that way” is more complex in the case of gender identity. In one sense, the evidence that we are born with

CONCLUSION

a given gender seems well supported by direct observation: males overwhelmingly identify as men and females as women. The fact that children are (with a few exceptions of intersex individuals) born either biologically male or female is beyond debate. The biological sexes play complementary roles in reproduction, and there are a number of population-level average physiological and psychological differences between the sexes. However, while biological sex is an innate feature of human beings, gender identity is a more elusive concept.

In reviewing the scientific literature, we find that almost nothing is well understood when we seek biological explanations for what causes some individuals to state that their gender does not match their biological sex. The findings that do exist often have sample-selection problems, and they lack longitudinal perspective and explanatory power. Better research is needed, both to identify ways by which we can help to lower the rates of poor mental health outcomes and to make possible more informed discussion about some of the nuances present in this field.

Yet despite the scientific uncertainty, drastic interventions are prescribed and delivered to patients identifying, or identified, as transgender. This is especially troubling when the patients receiving these interventions are children. We read popular reports about plans for medical and surgical interventions for many prepubescent children, some as young as six, and other therapeutic approaches undertaken for children as young as two. We suggest that no one can determine the gender identity of a two-year-old. We have reservations about how well scientists understand what it even means for a child to have a developed sense of his or her gender, but notwithstanding that issue, we are deeply alarmed that these therapies, treatments, and surgeries seem disproportionate to the severity of the distress being experienced by these young people, and are at any rate premature since the majority of children who identify as the gender opposite their biological sex will not continue to do so as adults. Moreover, there is a lack of reliable studies on the long-term effects of these interventions. We strongly urge caution in this regard.

We have sought in this report to present a complex body of research in a way that will be intelligible to a wide audience of both experts and lay readers alike. Everyone—scientists and physicians, parents and teachers, lawmakers and activists—deserves access to accurate information about sexual orientation and gender identity. While there is much controversy surrounding how our society treats its LGBT members, no political

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or cultural views should discourage us from understanding the related clinical and public health issues and helping people suffering from mental health problems that may be connected to their sexuality.

Our work suggests some avenues for future research in the biological, psychological, and social sciences. More research is needed to uncover the causes of the increased rates of mental health problems in the LGBT subpopulations. The social stress model that dominates research on this issue requires improvement, and most likely needs to be supplemented by other hypotheses. Additionally, the ways in which sexual desires develop and change across one's lifespan remain, for the most part, inadequately understood. Empirical research may help us to better understand relationships, sexual health, and mental health.

Critiquing and challenging both parts of the “born that way” paradigm—both the notion that sexual orientation is biologically determined and fixed, and the related notion that there is a fixed gender independent of biological sex—enables us to ask important questions about sexuality, sexual behaviors, gender, and individual and social goods in a different light. Some of these questions lie outside the scope of this work, but those that we have examined suggest that there is a great chasm between much of the public discourse and what science has shown.

Thoughtful scientific research and careful, circumspect interpretation of its results can advance our understanding of sexual orientation and gender identity. There is still much work to be done and many unanswered questions. We have attempted to synthesize and describe a complex body of scientific research related to some of these themes. We hope that this report contributes to the ongoing public conversation regarding human sexuality and identity. We anticipate that this report may elicit spirited responses, and we welcome them.

Decision Memo for GENDER Dysphoria and GENDER REASSIGNMENT SURGERY (CAG-00446N)

Links in PDF documents are not guaranteed to work. To follow a web link, please use the MCD Website.

Decision Summary

Currently, the local Medicare Administrative Contractors (MACs) determine coverage of gender reassignment surgery on a case-by-case basis. We received a complete, formal request to make a national coverage determination on surgical remedies for gender identity disorder (GID), now known as gender dysphoria. The Centers for Medicare & Medicaid Services (CMS) is not issuing a National Coverage Determination (NCD) at this time on gender reassignment surgery for Medicare beneficiaries with gender dysphoria because the clinical evidence is inconclusive for the Medicare population.

In the absence of a NCD, coverage determinations for gender reassignment surgery, under section 1862(a)(1)(A) of the Social Security Act (the Act) and any other relevant statutory requirements, will continue to be made by the local MACs on a case-by-case basis. To clarify further, the result of this decision is not national non-coverage rather it is that no national policy will be put in place for the Medicare program. In the absence of a national policy, MACs will make the determination of whether or not to cover gender reassignment surgery based on whether gender reassignment surgery is reasonable and necessary for the individual beneficiary after considering the individual's specific circumstances. For Medicare beneficiaries enrolled in Medicare Advantage (MA) plans, the initial determination of whether or not surgery is reasonable and necessary will be made by the MA plans.

Consistent with the request CMS received, the focus of this National Coverage Analysis (NCA) was gender reassignment surgery. Specific types of surgeries were not individually assessed. We did not analyze the clinical evidence for counseling or hormone therapy treatments for gender dysphoria. As requested by several public commenters, we have modified our final decision memorandum to remove language that was beyond the scope of the specific request. We are not making a national coverage determination related to counseling, hormone therapy treatments, or any other potential treatment for gender dysphoria.

While we are not issuing a NCD, CMS encourages robust clinical studies that will fill the evidence gaps and help inform which patients are most likely to achieve improved health outcomes with gender reassignment surgery, which types of surgery are most appropriate, and what types of physician criteria and care setting(s) are needed to ensure that patients achieve improved health outcomes.

To: Administrative File: CAG #00446N

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Subject: Final Decision Memorandum on Gender Reassignment Surgery for Medicare Beneficiaries with Gender Dysphoria

Date: August 30, 2016

I. Decision

Currently, the local Medicare Administrative Contractors (MACs) determine coverage of gender reassignment surgery on a case-by-case basis. We received a complete, formal request to make a national coverage determination on surgical remedies for gender identity disorder (GID), now known as gender dysphoria. The Centers for Medicare & Medicaid Services (CMS) is not issuing a National Coverage Determination (NCD) at this time on gender reassignment surgery for Medicare beneficiaries with gender dysphoria because the clinical evidence is inconclusive for the Medicare population.

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II. Background

Below is a list of acronyms used throughout this document.

AHRQ - Agency for Healthcare Research and Quality
AIDS - Acquired Immune Deficiency Syndrome
ANOVA - Analysis of Variance
APA - American Psychiatric Association
APGAR - Adaptability, Partnership Growth, Affection, and Resolve test
BIQ - Body Image Questionnaire
BSRI - Bem Sex Role Inventory
CCEI - Crown Craps Experimental Index
CDC - Centers for Disease Control
CHIS - California Health Interview Survey
CI - Confidence Interval
CMS - Centers for Medicare & Medicaid Services
DAB - Departmental Appeals Board
DSM - Diagnostic and Statistical Manual of Mental Disorders
EMBASE - Excerpta Medica dataBASE
FBeK - Fragebogen zur Beurteilung des eigenen Körpers
FDA - Food and Drug Administration
FPI-R - Freiburg Personality Inventory
FSFI - Female Sexual Function Index
GAF - Global Assessment of Functioning
GID - Gender Identity Disorder
GIS - Gender Identity Trait Scale
GRS - Gender Reassignment Surgery
GSI - Global Severity Indices
HADS - Hospital Anxiety Depression Scale
HHS - U.S. Department of Health and Human Services
HIV - Human Immunodeficiency Virus
IIP - Inventory of Interpersonal Problems
IOM - Institute of Medicine
KHQ - King's Health Questionnaire
LGB - Lesbian, Gay, and Bisexual
LGBT - Lesbian, Gay, Bisexual, and Transgender
MAC - Medicare Administrative Contractor
MMPI - Minnesota Multiphasic Personality Inventory
NCA - National Coverage Analysis
NCD - National Coverage Determination
NICE - National Institute for Health Care Excellence
NIH - National Institutes of Health
NZHTA - New Zealand Health Technology Assessment
PIT - Psychological Integration of Trans-sexuals
QOL - Quality of Life
S.D. - Standard Deviation
SADS - Social Anxiety Depression Scale
SCL-90R - Symptom Check List 90-Revised
SDPE - Scale for Depersonalization Experiences
SES - Self Esteem Scale

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SF - Short Form

SMR - Standardized Mortality Ratio SOC - Standards of Care

STAI-X1 - Spielberger State and Trait Anxiety Questionnaire

STAI-X2 - Spielberger State and Trait Anxiety Questionnaire

TSCS - Tennessee Self-Concept Scale

U.S. - United States

VAS - Visual Analog Scale

WHOQOL-BREF - World Health Organization Quality of Life - Abbreviated version of the WHOQOL-100

WPATH - World Professional Association for Transgender Health

A. Diagnostic Criteria

The criteria for gender dysphoria or spectrum of related conditions as defined by the American Psychiatric Association (APA) in the Diagnostic and Statistical Manual of Mental Disorders (DSM) has changed over time (See Appendix A).

Gender dysphoria (previously known as gender identity disorder) is a classification used to describe persons who experience significant discontent with their biological sex and/or gender assigned at birth. Although there are other therapeutic options for gender dysphoria, consistent with the NCA request, this decision only focuses on gender reassignment surgery.

B. Prevalence of Transgender Individuals

For estimates of transgender individuals in the U.S., we looked at several studies.

The Massachusetts Behavior Risk Factor Surveillance Survey (via telephone) (2007 and 2009) identified 0.5% individuals as transgender (Conron et al., 2012).

Derivative data obtained from the 2004 California Lesbian Gay Bisexual and Transgender (LGBT) Tobacco Survey (via telephone) and the 2009 California Health Interview Survey (CHIS) (via telephone) suggested the LGB population constitutes 3.2% of the California population and that transgender subjects constitute approximately 2% of the California LGBT population and 0.06% of the overall California population (Bye et al., 2005; CHIS 2009; Gates, 2011).

Most recently, the Williams Institute published a report that utilized data from the Centers for Disease Control's (CDC) Behavioral Risk Factor Surveillance System (BRFSS). Overall, they found that 0.6% or 1.4 million U.S. adults identify as transgender. The report further estimated 0.7% of adults between the ages of 18-25 identify as transgender, 0.6% of adults between the ages of 25-65 identify as transgender, and 0.5% of adults age 65 or older identify as transgender (Flores et al., 2016).

In a recent review of Medicare claims data, CMS estimated that in calendar year 2013 there were at least 4,098 transgender beneficiaries (less than 1% of the Medicare population) who utilized services paid for by Medicare, of which 90% had confirmatory diagnosis, billing codes, or evidence of a hormone therapy prescription. The Medicare transgender population is racially and ethnically diverse (e.g., 74% White, 15% African American) and spans the entire country. Nearly 80% of transgender beneficiaries are under age 65, including approximately 23% ages 45-54. (CMS Office of Minority Health 2015).

For international comparison purposes, recent estimates of transgender populations in other countries are similar to those in the United States. New Zealand researchers, using passport data, reported a prevalence of 0.0275% for male-to-female adults and 0.0044% female-to-male adults (6:1 ratio) (Veale, 2008). Researchers from a centers of transgender treatment and reassignment surgery in Belgium conducted a survey of regional plastic surgeons and reported a prevalence of 0.008% male-to-female and 0.003% female-to-male (ratio 2.7:1) surgically reassigned transsexuals in Belgium (De Cuypere et al., 2007). Swedish researchers, using national mandatory reporting data on those requesting reassignment surgery, reported secular changes over time in that the number of completed reassignment surgeries per application increased markedly in the 1990s; the male-to-female/female-to-male sex ratio changed from 1:1 to 2:1; the age of male-to-female and female-to-male applicants was initially similar, but increased by eight years for male-to-female applicants; and the proportion of foreign born applicants increased (Olsson and Moller 2003).

III. History of Medicare Coverage

Date	Action
August 1, 1989	CMS published the initial NCD, titled "140.3, Transsexual Surgery" in the Federal Register. (54 Fed. Reg. 34,555, 34,572)
May 30, 2014	The HHS Departmental Appeals Board (DAB) determined that the NCD denying coverage for all transsexual surgery was not valid. As a result, MACs determined coverage on a case-by-case basis.

CMS does not currently have a NCD on gender reassignment surgery.

A. Current Request

On December 3, 2015, CMS accepted a formal complete request from a beneficiary to initiate a NCA for gender reassignment surgery.

Roth Decl. Ex. 1001

CMS opened this National Coverage Analysis (NCA) to thoroughly review the evidence to determine whether or not gender reassignment surgery may be covered nationally under the Medicare program.

B. Benefit Category

Medicare is a defined benefit program. For an item or service to be covered by the Medicare program, it must fall within one of the statutorily defined benefit categories as outlined in the Act. For gender reassignment surgery, the following are statutes are applicable to coverage:

Under §1812 (Scope of Part A) Under §1832 (Scope of Part B)
 Under §1861(s) (Definition of Medical and Other Health Services)
 Under §1861(s)(1) (Physicians' Services)

This may not be an exhaustive list of all applicable Medicare benefit categories for this item or service.

IV. Timeline of Recent Activities

Timeline of Medicare Coverage Policy Actions for Gender Reassignment Surgery

Date	Action
December 3, 2015	CMS accepts an external request to open a NCD. A tracking sheet was posted on the web site and the initial 30 day public comment period commenced.
January 2, 2016	Initial comment period closed. CMS received 103 comments.
June 2, 2016	Proposed Decision Memorandum posted on the web site and the final 30 day public comment period commenced.
July 2, 2016	Final comment period closed. CMS received 45 comments.

V. FDA Status

Surgical procedures per se are not subject to the Food and Drug Administration's (FDA) approval.

Inflatable penile prosthetic devices, rigid penile implants, testicular prosthetic implants, and breast implants have been approved and/or cleared by the FDA.

VI. General Methodological Principles

In general, when making national coverage determinations, CMS evaluates relevant clinical evidence to determine whether or not the evidence is of sufficient quality to support a finding that an item or service is reasonable and necessary for the diagnosis or treatment of illness or injury or to improve the functioning of a malformed body member. (§ 1862 (a)(1)(A)). The evidence may consist of external technology assessments, internal review of published and unpublished studies, recommendations from the Medicare Evidence Development & Coverage Advisory Committee (MEDCAC), evidence-based guidelines, professional society position statements, expert opinion, and public comments.

The overall objective for the critical appraisal of the evidence is to determine to what degree we are confident that: 1) specific clinical question relevant to the coverage request can be answered conclusively; and 2) the extent to which we are confident that the intervention will improve health outcomes for patients.

A detailed account of the methodological principles of study design the agency staff utilizes to assess the relevant literature on a therapeutic or diagnostic item or service for specific conditions can be found in Appendix B. In general, features of clinical studies that improve quality and decrease bias include the selection of a clinically relevant cohort, the consistent use of a single good reference standard, blinding of readers of the index test, and reference test results.

VII. Evidence

A. Introduction

Below is a summary of the evidence we considered during our review, primarily articles about clinical trials published in peer-reviewed medical journals. We also considered articles cited by the requestor, articles identified in public comments, as well as those found by a CMS literature review. Citations are detailed below.

B. Literature Search Methods

CMS staff extensively searched for primary studies for gender dysphoria. The emphasis focused less on specific surgical techniques and more on functional outcomes unless specific techniques altered those types of outcomes.

The reviewed evidence included articles obtained by searching literature databases and technology review databases from PubMed (1965 to current date), EMBASE, the Agency for Healthcare Research and Quality (AHRQ), the Blue Cross/Blue Shield Technology Evaluation Center, the Cochrane Collection, the Institute of Medicine, and the National Institute for Health and Care Excellence (NICE) as well as the source material for commentary, guidelines, and formal evidence-based documents published by professional societies. Systematic reviews were used to help locate some of the more obscure publications and abstracts.

Keywords used in the search included: Trans-sexual, transgender, gender identity disorder (syndrome), gender dysphoria and/or hormone therapy, gender surgery, genital surgery, gender reassignment (surgery), sex reassignment (surgery) and/or quality of life, satisfaction-regret, psychological function (diagnosis of mood disorders, psychopathology, personality disorders), suicide (attempts), mortality, and adverse events-reoperations. After the identification of germane publications, CMS also conducted searches on the specific psychometric instruments used by investigators.

Psychometric instruments are scientific tools used to measure individuals' mental capabilities and behavioral style. They are usually in the form of questionnaires that numerically capture responses. These tools are used to create a psychological profile that can address questions about a person's knowledge, abilities, attitudes and personality traits. In the evaluation of patients with gender dysphoria, it is important that both validity and reliability be assured in the construction of the tool (validity refers to how well the tool actually measures what it was designed to measure, or how well it reflects the reality it claims to represent, while reliability refers to how accurately results of the tool would be replicated in a second identical piece of research). Reliability and validity are important because when evaluating patients with gender dysphoria most of the variables of interest (e.g., satisfaction, anxiety, depression) are latent in nature (not directly observed but are rather inferred) and difficult to quantify objectively.

Studies with robust study designs and larger, defined patient populations assessed with objective endpoints or validated test instruments were given greater weight than small, pilot studies. Reduced consideration was given to studies that were underpowered for the assessment of differences or changes known to be clinically important. Studies with fewer than 30 patients were reviewed and delineated, but excluded from the major analytic framework. Oral presentations, unpublished white papers, and case reports were excluded. Publications in languages other than English were excluded. The CMS initial internal search for the proposed decision memorandum was limited to articles published prior to March 21, 2016. The CMS internal search for the final decision memorandum continued through articles published prior to July 22, 2016.

Included studies were limited to those with adult subjects. Review and discussion of the management of children and adolescents with the additional considerations of induced pubertal delay are outside the scope of this NCD. In cases where the same population was studied for multiple reasons or where the patient population was expanded over time, the latest and/or most germane sections of the publications were analyzed. The excluded duplicative publications are delineated.

termination, completed, ongoing with sponsor update, and ongoing with estimated date of completion. Publications on completed trials were sought. For this final decision, CMS also reviewed all evidence submitted via public comment.

C. Discussion of Evidence

The development of an assessment in support of Medicare coverage determinations is based on the same general question for almost all national coverage analyses (NCAs): "Is the evidence sufficient to conclude that the application of the item or service under study will improve health outcomes for Medicare patients?" For this specific NCA, CMS is interested in answering the following question:

Is there sufficient evidence to conclude that gender reassignment surgery improves health outcomes for Medicare beneficiaries with gender dysphoria?

The evidence reviewed is directed towards answering this question.

1. Internal Technology Assessment

CMS conducted an extensive literature search on gender reassignment related surgical procedures and on facets of gender dysphoria that provide context for this analysis. The latter includes medical and environmental conditions.

CMS identified numerous publications related to gender reassignment surgery. A large number of these were case reports, case series with or without descriptive statistics, or studies with population sizes too small to conduct standard parametric statistical analyses. Others addressed issues of surgical technique.

CMS identified and described 36 publications on gender reassignment surgery that included health outcomes. Because the various investigators at a site sometimes conducted serial studies on ever-enlarging cohort populations, studied sub-populations, studied different outcomes, or used different tools to study the same outcomes, not all study populations were unique. To reduce bias from over-lapping populations, only the latest or most germane publication(s) were described. Subsumed publications were delineated.

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Of these 36 publications, two publications used different assessment tools on the same population, and, so for the purposes of evaluation, were classified as one study (Udeze et al., 2008; Megeri and Khoosal, 2007). A total of 33 studies were reviewed (See Figure 1). Appendices C, D, and F include more detail of each study. The publications covered a time span from 1979 to 2015. Over half of the studies were published after 2005.

Figure 1. Studies of Gender Reassignment Surgery (GRS)



ANOVA=Analysis of Variance Normative=Psychometric Tests with known normative for large populations

Figure 1 Legend: The studies in Figure 1 are categorized into three groups. The first group, depicted by the colored boxes (red, blue, and green), had explicit controls. There was a single randomized study. The remainder in the first group were observational studies. These were subdivided into longitudinal studies and cross-sectional studies. The second group, depicted by black boxes (starting with the surgery only population box) consisted of surgical series. The third group, depicted by black boxes (starting with mixed population), was composed of patients whose treatment could involve a variety of therapeutic interventions, but who were not stratified by that treatment.

When looking at the totality of studies, the 33 studies could be characterized by the following research design groups:

a. Observational, mixed population of surgical and non-surgical patients without stratification

Asscheman H, Giltay EJ, Megens JA, de Ronde WP, van Trotsenburg MA, Gooren LJ. A long-term follow-up study of mortality in transsexuals receiving treatment with cross-sex hormones. Eur J Endocrinol. 2011 Apr;164(4):635-42. Epub 2011 Jan 25.

Asscheman et al. conducted a retrospective, non-blinded, observational study of mortality using a longitudinal design to assess a mixed population treated with hormones, as well as, reassignment surgery in comparison to a population-based cohort. The study was not designed to assess the specific impact of gender reassignment surgery on clinical outcomes.

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The investigators assessed mortality in patients who (a) were from a single-center, unspecified, Dutch university specialty clinic, (b) had initiated cross-sex hormone treatment prior to July 1, 1997, and (c) had been followed (with or without continued hormone treatment) by the clinic for at least one year or had expired during the first year of treatment. The National Civil Record Registry (Gemeentelijke Basis Administratie) was used to identify/confirm deaths of clinic patients. Information on the types or hormones used was extracted from clinic records, and information on the causation of death was extracted from medical records or obtained from family physicians. Mortality data for the general population were obtained through the Central Bureau of Statistics of the Netherlands (Centraal Bureau voor de Statistiek). Mortality data from Acquired Immune Deficiency Syndrome (AIDS) and substance abuse were extracted from selected Statistics Netherlands reports. The gender of the general Dutch population comparator group was the natal sex of the respective gender dysphoric patient groups.

A total of 1,331 patients who met the hormone treatment requirements were identified (365 female-to-male [27.4%]; 966 male-to-female [72.6%]; ratio 1:2.6). Of these, 1,177 (88.4%) underwent reassignment surgery (343 [94.0% of female-to-male entrants]; 834 [86.3% of male-to-female entrants]; ratio difference 1:2.4 with a p-value $p < 0.0001$). Later calculations did not distinguish between those with hormone therapy alone versus those with hormone therapy plus reassignment surgery. The mean age at the time of hormone initiation in female-to-male and male-to-female patients was 26.1 ± 7.6 (range 16–56) years and 31.4 ± 11.4 (range 16–76) years respectively, although the male-to-female subjects were relatively older ($p < 0.001$). The mean duration of hormone therapy in female-to-male and male-to-female patients was 18.8 ± 6.3 and 19.4 ± 7.7 years respectively.

There were a total of 134 deaths in the clinic population using hormone therapy with or without surgical reassignment. Of these patients, 12 (3.3%) of the 365 female-to-male patients and 122 (12.6%) of the 966 male-to-female patients died. All-cause mortality for this mixed population was 51% higher and statistically significant (Standardized Mortality Ratio [SMR] 95% confidence interval [CI] 1.47–1.55) for males-to-females when compared to males in the general Dutch population. The increase in all-cause mortality (12%) for females-to-males when compared to females in the general Dutch population was not statistically significant (95% CI 0.87–1.42).

Ischemic heart disease was a major disparate contributor to excess mortality in male-to-female patients but only in older patients ($n=18$, SMR 1.64 [95% CI 1.43–1.87]), mean age [range]: 59.7 [42–79] years. Current use of a particular type of estrogen, ethinyl estradiol, was found to contribute to death from myocardial infarction or stroke (Adjusted Hazard Ratio 3.12 [95% CI 1.28–7.63], $p=0.01$). There was a small, but statistically significant increase in lung cancer that was thought to possibly be related to higher rates of smoking in this cohort.

Other contributors to the mortality difference between male-to-female patients and the Dutch population at large were completed suicide ($n=17$, SMR 5.70 [95% CI 4.93–6.54]), AIDS ($n=16$, SMR 30.20 [95% CI 26.0–34.7]), and illicit drug use ($n=5$, SMR 13.20 [95% CI 9.70–17.6]). An additional major contributor was “unknown cause” ($n=21$, SMR 4.00 [95% CI 3.52–4.51]). Of the 17 male-to-female hormone treated patients who committed suicide, 13 (76.5%) had received prior psychiatric treatment and six (35.3%) had not undergone reassignment surgery because of concerns about mental health stability.

This study subsumes earlier publications on mortality (Asscheman et al. 1989 [n=425]; Van Kesteren et al. 1997 [n=816]).

Gómez-Gil E, Zubiaurre-Elorza L, Esteva I, Guillamon A, Godás T, Cruz Almaraz M, Halperin I, Salamero M. Hormone- treated transsexuals report less social distress, anxiety and depression. Psychoneuroendocrinology. 2012 May;37(5):662-70. Epub 2011 Sep 19.

Gómez-Gil et al. conducted a prospective, non-blinded observational study using a cross-sectional design and non-specific psychiatric distress tools in Spain. The investigators assessed anxiety and depression in patients with gender dysphoria who attended a single-center specialty clinic with comprehensive endocrine, psychological, psychiatric, and surgical care. The clinic employed World Professional Association for Transgender Health (WPATH) guidelines. Patients were required to have met diagnostic criteria during evaluations by 2 experts. Investigators used the Hospital Anxiety and Depression Scale (HADS) and the Social Anxiety and Distress Scale (SADS) instruments. The SADS total score ranges from 0 to 28, with higher scores indicative of more anxiety. English language normative values are 9.1 ± 8.0 . HAD-anxiety and HAD-depression total score ranges from 0 to 21, with higher scores indicative of more pathology. Scores less than 8 are normal. ANOVA was used to explore effects of hormone and surgical treatment.

Of the 200 consecutively selected patients recruited, 187 (93.5% of recruited) were included in the final study population. Of the final study population, 74 (39.6%) were female-to-male patients; 113 (60.4%) were male-to-female patients (ratio 1:1.5); and 120 (64.2%) were using hormones. Of those using hormones, 36 (30.0%) were female-to-male; 84 (70.0%) were male-to-female (ratio 1:2.3). The mean age was 29.87 ± 9.15 years (range 15-61). The current age of patients using hormones was 33.6 ± 9.1 years (n=120) and older than the age of patients without hormone treatment (25.9 ± 7.5) ($p=0.001$). The age at hormone initiation, however, was 24.6 ± 8.1 years.

Of those who had undergone reassignment surgery, 29 (36.7%) were female-to-male; 50 (63.3%) were male-to-female (ratio 1:1.7). The number of patients not on hormones and who had undergone at least one gender-related surgical procedure (genital or non-genital) was small (n=2). The number of female-to-male patients on hormones who had undergone such surgery (mastectomy, hysterectomy, and/or phalloplasty) was 28 (77.8%). The number of male-to-female patients on hormones who had undergone such surgery (mammoplasty, facial feminization, buttock feminization, vaginoplasty, orchiectomy, and/or vocal feminization (thyroid chondroplasty) was 49 (58.3%).

Analysis of the data revealed that although the mean scores HAD-Anxiety, HAD-Depression, and SADS were statistically lower (better) in those on hormone therapy than in those not on hormone therapy, the mean scores for HAD-Depression and SADS were in the normal range for gender dysphoric patients not using hormones. The HAD-Anxiety score was 9 in transsexuals without hormone treatment and 6.4 in transsexuals with hormone

treatment. The mean scores for HAD-Anxiety, HAD-Depression, and SADS were in the normal range for gender dysphoric patients using hormones. ANOVA revealed that results did not differ by whether the patient had undergone a gender related surgical procedure or not.

Gómez-Gil E, Zubiaurre-Elorza L, de Antonio I, Guillamon A, Salamero M. Determinants of quality of life in Spanish transsexuals attending a gender unit before genital sex reassignment surgery. Qual Life Res. 2014 Mar;23(2):669-76. Epub 2013 Aug 13.

Gómez-Gil et al. conducted a prospective, non-blinded observational study using a non-specific quality of life tool. There were no formal controls for this mixed population ± non-genital reassignment surgery undergoing various stages of treatment.

The investigators assessed quality of life in the context of culture in patients with gender dysphoria who were from a single-center (Barcelona, Spain), specialty and gender identity clinic. The clinic used WPATH guidelines. Patients were required to have met diagnostic criteria during evaluations by both a psychologist and psychiatrist. Patients could have undergone non-genital surgeries, but not genital reassignment surgeries (e.g., orchiectomy, vaginoplasty, or phalloplasty). The Spanish version of the World Health Organization Quality of Life-Abbreviated version of the WHOQOL-100 (WHOQOL- BREF) was used to evaluate quality of life, which has 4 domains (environmental, physical, psychological, and social) and 2 general questions. Family dynamics were assessed with the Spanish version of the Family Adaptability, Partnership Growth, Affection, and Resolve (APGAR) test. Regression analysis was used to explore effects of surgical treatment.

All consecutive patients presenting at the clinic (277) were recruited and, 260 (93.9%) agreed to participate. Of this number, 59 of these were excluded for incomplete questionnaires, 8 were excluded for prior genital reassignment surgery, and 193 were included in the study (the mean age of this group was 31.2 ± 9.9 years (range 16-67). Of these, 74 (38.3%) were female-to-male patients; 119 (61.7%) were male-to-female patients (ratio 1:1.6). Of these, 120 (62.2%) were on hormone therapy; 29 (39.2%) of female-to-male patients had undergone at least 1 non-genital, surgical procedure (hysterectomy $n=19$ (25.7%); mastectomy $n=29$ (39.2%)); 51 (42.9%) of male-to-female patients had undergone at least one non-genital surgical procedure with mammoplasty augmentation being the most common procedure, $n=47$ (39.5%), followed by facial feminization, $n=11$ (9.2%), buttocks feminization, $n=9$ (7.6%), and vocal feminization (thyroid chondroplasty), $n=2$ (1.7%).

WHOQOL-BREF domain scores for gender dysphoric patients with and without non-genital surgery were: "Environmental" 58.81 ± 14.89 (range 12.50-96.88), "Physical" 63.51 ± 17.79 (range 14.29-100), "Psychological" 56.09 ± 16.27 (range 16.67- 56.09), "Social" 60.35 ± 21.88 (range 8.33-100), and "Global QOL and Health" 55.44 ± 27.18 (range 0-100 with higher score representing better QOL). The mean APGAR family score was 7.23 ± 2.86 (range 0-10 with a score of 7 or greater indicative of family functionality).

Regression analysis, which was used to assess the relative importance of various factors to WHOQOL-BREF domains and general questions, revealed that family support was an important element in all four domains and

the general health and quality of life questions. Hormone therapy was an important element for the general questions and for all of the domains except "Environmental." Having undergone non-genital reassignment surgery, age, educational levels, and partnership status, did not impact domain and general question results related to quality of life.

Hepp U, Kraemer B, Schnyder U, Miller N, Delsignore A. Psychiatric comorbidity in gender identity disorder. J Psychosom Res. 2005 Mar;58(3):259-61.

Hepp et al. conducted a single-site (Zurich, Switzerland) prospective, non-blinded, observational study using a cross-sectional design. There was some acquisition of retrospective data. The investigators assessed current and lifetime psychiatry co-morbidity using structured interviews for diagnosis of Axis 1 disorders (clinical syndromes) and Axis 2 disorders (developmental or personality disorders) and HADS for dimensional evaluation of anxiety and depression. Statistical description of the cohort and intra-group comparisons was performed. Continuous variables were compared using t-tests and ANOVA.

A total of 31 patients with gender dysphoria participated in the study: 11 (35.5%) female-to-male; 20 (64.5%) male-to-female (ratio 1:1.8). The overall mean age was 32.2 ± 10.3 years. Of the participants, seven had undergone reassignment surgery, 10 pre-surgical patients had been prescribed hormone therapy, and 14 pre-surgical patients had not been prescribed hormone therapy. Forty five and one half percent of female-to-male and 20% of male-to-female patients did not carry a lifetime diagnosis of an Axis 1 condition. Sixty three and six tenths percent of female-to-male and 60% of male-to-female patients did not carry a current diagnosis of an Axis 1 condition. Lifetime diagnosis of substance abuse and mood disorder were more common in male-to-female patients (50% and 55% respectively) than female-to-male patients (36.4% and 27.3% respectively). Current diagnosis of substance abuse and mood disorder were present in male-to-female patients (15% and 20% respectively) and absent in female-to-male patients. One or more personality disorders were identified 41.9%, but whether this was a current or lifetime condition was not specified. Of the patients, five (16.1%) had a Cluster A personality disorder (paranoid-schizoid), seven (22.6%) had a Cluster B personality disorder (borderline, anti-social, histrionic, narcissistic), six (19.4%) had a Cluster C personality disorder (avoidant, dependent, obsessive-compulsive), and two (6.5%) were not otherwise classified.

HADS scores were missing for at least one person. The HADS test revealed non-pathologic results for depression (female-to-male: 6.64 ± 5.03 ; male-to-female: 6.58 ± 4.21) and borderline results for anxiety (female-to-male: 7.09 ± 5.11 ; male-to-female: 7.74 ± 6.13 , where a result of 7-10 = possible disorder). There were no differences by natal gender. The investigators reported a trend for less anxiety and depression as measured by HADS in the patients who had undergone surgery.

Johansson A, Sundbom E, Höjerback T, Bodlund O. A five-year follow-up study of Swedish adults with gender identity disorder. Arch Sex Behav. 2010 Dec;39(6):1429-37. Epub 2009 Oct 9.

Johansson et al. conducted a two center (Lund and Umeå, Sweden) non-blinded, observational study using a

semi-cross-sectional design (albeit over an extended time interval) using a self-designed tool and Axis V assessment. The study was prospective except for the acquisition of baseline Axis V data. There were no formal controls in this mixed population with and without surgery.

The investigators assessed satisfaction with the reassignment process, employment, partnership, sexual function, mental health, and global satisfaction in gender-reassigned persons from two disparate geographic regions. Surgical candidates were required to have met National Board of Health and Welfare criteria including initial and periodic psychiatric assessment, ≥ 1 year of real-life experience in preferred gender, and ≥ 1 year of subsequent hormone treatment. In addition, participants were required to have been approved for reassignment five or more years prior and/or to have completed surgical reassignment (e.g., sterilization, genital surgery) two or more years prior. The investigators employed semi-structured interviews covering a self-designed list of 55 pre-formulated questions with a three or five point ordinal scale. Clinician assessment of Global Assessment of Functioning (GAF; Axis V) was also conducted and compared to initial finding during the study. Changes or differences considered to be biologically significant were not pre-specified except for GAF, which pre-specified a difference to mean change ≥ 5 points. Statistical corrections for multiple comparisons were not included. There was no stratification by treatment.

Of the pool of 60 eligible patients, 42 (70.0% of eligible) (17 [40.5 %] female-to-male; 25 [59.5%] male-to-female; ratio 1:1.5) were available for follow-up. Of these, 32 (53.3% of eligible) (14 [43.8%] female-to-male; 18 [56.2%] male-to-female [ratio 1:1.3]) had completed genital gender reassignment surgery (not including one post mastectomy), five were still in the process of completing surgery, and five (one female-to-male; four male-to-female; ratio 1:4) had discontinued the surgical process prior to castration and genital surgery.

The age (ranges) of the patients at entry into the program, reassignment surgery, and follow-up were 27.8 (18-46), 31.4 (22- 49), and 38.9 (28-53) years in the female-to-male group respectively and 37.3 (21-60), 38.2 (22-57), and 46.0 (25.0-69.0) years in the male- to-female group respectively. The differences in age by cohort group were statistically significant. Of participants, 88.2% of all enrolled female-to-male versus 44.0% of all enrolled female-to-male patients had cross-gender identification in childhood (versus during or after puberty) ($p < 0.01$).

Although 95.2% of all enrolled patients self-reported improvement in GAF, in contrast, clinicians determined GAF improved in 61.9% of patients. Clinicians observed improvement in 47% of female-to-male patients and 72% of male-to- female patients. A ≥ 5 point improvement in the GAF score was present in 18 (42.9%). Of note, three of the five patients who were in the process of reassignment and five of the five who had discontinued the process were rated by clinicians as having improved.

Of all enrolled 95.2% (with and without surgery) reported satisfaction with the reassignment process. Of these 42 patients, 33 (79%) identified themselves by their preferred gender and nine (21%) identified themselves as transgender. None of these nine (eight male-to-female) had completed reassignment surgery because of ambivalence secondary to lack of acceptance by others and dissatisfaction with their appearance. Of the patients who underwent genital surgery ($n=32$) and mastectomy only ($n=one$), 22 (66.7%) were satisfied while four (three female-to-male) were dissatisfied with the surgical treatment.

Regarding relationships after surgery, 16 (38.1%) (41.2% of female-to-male; 36.0% of male-to-female patients) were reported to have a partner. Yet more than that number commented on partner relationships: (a) 62.2 % of the 37 who answered (50.0% of female-to-male; 69.6% of male-to-female patients) reported improved partner relationships (five [11.9%] declined to answer.); (b) 70.0% of the 40 who answered (75.0% of female-to-male; 66.7% of male-to-female patients) reported an improved sex life. Investigators observed that reported post-operative satisfaction with sex life was statistically more likely in those with early rather than late cross-gender identification. In addition 55.4% self-reported improved general health; 16.1% reported impaired general health; 11.9% were currently being treated with anti-depressants or tranquilizers.

This study subsumes earlier work by Bodlund et al. (1994, 1996). The nationwide mortality studies by Dhejne et al. (2011) may include all or part of this patient population.

Leinung M, Urizar M, Patel N, Sood S. Endocrine treatment of transsexual persons: extensive personal experience. Endocr Pract. 2013 Jul-Aug;19(4):644-50. (United States study)

Leinung et al. conducted a single-center (Albany, New York) a partially prospective, non-blinded, observational study using a cross-sectional design and descriptive statistics. There were no formal controls. The investigators assessed employment, substance abuse, psychiatric disease, mood disorders, Human Immunodeficiency Virus (HIV) status in patients who had met WPATH guidelines for therapy, and who had initiated cross-sex hormone treatment.

A total of 242 patients treated for gender identity disorder in the clinic from 1992 through 2009 inclusive were identified. The number of those presenting for therapy almost tripled over time. Of these patients, 50 (20.7%) were female-to-male; 192 (79.3%) male-to-female (ratio 1:3.8).

The age of female-to-male and male-to-female patients with gender dysphoria at the time of clinic presentation was 29.0 and 38.0 years respectively.

The female-to-male and male-to-female patients with gender dysphoria at the time of hormone initiation were young: 27.5 and 35.5 years old respectively ($p < 0.5$). Of the male-to-female cohort, 19 (7.8%) had received hormone therapy in the absence of physician supervision; Of the patient population, 91 (37.6%) had undergone gender-reassignment surgery (32 female-to-male [64.0% of all female-to-male; 35.2% of all surgical patients]; 59 male-to-female [30.7% of all male-to-female; 64.8% of all surgical patients]; ratio 1:1.8).

Psychiatric disease was more common in those who initiated hormone therapy at an older age (>32 years) 63.9% versus 48.9% at a younger age and by natal gender (48.0% of female-to-male; 58.3% male-to-female). Mood disorders were more common in those who initiated hormone therapy at an older age (>32 years) 52.1% versus 36.0% at a younger age and this finding did not differ by natal gender (40.0% of female-to-male; 44.8% male-to-female). The presence of mood disorders increased the time to reassignment surgery in male-to-female patients.

Motmans J, Meier P, Ponnet K, T'Sjoen G. Female and male transgender quality of life: socioeconomic and medical differences. J Sex Med. 2012 Mar;9(3):743-50. Epub 2011 Dec 21.

Motmans et al., conducted a prospective, non-blinded, observational study using a cross-sectional design and a non-specific quality of life tool. No concurrent controls were used in this study. Quality of life in this Dutch-speaking population was assessed using the Dutch version of a SF-36 (normative data was used). Participants included subjects who were living in accordance with the preferred gender and who were from a single Belgian university specialty clinic at Ghent. The Dutch version of the SF-36 questionnaire along with its normative data were used. Variables explored included employment, pension status, ability to work, being involved in a relationship. Also explored, was surgical reassignment surgery and the types of surgical interventions. Intragroup comparisons by transgender category were conducted, and the relationships between variables were assessed by analysis of variance (ANOVA) and correlations.

The age of the entire cohort (n=140) was 39.89±10.21 years (female-to-male: 37.03±8.51; male-to-female: 42.26±10.39). Results of the analysis revealed that not all female-to-male patients underwent surgical reassignment surgery and, of those who did, not all underwent complete surgical reassignment. The numbers of female-to-male surgical interventions were: mastectomy 55, hysterectomy 55, metaoidplasty eight (with five of these later having phalloplasty), phalloplasty 40, and implantation of a prosthetic erectile device 20. The frequencies of various male-to-female surgical interventions were: vaginoplasty 48, breast augmentation 39, thyroid cartilage reduction 17, facial feminization 14, and hair transplantation three.

The final number of subjects with SF-36 scores was 103 (49 [47.6%] female-to-male; 54 [52.4%] male-to-female; ratio 1:1.1). For this measure, the scores for the vitality and mental health domains for the final female-to-male cohort (n= 49 and not limited to those having undergone some element of reassignment surgery) were statistically lower: 60.61±18.16 versus 71.9±18.31 and 71.51±16.40 versus 79.3±16.4 respectively. Scores were not different from the normative data for Dutch women: vitality: 64.3±19.7 or mental health 73.7±18.2. None of the domains of the SF-36 for the final male-to-female cohort (n=54 and not limited to those having undergone some element of reassignment surgery) were statistically different from the normative data for Dutch women.

Analysis of variance indicated that quality of life as measured by the SF-36 did not differ by whether female-to-male patients had undergone genital surgery (metaoidoplasty or phalloplasty) or not. Also, ANOVA indicated that quality of life as measured by the SF-36 did not differ by whether male-to-female patients had undergone either breast augmentation or genital surgery (vaginoplasty) or not.

Whether there is overlap with the client populations studied by Heylen et al. or Weyers et al. is unknown.

Newfield E, Hart S, Dibble S, Kohler L. Female-to-male transgender quality of life. Qual Life Res. 2006 Nov;15(9):1447-57. Epub 2006 Jun 7. (United States study)

Newfield et al. conducted a prospective, observational internet self-report survey of unknown blinding status using a cross-sectional design and a non-specific quality of life tool in a mixed population with and without hormone therapy and/or reassignment surgery. There were no formal controls.

The investigators recruited natal female participants identifying as male using email, internet bulletin boards, and flyers/postcards distributed in the San Francisco Bay Area. Reduction of duplicate entries by the same participant was limited to the use of a unique user name and password.

The investigators employed the Short-Form 36 (SF-36) Version 2 using U.S. normative data. They reported using both male and female normative data for the comparator SF-36 cohort. Data for the eight domains were expressed as normative scoring. The Bonferroni correction was used to adjust for the risk of a Type 1 error with analyses using multiple comparisons.

A total of 379 U.S. respondents classified themselves as males-or-females to males with or without therapeutic intervention. The mean age of the respondents who classified themselves as male or female-to-male was 32.6 ± 10.8 years. Of these 89% were Caucasian, 3.6% Latino, 1.8% African American, 1.8% Asian, and 3.8% other. Of these, 254 (67.0%) reported prior or current testosterone use while 242 (63.8%) reported current testosterone use. In addition, 136 (36.7%) reported having had "top" surgery and 11 (2.9%) reported having "bottom" surgery.

Complete SF-36 data were available for 376 U.S. respondents. For the complete, non-stratified U.S. cohort the Physical Summary Score (53.45 ± 9.42) was statistically higher (better) than the natal gender unspecified SF-36 normative score (50 ± 10) ($p < 0.001$), but was within one standard deviation of the normative mean. The Mental Summary Score (39.63 ± 12.2) was statistically lower (worse) than the natal gender unspecified SF-36 normative score (50 ± 10) ($p < 0.001$), but was well within two standard deviations of the normative mean. Subcomponents of this score: Mental Health (42.12 ± 10.2), Role Emotional (42.42 ± 11.6), Social Functioning (43.14 ± 10.9), and Vitality (46.22 ± 9.9) were statistically lower (worse) than the SF-36 normative sub-scores, but well within one standard deviation of the normative sub-score means. Interpretive information for these small biologic differences in a proprietary assessment tool was not provided.

Additional intragroup analyses were conducted, although the data were not stratified by type of therapeutic intervention (hormonal, as well as, surgical). Outcomes of hormone therapy were considered separately and dichotomously from reassignment surgery. The Mental Summary Score was statistically higher (better) in those who had "Ever Received Testosterone" (41.22 ± 11.9) than those with "No Testosterone Usage" (36.08 ± 12.6) ($p=0.001$). The Mental Summary Scores showed a trend towards statistical difference between those who "Ever Received Top Surgery" (41.21 ± 11.6) and those without "Top Surgery" (38.01 ± 12.5) ($p=0.067$). These differences were well within one standard deviation of the normative mean. Interpretive information for these small biologic differences in a proprietary assessment tool was not provided.

b. Observational, surgical series, without concurrent controls

Blanchard R, Steiner BW, Clemmensen LH. Gender dysphoria, gender reorientation, and the clinical management of transsexualism. J Consult Clin Psychol. 1985 Jun; 53(3):295-304.

Blanchard et al. conducted a single-center (Ontario, Canada), prospective, non-blinded, cross-sectional study using a self-designed questionnaire and a non-specific psychological symptom assessment with normative data. The investigators assessed social adjustment and psychopathology in patients with gender dysphoria and who were at least one year post gender reassignment surgery. Reassignment surgery was defined as either vaginoplasty or mastectomy/construction of male chest contour with or without nipple transplants, but did not preclude additional procedures. Partner preference was determined using Blanchard's Modified Androphilia-Gynephilia Index, and the nature and extent of any psychopathology was determined with the Symptom Check List 90-Revised (SCL-90R). Differences in test scores considered to be biologically significant were not pre-specified in the methods.

Of the 294 patients (111 natal females and 183 natal males, ratio: 1:1.65) initially evaluated, 263 were diagnosed with gender dysphoria. Of these 79 patients participated in the study (38 female-to-male; 32 male-to-female with male partner preference; 9 male-to-female with female partner preference). The respective mean ages for these 3 groups were 32.6, 33.2, and 47.7 years with the last group being older statistically ($p=0.01$).

Additional surgical procedures in female-to-male patients included: oophorectomy/hysterectomy (92.1%) and phalloplasty (7.9%). Additional surgical procedures in male-to-female patients with male partner preference included facial hair electrolysis 62.5% and breast implantation (53.1%). Additional procedures in male-to-female patients with female partner preference included facial hair electrolysis (100%) and breast implantation (33.3%). The time between reassignment surgery and questionnaire completion did not differ by group.

Psychopathology as measured by the Global Severity Index of the SCL-90R was absent in all three patient groups. Interpretation did not differ by the sex of the normative cohort.

Of participants, 65.2% of female-to-male patients cohabitated with partners of their natal gender, 46.9% of male-to-female patients with male partner preference cohabitated with partners of their natal gender; and no male-to-female patients with female partner preference cohabitated with partners of their natal gender.

Of participants, 93.7% reported that they would definitely undergo reassignment surgery again. The remaining 6.3% (one female-to-male; one male-to-female with male partner preference; three male-to-female with female partner preference) indicated that they probably would undertake the surgery again. Post hoc analysis suggested that the more ambivalent responders had more recently undergone surgery. Of responders, 98.7% indicated that they preferred life in the reassigned gender. The one ambivalent subject was a skilled and well compensated tradesperson who was unable to return to work in her male dominated occupation.

Eldh J, Berg A, Gustafsson M. Long-term follow up after sex reassignment surgery. Scand J Plast Reconstr Surg Hand Surg. 1997 Mar;31(1):39-45.

Eldh et al. conducted a non-blinded, observational study using a prospective cross-sectional design with an investigator designed questionnaire and retrospective acquisition of pre-operative data. The investigators assessed economic circumstances, family status, satisfaction with surgical results, and sexual function in patients who had undergone gender reassignment surgery.

Of the 175 patients who underwent reassignment surgery in Sweden, 90 responded. Of this number, 50 were female-to-male and 40 were male-to-female (ratio: 1:0.8). Patients reportedly were generally satisfied with the appearance of the reconstructed genitalia (no numbers provided). Of the patients who had undergone surgery prior to 1986, seven (14%) were dissatisfied with shape or size of the neo-phallus; eight (16%) declined comment. There were 14 (35%), with 12 having surgery prior to 1986 and two between 1986 and 1995 inclusive, were moderately satisfied because of insufficient vaginal volume; 8 (20%) declined comment. A neo-clitoris was not constructed until the later surgical cohort. Three of 33 reported no sensation or no sexual sensation. Eight had difficulties comprehending the question and did not respond.

A total of nine (18%) patients had doubts about their sexual orientation; 13 (26%) declined to answer the question. The study found that two female-to- male patients and two male-to-female patients regretted their reassignment surgery and continued to live as the natal gender, and two patients attempted suicide.

Hess J, Rossi Neto R, Panic L, Rübber H, Senf W. Satisfaction with male-to-female gender reassignment surgery. Dtsch Arztebl Int. 2014 Nov 21;111(47):795-801.

Hess et al. conducted a prospective, blinded, observational study using a cross-sectional design and a self-designed anonymous questionnaire. The investigators assessed post-operative satisfaction in male-to-female patients with gender dysphoria who were followed in a urology specialty clinic (Essen, Germany). Patients had met the ICD-10 diagnostic criteria, undergone gender reassignment surgeries including penile inversion vaginoplasty, and a Likert-style questionnaire with 11 elements. Descriptive statistics were provided.

There were 254 consecutive eligible patients who had undergone surgery between 2004 and 2010 identified and sent surveys, of whom 119 (46.9%) responded anonymously. Of the participants, 13 (10.9%) reported dissatisfaction with outward appearance and 16 (13.4%) did not respond; three (2.5%) reported dissatisfaction with surgical aesthetics and 25 (21.0%) did not respond; eight (6.7%) reported dissatisfaction with functional outcomes of the surgery and 26 (21.8%) did not respond; 16 (13.4%) reported they could not achieve orgasm and 28 (23.5%) did not respond; four (3.4%) reported feeling completely male/more male than female and 28 (23.5%) did not respond; six (5.0%) reported not feeling accepted as a woman, two (1.7%) did not understand the question, and 17 (14.3%) did not respond; and 16 (13.4%) reported that life was harder and 24 (20.2%) did not respond.

Lawrence A. Patient-reported complications and functional outcomes of male-to-female sex reassignment surgery. Arch Sex Behav. 2006 Dec;35(6):717-27. Epub 2006 Nov 16. (United States study)

Lawrence conducted a prospective, blinded observational study using a cross-sectional design and a partially self-designed quality of life tool using yes/no questions or Likert scales. The investigator assessed sexual function, urinary function, and other pre/post-operative complications in patients who underwent male-to-female gender reassignment surgery. Questions addressed core reassignment surgery (neo-vagina and sensate neo-clitoris) and related reassignment surgery (labiaplasty, urethral meatus revision, vaginal deepening/widening, and other procedures), use of electrolysis, and use of hormones.

Questionnaires were designed to be completed anonymously and mailed to 727 eligible patients. Of those eligible, 232 (32%) returned valid questionnaires. The age at the time reassignment surgery was 44 ± 9 (range 18-70) years and mean duration after surgery was 3 ± 1 (range 1-7) years.

Happiness with sexual function and the reassignment surgery was reported to be lower when permanent vaginal stenosis, clitoral necrosis, pain in the vagina or genitals, or other complications such as infection, bleeding, poor healing, other tissue loss, other tissue necrosis, urinary incontinence, and genital numbness were present. Quality of life was impaired when pain in the vagina or genitals was present.

Satisfaction with sexual function, gender reassignment surgery, and overall QOL was lower when genital sensation was impaired and when vaginal architecture and lubrication were perceived to be unsatisfactory. Intermittent regret regarding reassignment surgery was associated with vaginal hair and clitoral pain. Vaginal stenosis was associated with surgeries performed in the more distant past; whereas, more satisfaction with vaginal depth and width was present in more recent surgical treatment.

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Salvador J, Massuda R, Andreazza T, Koff WJ, Silveira E, Kreische F, de Souza L, de Oliveira MH, Rosito T, Fernandes BS, Lobato MI. Minimum 2-year follow up of sex reassignment surgery in Brazilian male-to-female transsexuals. *Psychiatry Clin Neurosci*. 2012 Jun; 66(4):371-2. PMID: 22624747.

Salvador et al. conducted a single center (Port Alegre, Brazil) prospective, non-blinded, observational study using a cross-sectional design (albeit over an extended time interval) and a self-designed quality of life tool. The investigators assessed regret, sexual function, partnerships, and family relationships in patients who had undergone gender reassignment surgery at least 24 months prior.

Out of the 243 enrolled in the clinic over a 10 year interval, 82 underwent sex reassignment surgery. There were 69 participants with a minimum 2-year follow up, of whom 52 patients agreed to participate in the study. The age at follow-up was 36.3 ± 8.9 (range 15-58) years with the time to follow-up being 3.8 ± 1.7 (2-7) years. A total of 46 participants reported pleasurable neo-vaginal sex and post-surgical improvement in the quality of their sexual experience. The quality of sexual intercourse was rated as satisfactory to excellent, average, unsatisfactory, or not applicable in the absence of sexual contact by 84.6%, 9.6%, 1.9%, and 3.8% respectively. Of the participants, 78.8% reported greater ease in initiating and maintaining relationships; 65.4% reported having a partner; 67.3% reported increased frequency of intercourse; 36.8% reported improved familial relationships. No patient reported regret over reassignment surgery. The authors did not provide information about incomplete questionnaires.

Tsoi WF. Follow-up study of transsexuals after sex-reassignment surgery. *Singapore Med J*. 1993 Dec; 34(6):515-7.

Tsoi conducted a single-center (Singapore) prospective, non-blinded, observational study using a cross-sectional design and a self-designed quality of life tool. The investigator assessed overall life satisfaction, employment, partner status, and sexual function in gender-reassigned persons who had undergone gender reassignment surgery between 1972 and 1988 inclusive and who were approximately 2 to 5 years post-surgery. Acceptance criteria for surgery included good physical health, good mental health, absence of heterosexual tendencies, willingness to undergo hormonal therapy for ≥ 6 months, and willingness to function in the life of the desired gender for ≥ 6 months. Tsoi also undertook retrospective identification of variables that could predict outcomes.

The size of the pool of available patients was not identified. Of the 81 participants, 36 (44.4%) were female-to-male and 45 (55.6%) were male-to-female (ratio 1:1.25).

The mean ages at the time of the initial visit and operation were: female-to-male 25.4 ± 4.4 (range 14-36) and 27.4 ± 4.0 ; (range 14-36); male-to-female 22.9 ± 4.6 (range 14-36) and 24.7 ± 4.3 (14-36) years respectively. Of all participants, 14.8% were under age 20 at the time of the initial visit. All were at least 20 at the time of gender reassignment surgery. Roth Dec. Ex. 1001

reassignment surgery. The reported age of onset was 8.6 years for female-to-male patients and 9.7 years for male-to-female patients.

All participants reported dressing without difficulty in the reassigned gender; 95% of patients reported good or satisfactory adjustment in employment and income status; 72% reported good or satisfactory adjustment in relationships with partners. Although the quality of life tool was self-designed, 81% reported good or satisfactory adjustment to their new gender, and 63% reported good or acceptable satisfaction with sexual activity. Of the female-to-male patients, 39% reported good or acceptable satisfaction with sex organ function in comparison to 91% of male-to-female patients ($p < 0.001$). (The author reported that a fully functioning neo-phallus could not be constructed at the time.) The age of non-intercourse sexual activity was the only predictor of an improved outcome.

Weyers S, Elaut E, De Sutter P, Gerris J, T'Sjoen G, Heylens G, De Cuypere G, Verstraelen H. Long-term assessment of the physical, mental, and sexual health among transsexual women. J Sex Med. 2009 Mar;6(3):752-60. Epub 2008 Nov 17.

Weyers et al. (2009) conducted a prospective, non-blinded, observational study using a cross-sectional design and several measurement instruments including a non-specific quality of life tool and a semi-specific quality of life tool (using normative data) along with two self-designed tools.

The investigators assessed general quality of life, sexual function, and body image from the prior four weeks in Dutch-speaking male-to-female patients with gender dysphoria who attended a single-center (Ghent, Belgium), specialized, comprehensive care university clinic. Investigators used the Dutch version of the SF-36 and results were compared to normative data from Dutch women and U.S. women. The 19 items of the Dutch version of the Female Sexual Function Index (FSFI) were used to measure sexual desire, function, and satisfaction. A self-designed seven question visual analog scale (VAS) was used to measure satisfaction with gender related body traits and appearance perception by self and others. A self-designed survey measured a broad variety of questions regarding personal medical history, familial medical history, relationships, importance of sex, sexual orientation, gynecologic care, level of regret, and other health concerns. For this study, hormone levels were also obtained.

The study consisted of 50 (71.5% of the eligible recruits) participants. Analysis of the data revealed that the patient's average age was 43.1 ± 10.4 years, and all of the patients had vaginoplasty. This same population also had undergone additional feminization surgical procedures (breast augmentation 96.0%, facial feminization 36.0%, vocal cord surgery 40.0%, and cricoid cartilage reduction 30.0%). A total of two (4.0%) participants reported "sometimes" regretting reassignment surgery and 23 (46.0%) were not in a relationship. For the cohort, estradiol, testosterone, and sex hormone binding globulin levels were in the expected range for the reassigned gender. The SF-36 survey revealed that the subscale scores of the participants did not differ substantively from those of Dutch and U.S. women. VAS scores of body image were highest for self-image, appearance to others, breasts, and vulva/vagina (approximately 7 to 8 of 10). Scores were lowest for body hair, facial hair, and voice characteristics (approximately 6 to 7 of 10).

The total FSFI score was 16.95 ± 10.04 out of a maximal 36. The FSFI scores averaged 2.8 (6 point maximum): satisfaction 3.46 ± 1.57 , desire 3.12 ± 1.47 , arousal 2.95 ± 2.17 , lubrication 2.39 ± 2.29 , orgasm 2.82 ± 2.29 , and pain 2.21 ± 2.46 . Though these numbers were reported in the study, data on test population controls were not provided.

A post hoc exploration of the data suggested the following: perceived improvement in general health status was greater in the subset that had undergone reassignment surgery within the last year; sexual orientation impacted the likelihood of being in a relationship; SF-36 scores for vitality, social functioning, and mental health were nominally better for those in relationships, but that overall SF-36 scores did not differ by relationship status; sexual orientation and being in a relationship impacted FSFI scores; and reported sexual function was higher in those with higher satisfaction with regards to their appearance.

Wierckx K, Van Caenegem E, Elaut E, Dedeker D, Van de Peer F, Toye K, Weyers S, Hoebeke P, Monstrey S, De Cuypere G, T'Sjoen G. Quality of life and sexual health after sex reassignment surgery in transsexual men. J Sex Med. 2011 Dec;8 (12):3379-88. Epub 2011 Jun 23.

Wierckx et al. conducted a prospective, non-blinded, observational study using a cross-sectional design and several measurement instruments (a non-specific quality of life tool with reported normative data along with three self-designed tools). The investigators assessed general quality of life, sexual relationships, and surgical complications in Dutch-speaking female-to-male patients with gender dysphoria who attended a single-center, specialized, comprehensive care, university clinic (Ghent, Belgium). Investigators used the Dutch version of the SF-36 with 36 questions, eight subscales, and two domains evaluating physical and mental health. Results were compared to normative data from Dutch women and Dutch men. Self-designed questionnaires to evaluate aspects of medical history, sexual functioning (there were separate versions for those with and without partners), and surgical results were also used. The Likert-style format was used for many of the questions.

A total of 79 female-to-male patients with gender dysphoria had undergone reassignment surgery were recruited; ultimately, 47 (59.5%) chose to participate. Three additional patients were recruited by other patients. One of the 50 participants was later excluded for undergoing reassignment surgery within the one year window. The age of patients was: 30 ± 8.2 years (range 16 to 49) at the time of reassignment surgery and 37.1 ± 8.2 years (range 22 to 54) at the time of follow-up. The time since hysterectomy, oophorectomy, and mastectomy was 8 years (range 2 to 22). The patient population had undergone additional surgical procedures: metoidioplasty ($n=9$; 18.4%), phalloplasty ($n=8$ after metoidioplasty, 38 directly; 93.9% total), and implantation of erectile prosthetic device ($n=32$; 65.3%). All had started hormonal therapy at least two years prior to surgery and continued to use androgens.

The SF-36 survey was completed by 47 (95.9%) participants. The "Vitality" and the "Mental Health" scales were lower than the Dutch male population: 62.1 ± 20.7 versus 71.9 ± 18.3 and 72.6 ± 19.2 versus 79.3 ± 16.4 respectively. These subscale scores were equivalent to the mean scores of the Dutch women.

None of the participants were dissatisfied with their hysterectomy/oophorectomy procedures; 4.1% were dissatisfied with their mastectomies because of extensive scarring; and 2.2% were dissatisfied with their phalloplasties. Of the participants, 17.9% were dissatisfied with the implantation of an erectile prosthetic device; 25 (51.0%) reported at least one post-operative complication associated with phalloplasty (e.g., infection, urethrostenosis, or fistula formation); 16 (50.0% of the 32 with an erectile prosthetic device) reported at least one post-operative complication associated with implantation of an erectile prosthetic (e.g., infection, leakage, incorrect positioning, or lack of function).

A total of 18 (36.7%) participants were not in a relationship; 12.2% reported the inability to achieve orgasm with self-stimulation less than half the time; 12.2% did not respond to the question. Of those participants with partners, 28.5% reported the inability to achieve orgasm with intercourse less than half the time and 9.7% did not respond to this question. Also, 61.3% of those with partners reported (a) no sexual activities (19.4%) or (b) activities once or twice monthly (41.9%), and there were 12.9% who declined to answer.

c. Observational, surgical patients, cross-sectional, with controls

Ainsworth TA, Spiegel JH. Quality of life of individuals with and without facial feminization surgery or gender reassignment surgery. Qual Life Res. 2010 Sep;19(7):1019-24.

Ainsworth and Spiegel conducted a prospective, observational study using a cross-sectional design and a partially self-designed survey tool. The blind status is unknown. Treatment types served as the basis for controls.

The investigators, head and neck surgeons who provided facial feminization services, assessed perception of appearance and quality of life in male-to-female subjects with self-reported gender dysphoria. Patients could have received no therapeutic intervention, hormone therapy, reassignment surgery, and/or facial feminization surgery and an unrestricted length of transition. (Transition refers to the time when a transgender person begins to live as the gender with which they identify rather than the gender assigned at birth.) Criteria for the various types of interventions were not available because of the survey design of the study. Patients were recruited via website or at a 2007 health conference. Pre-specified controls to eliminate duplicate responders were not provided. The investigators employed a self-designed Likert-style facial feminization outcomes evaluation questionnaire and a "San Francisco 36" health questionnaire. No citations were provided for the latter. It appears to be the Short-form (SF) 36-version 2. Changes or differences considered to be biologically significant were not pre-specified. Power corrections for multiple comparisons were not provided.

The investigators reported that there were 247 participants. (The numbers of incomplete questionnaires was not reported.) Of the 247 participants, 25 (10.1%) received only primary sex trait reassignment surgery, 28 (11.3%) received facial surgery without primary sex trait reassignment surgery, 47 (19.0%) received both facial and primary sex trait reassignment surgery, and 147 (59.5%) received neither facial nor reassignment surgery.

The mean age for each of these cohorts was: 50 years (no standard deviation [S.D.]) only reassignment surgery, 51 years (no S.D.) only facial surgery, 49 years (no S.D.) both types of surgery, and 46 years (no S.D.) (neither surgery). Of the surgical cohorts: 100% of those who had undergone primary sex trait reassignment surgery alone used hormone therapy, 86% of those who had undergone facial feminization used hormone therapy, and 98% of those who had undergone both primary sex trait reassignment surgery and facial feminization used hormone therapy. In contrast to the surgical cohorts, 66% of the "no surgery" cohort used hormonal therapy, and a large proportion (27%) had been in transition for less than one year.

The investigators reported higher scores on the facial outcomes evaluation in those who had undergone facial feminization. Scores of the surgical cohorts for the presumptive SF-36 comprehensive mental health domain did not differ from the general U.S. female population. Scores of the "no surgery" cohort for the comprehensive mental health domain were statistically lower than those of the general U.S. female population, but within one standard deviation of the normative mean. Mean scores of all the gender dysphoric cohorts for the comprehensive physical domain were statistically higher than those of the general female U.S. population, but were well within one standard deviation of the normative mean. Analyses of inter-cohort differences for the SF-36 results were not conducted. Although the investigators commented on the potential disproportionate impact of hormone therapy on outcomes and differences in the time in "transition", they did not conduct any statistical analyses to correct for putative confounding variables.

Kraemer B, Delsignore A, Schnyder U, Hepp U. Body image and transsexualism. Psychopathology. 2008;41(2):96-100. Epub 2007 Nov 23.

Kraemer et al. conducted a single center (Zurich, Switzerland) prospective, non-blinded, observational study using a cross-sectional design comparing pre-and post- surgical cohorts. Patients were required to meet DSM III or DSM IV criteria as applicable to the time of entry into the clinic. Post-surgical patients were from a long-term study group (Hepp et al., 2002). Pre-surgical patients were recent consecutive referrals. The assessment tool was the Fragebogen zur Beurteilung des eigenen Körpers (FBek) which contained three domains.

There were 23 pre-operative patients: 7 (30.4%) female-to-male and 16 (69.6%) male-to-female (ratio 1:2.3). There were 22 post-operative patients: 8 (36.4 %) female-to-male and 14 (63.6%) male-to-female (ratio 1:1.8). The mean ages of the cohorts were as follows: pre-operative 33.0±11.3 years; post-operative 38.2±9.0 years. The mean duration after reassignment surgery was 51±25 months (range 5-96).

The pre-operative groups had statistically higher insecurity scores compared to normative data for the natal sex: female-to-male 9.0±3.8 versus 5.1±3.7; male-to-female 8.1±4.5 versus 4.7±3.1 as well as statistically lower self-confidence in one's attractiveness: female-to-male 3.1±2.9 versus 8.9±3.1; male-to-female 7.0±2.9 vs 9.5±2.6.

Mate-Kole et al. conducted a single site (London, United Kingdom) prospective non-blinded, observational study using a cross-sectional design and two psychological tests (one with some normative data). Concurrent controls were used in this study design. The investigators assessed neuroticism and sex role in natal males with gender dysphoria. Patients at various stages of management, (i.e., under evaluation, using cross-sex hormones, or post reassignment surgery [6 months to 2 years]) were matched by age of cross-dressing onset, childhood neuroticism, personal psychiatric history, and family psychiatric history. Both a psychologist and psychiatrist conducted assessments. The instruments used were the Crown Crisp Experiential Index (CCEI) for psychoneurotic symptoms and the Bem Sex Role Inventory. ANOVA was used to identify differences between the three treatment cohorts.

For each cohort, investigators recruited 50 male-to-female patients from Charing Cross Hospital. The mean ages of the three cohorts were as follows: 34 years for patients undergoing evaluation; 35 years for wait-listed patients; and 37 years for post-operative patients. For the cohorts, 22% of those under evaluation, 24% of those on hormone treatment only, and 30% of those post-surgery had prior psychiatric histories, and 24%, 24%, while 14% in each cohort, respectively, had a history of attempted suicide. More than 30% of patients in each cohort had a first degree relative with a history of psychiatric disease.

The scores for the individual CCEI domains for depression and somatic anxiety were statistically higher (worse) for patients under evaluation than those on hormone treatment alone. The scores for all of the individual CCEI domains (free floating anxiety, phobic anxiety, somatic anxiety, depression, hysteria, and obsessiveness) were statistically lower in the post-operative cohort than in the other two cohorts.

The Bem Sex Role Inventory masculinity score for the combined cohorts was lower than for North American norms for either men or women. The Bem Sex Role Inventory femininity score for the combined cohorts was higher than for North American norms for either men or women. Those who were undergoing evaluation had the most divergent scores from North American norms and from the other treatment cohorts. Absolute differences were small. All scores of gender dysphoric patients averaged between 3.95 and 5.33 on a 7 point scale while the normative scores averaged between 4.59 and 5.12.

Wolfradt U, Neumann K. Depersonalization, self-esteem and body image in male-to-female transsexuals compared to male and female controls. Arch Sex Behav. 2001 Jun;30(3):301-10.

Wolfradt and Neumann conducted a controlled, prospective, non-blinded, observational study using a cross-sectional design. The investigators assessed aspects of personality in male-to-female patients who had undergone vocal cord surgery for voice feminization and in healthy non-transgender volunteers from the region. The patients had undergone gender reassignment surgery 1 to 5 years prior to voice surgery. The volunteers were matched by age and occupation.

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The primary hypothesis was that depersonalization, with the sense of being detached from one's body or mental processes, would be more common in male-to-female patients with gender dysphoria. German versions of the Scale for Depersonalization Experiences (SDPE), the Body Image Questionnaire (BIQ), a Gender Identity Trait Scale (GIS), and the Self-Esteem Scale (SES) were used in addition to a question regarding global satisfaction. Three of the assessments used a 5 point scale (BIQ, GIS, and SDPE) for questions. One used a 4 point scale (SES). Another used a 7 point scale (global satisfaction). The study consisted of 30 male-to-female patients, 30 healthy female volunteers, and 30 healthy male volunteers. The mean age of study participants was 43 years (range 29- 67).

Results of the study revealed that there were no differences between the three groups for the mean scores of measures assessing depersonalization, global satisfaction, the integration of masculine traits, and body-image-rejected (subset). Also, the sense of femininity was equivalent for male-to-female patients and female controls and higher than that in male controls. The levels of self-esteem and body image-dynamic (subset) were equivalent for male-to-female patients and male controls and higher than that in female controls, and none of the numeric differences between means exceeded 0.61 units.

Kuhn A, Bodmer C, Stadlmayr W, Kuhn P, Mueller M, Birkhäuser M. Quality of life 15 years after sex reassignment surgery for transsexualism. Fertil Steril. 2009 Nov;92(5):1685-1689.e3. Epub 2008 Nov 6.

Kuhn et al. conducted a prospective, non-blinded, observational study using a cross-sectional design and semi-matched control cohort. The investigators assessed global satisfaction in patients who were from gynecology and endocrinology clinic (Bern, Switzerland), and who had undergone some aspect of gender reassignment surgery in the distant past, but were still receiving cross-sex hormones from the clinic. The quality of life assessment tools included a VAS and the King's Health Questionnaire (KHQ), which consists of eight domains with scores between zero and five or one and five, with lower scores indicating higher preference. The KHQ and the numerical change/difference required for clinical significance (≥ 5 points in a given domain, with higher scores being more pathologic) were included in the publication. Twenty healthy female controls from the medical staff who had previously undergone an abdominal or pelvic surgery were partially matched by age and body mass index (BMI), but not sex. No corroborative gynecologic or urologic evaluations were undertaken.

Of the 55 participants, three (5.4%) were female-to-male and 52 (94.5%) were male-to-female (ratio 1:17.3). Reassignment surgery had been conducted 8 to 23 years earlier (median 15 years). The median age of the patients at the time of this study was 51 years (range 39-62 years). The patients had undergone a median of nine surgical procedures in comparison to the two undergone by controls. Reassignment patients were less likely to be married (23.6% versus 65%; $p=0.002$); partnership status was unknown in five patients. The scores of VAS global satisfaction (maximal score eight) were lower for surgically reassigned patients (4.49 ± 0.1 SEM) than controls (7.35 ± 0.26 SEM) ($p<0.0001$).

The abstract stated that quality of life was lower in reassignment patients 15 years after surgery relative to controls. One table in the study, Table 2, delineated statistically and biologically significant differences for four of the eight KHQ domains between the patients and controls: physical limitation: 37.6 ± 2.3 versus 20.9 ± 1.9 ($p<0.0001$), personal limitation: 20.9 ± 1.9 versus 11.6 ± 0.4 ($p<0.001$), role limitation: 27.8 ± 2.4 versus 34.6 ± 1.7 ($p=0.046$), and general health: 31.7 ± 2.2 versus 41.0 ± 2.3 ($p<0.02$). There is a related paper by Kuhn
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Haraldsen IR, Dahl AA. Symptom profiles of gender dysphoric patients of transsexual type compared to patients with personality disorders and healthy adults. Acta Psychiatr Scand. 2000 Oct;102(4):276-81.

Haraldsen and Dahl conducted a single-center (Oslo, Norway) partially prospective, non-blinded, observational study using a cross-sectional design and a non-specific psychometric test. There was a control group, but it was not concurrent.

In the germane sub-study, the investigator assessed psychopathology in patients with gender dysphoria. Patients, who were independently evaluated by two senior psychiatrists, were required to meet DSM III-R or DSM IV diagnostic criteria and the Swedish criteria for reassignment surgery. The Norwegian version of the SCL-90 was used. The testing was conducted from 1987 to 1989 for those who had undergone reassignment surgery between 1963 and 1987 and from 1996 to 1998 for pre- surgical patients who had applied for reassignment surgery between 1996 and 1998. In addition, Axis I, Axis II, and Axis V (Global Functioning) was assessed.

Of 65 post-surgical and 34 pre-surgical patients, 59 post-surgical and 27 pre-surgical patients ultimately entered the study. The combined cohorts consisted of 35 (40.7%) female-to-male patients and 51 (59.3%) male-to-female patients (ratio 1:1.5). The ages were female-to-male 34 ± 9.5 years and female-to-male 33.3 ± 10.0 years. The other control group consisted of patients with personality disorder. Of these, 101 (27 men (33.9 ± 7.3 years) and 74 women (31.6 ± 8.2)) were tested during a treatment program. One year later, 98% were evaluated. A total of 28 (32.5%) of the pre- and post- reassignment surgery patients had an Axis I diagnosis compared to 100 (99.0%) of those with personality disorders. Depression and anxiety were the most common diagnoses in both groups, but were approximately three to four times more common in the personality disorder cohort. Seventeen (19.8%) of the pre- and post-reassignment surgery patients had an Axis II diagnosis whereas the mean number of personality disorders in the personality disorder cohort was 1.7 ± 1 . The Global Assessment of Function was higher (better) in the gender dysphoric groups (78.0 ± 8.9) than in the personality disorder cohort (53.0 ± 9.0).

Global Severity Indices (GSI) were highest for those with personality disorder regardless of gender and exceeded the cut-point score of 1.0. The GSI scores for females-to-males and males-to-females were 0.67 ± 0.57 and 0.56 ± 0.45 . Although they were nominally higher than the healthy normative controls (males: 0.32 ± 0.36 and females 0.41 ± 0.43), they were well within the non- pathologic range. The same was true for the subscales.

SCL-90 GSI scores did not differ substantively between pre- and post-surgical patients, nor did the SCI subscale scores differ substantively between pre- and post-surgical patients. Any small non-significant differences tracked with the age and sex differences.

Beatrice conducted a prospective, non-blinded, observational study using a cross-sectional design and control cohorts in the U.S. The investigator assessed psychological adjustment and functioning (self-acceptance) in male-to-female patients with gender dysphoria (with and without GRS), transvestites from two university specialty clinics, and self-identified heterosexual males recruited from the same two universities. The criteria to qualify for the study included being known to the clinic for at least one year, cross-dressing for at least one year without arrest, attendance at 10 or more therapy sessions, emotionally self-supporting, and financially capable of payment for reassignment surgery, and all of these criteria were met by the pre-operative cohort as well as the post-operative cohort. The cohorts were matched to the post-operative cohort (age, educational level, income, ethnicity, and prior heterosexual object choice). The post-operative cohort was selected not on the basis of population representation, but on the basis of demographic feasibility for a small study. The instruments used were the Minnesota Multiphasic Personality Inventory (MMPI) and the Tennessee Self-Concept Scale (TSCS). Changes or differences considered to be biologically significant were not pre-specified.

Of the initial 54 recruits, ten subjects were left in each of the cohorts because of exclusions identified due to demographic factors. The mean age of each cohort were as follows: pre-operative gender dysphoric patients 32.5 (range 27-42) years, postoperative patients 35.1 (30-43) years old, transvestite 32.5 (29-37) years old, and heterosexual male 32.9 (28-38) years old. All were Caucasian. The mean age for cross-dressing in pre-operative patients (6.4 years) and post-operative patients (5.8 years) was significantly lower than for transvestites (11.8 years).

The scores for self-acceptance did not differ by diagnostic category or surgical status as measured by the TSCS instrument. As measured by the T-scored MMPI instrument (50 ± 10), levels of paranoia and schizophrenia were higher for post-operative (GRS) patients (63.0 and 68.8) than transvestites (55.6 and 59.6) and heterosexual males (56.2 and 51.6). Levels of schizophrenia were higher for pre-operative patients (65.1) than heterosexual males (51.6). There were no differences between patients with gender dysphoria. Scores for the Masculine-Feminine domain were equivalent in those with transvestitism and gender dysphoria with or without surgery, but higher than in heterosexual males. The analysis revealed that despite the high level of socio-economic functioning in these highly selected subjects, the MMPI profiles based on the categories with the highest scores were notable for antisocial personality, emotionally unstable personality, and possible manic psychosis in the pre-operative GRS patients and for paranoid personality, paranoid schizophrenia, and schizoid personality in the post-operative GRS patients. By contrast, the same MMPI profiling in heterosexual males and transvestites was notable for the absence of psychological dysfunction.

d. Observational, surgical patients, longitudinal, with controls

Dhejne C, Lichtenstein P, Boman M, Johansson A, Långström N, Landén M. Long-term follow-up of transsexual persons undergoing sex reassignment surgery: cohort study in Sweden. *PLoS One.* 2011;6(2):e16885. Epub 2011 Feb 22.

Dhejne et al. conducted a retrospective, non-blinded, observational study of nation-wide mortality using a longitudinal and a population-based matched cohort. The investigators assessed conditions such as, but not limited to, mortality, suicide attempts, psychiatric hospitalization, and substance abuse in gender-reassigned persons and randomly selected unexposed controls matched by birth year and natal sex (1:10) as well as by birth year and the reassigned gender (1:10). Data were extracted from national databases including the Total Population Register (Statistics Sweden), the Medical Birth Register, the Cause of Death Register (Statistics Sweden), the Hospital Discharge Register (National Board of Health and Welfare), the Crime Register (National Council of Crime), and those from the Register of Education for highest educational level. The criteria required to obtain the initial certificate for reassignment surgery and change in legal status from the National Board of Health and Welfare were the 2002 WPATH criteria and included evaluation and treatment by one of six specialized teams, name change, a new national identity number indicative of gender, continued use of hormones, and sterilization/castration. Descriptive statistics with hazard ratios were provided.

Investigators identified 804 patients with gender identity disorder (or some other disorder) in Sweden during the period from 1973 to 2003 inclusive. Of these patients, 324 (40.3%) underwent gender-reassignment surgery (133 female-to-male [41.0%]; 191 male-to-female [59.0%]; ratio 1:1.4). The average follow-up time for all-cause mortality was 11.4 years (median 9.1). The average follow-up time for psychiatric hospitalization was 10.4 years (median 8.1).

The mean ages in female-to-male and male-to-female reassigned patients were: 33.3 ± 8.7 (range 20–62) and 36.3 ± 10.1 (range 21–69) years, respectively. Immigrant status was two times higher in reassigned patients ($n=70$, 21.6%) than in either type of control (birth [natal] sex matched $n=294$ [9.1%] or reassigned gender matched $n=264$ [8.1%]). Educational attainment (10 or more years) was somewhat lower for reassigned patients ($n=151$ [57.8%]) than in either type of control (birth sex matched $n=1,725$ [61.5%] or reassigned gender matched $n=1804$ [64.3%]) (cohort data were incomplete). The biggest discordance in educational attainment was for female-to-male reassigned patients regardless of the control used. Prior psychiatric morbidity (which did not include hospitalization for gender dysphoria) was more than four times higher in reassigned patients ($n=58$, 17.9%) than in either type of control (birth sex matched $n=123$ [3.8%] or reassigned gender matched $n=114$ [3.5%]).

All-cause mortality was higher for patients who underwent gender reassignment surgery ($n=27$ [8.3%]) than in controls (hazard ratio 2.8 [CI 1.8–4.3]) even after adjustment for covariants (prior psychiatric morbidity and immigration status). Divergence in the survival curves began at 10 years. Survival rates at 20 year follow-up (as derived from figure 1) were: female control 97%, male controls 94%, female-to-male patients 88%, and male-to-female patients 82%. The major contributor to this mortality difference was completed suicide ($n=10$ [3.1%]; adjusted hazard ratio 19.1 [CI 5.8–62.9]). Mortality due to cardiovascular disease was modestly higher for reassigned patients ($n=9$ [2.8%]) than in controls (hazard ratio 2.5 [CI 1.2–5.3]).

Suicide attempts were more common in patients who underwent gender reassignment surgery ($n=29$ [9.0%]) than in controls (adjusted hazard ratio 4.9 [CI 2.9–8.5]). Male-to-female patients were at higher adjusted risk for attempted suicide than either control whereas female-to-male patients were at higher adjusted risk compared to only male controls and maintained the female pattern of higher attempted suicide risk. Hospitalizations for psychiatric conditions (not related to gender dysphoria) were more common in reassigned persons $n=64$ [20.0%] than in controls (hazard ratio 2.8 [CI 2.0–3.9]) even after adjusting for prior psychiatric morbidity. Hospitalization for substance abuse was not greater than either type of control.

The nationwide mortality studies by Dhejne et al. (2011) includes much, if not all, of the Landén (1998) patient population and much of the Dhejne et al. (2014) population.

Dhejne C, Öberg K, Arver S, Landén M. An analysis of all applications for sex reassignment surgery in Sweden, 1960-2010: prevalence, incidence, and regrets. Arch Sex Behav. 2014 Nov;43(8):1535-45. Epub 2014 May 29 and Landén M, Wålinder J, Lambert G, Lundström B. Factors predictive of regret in sex reassignment. Acta Psychiatr Scand. 1998 Apr;97(4):284 (Dhejne et al., 2014; Landén et al., 1998) Sweden-All

Dhejne et al. conducted a non-blinded, observational study that was longitudinal for the capture of patients with "regret" in a national database. This same group (Landén et al., 1998) conducted a similar study along with retrospective acquisition of clinical data to explore the differences between the cohorts with and without regret. There were no external controls; only intra- group comparisons for this surgical series.

The investigators assessed the frequency of regret for gender reassignment surgery. Data were extracted from registries at the National Board of Health and Welfare to which patients seeking reassignment surgery or reversal of reassignment surgery make a formal application and which has maintained such records since a 1972 law regulating surgical and legal sex reassignment. The investigators reviewed application files from 1960 through 2010. The specific criteria to qualify for gender surgery were not delineated. Patients typically underwent diagnostic evaluation for at least one year. Diagnostic evaluation was typically followed by the initiation of gender confirmation treatment including hormonal therapy and real-life experience. After two years of evaluation and treatment, patients could make applications to the national board. Until recently sterilization or castration were the required minimal surgical procedures (Dhejne et al., 2011). Secular changes in this program included consolidation of care to limited sites, changes in accepted diagnostic criteria, and provision of non-genital surgery, e.g., mastectomy during the real- life experience phase, and family support.

There were 767 applicants for legal and surgical reassignment (289 [37.7%] female-to-male and 478 [62.3%] male-to-female; ratio 1:1.6). The number of applicants doubled each ten year interval starting in 1981.

Of the applicants, 88.8% or 681 (252 [37.0%] female-to-male and 429 [63.0%] male-to-female; ratio 1:1.7] had undergone surgery and changed legal status by June 30, 2011. This number included eight (four [50.0%] female-to-male and four [50.0%] male to female; ratio 1:1) people who underwent surgery prior to the 1972 law. This number appears to include 41 (two [4.9%] female-to-male and 39 [95.1%] male-to-female; ratio 1:19.5) people who underwent surgery abroad at their own expense (usually in Thailand or the U.S.). This cohort (6% of 681) includes one person who was denied reassignment surgery by Sweden.

Twenty-five (3.3%) of the applications were denied with the two most common reasons being an incomplete application or not meeting the diagnostic criteria. An additional 61(8.0%) withdrew their application, were wait-listed for surgery, postponed surgery (perhaps in hopes of the later revocation of the sterilization requirement), or were granted partial treatment.

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The formal application for reversal of the legal gender status, the "regret rate", was 2.2%. No one who underwent sex- reassignment surgery outside of Sweden (36 of these 41 had surgery after 1991) has requested reversal. The authors noted, however, that this preliminary number may be low because the median time interval to reversal request was eight years-only three of which had elapsed by publication submission- and because it was the largest serial cohort. This number did not include other possible expressions of regret including suicide (Dhejne et al., 2011).

Dhejne et al. in 2014 reported that the female-to-male (n=5): male-to-female (n=10) ratio among those who made formal applications for reversal was 1:2. The investigators also reported that the female-to-male applicants for reversal were younger at the time of initial surgical application (median age 22 years) than the complete female-to-male cohort at the time of surgical application (median age 27 years). By contrast the male-to-female applicants for reversal were older at the time of initial surgical application (median age 35 years) than the complete male-to-female cohort at the time of initial surgical application (median age 32 years). Other clinical data to explore the differences between the cohorts with and without regret were not presented in this update publication.

In their earlier publication, in addition to determining a regret rate (3.8%), Landén et al. extracted data from medical records and government verdicts. Pearson Chi-square testing with Yates' correction for small sample sizes was used to identify candidate variables predictive of regret. They observed that: (a) 25.0% of the cohort with regrets and 11.4% of the cohort without regrets were unemployed, (b) 16.7% of the cohort with regrets and 15.4% of the cohort without regrets were on "sick benefit", (c) 15.4% of the cohort with regrets and 13.9% of the cohort without regrets had problems with substance abuse, (d) 69.2% of the cohort with regrets and 34.6% of the cohort without regrets had undergone psychiatric treatment, (e) 15.4% of the cohort with regrets and 8.8% of the cohort without regrets had a mood disorder, and (f) 15.4% of the cohort with regrets and 1.5% of the cohort without regrets had a psychotic disorder.

The putative prognostic factors that were statistically different between the cohorts with and without regret included prior psychiatric treatment, a history of psychotic disorder, atypical features of gender identity, and poor family support. Factors that trended towards statistical difference included having an unstable personality, sexual orientation and transvestitism. Univariate regression analyses further clarified the most important variables. These variables were tested with logistic regression. Initial modeling included the variable "history of psychotic disorder". Although this variable was predictive, it was excluded from future analyses because it was already a contraindication to reassignment surgery. Additional multivariate regression analyses identified poor family support as the most predictive variable and atypical features of gender identity as the second most important variable. Presence of both variables had a more than additive effect.

The nationwide mortality studies by Dhejne et al. (2011) includes much, if not all, of the Landén (1998) patient population and most of the Dhejne (2014) population. There is a related paper by Landén et al. 1998b that included the criteria to qualify for surgical intervention at that time.

Heylens et al. conducted a prospective, non-blinded observational study using a longitudinal design in which patients served as their own controls. They used a non-specific psychiatric test with normative data along with two self-designed questionnaires. The investigators assessed psychosocial adjustment and psychopathology in patients with gender identity disorders. Patients were to be sequentially evaluated prior to institution of hormonal therapy, then 3 to 6 months after the start of cross-sex hormone treatment, and then again one to 12 months after reassignment surgery. The Dutch version of the SCL-90R with eight subscales (agoraphobia, anxiety, depression, hostility, interpersonal sensitivity, paranoid ideation/psychoticism, and sleeping problems) and a global score (psycho-neuroticism) was used serially. A seven parameter questionnaire was used serially to assess changes in social function. Another cross-sectional survey assessed emotional state. The cohorts at each time point consisted of patients who were in the treatment cohort at the time and who had submitted survey responses.

Ninety of the patients who applied for reassignment surgery between June 2005 and March 2009 were recruited. Fifty seven entered the study. Forty-six (51.1% of the recruited population) underwent reassignment surgery. Baseline questionnaire information was missing for 3 patients. Baseline SCL-90 scores were missing for 1 patient but included SCL-90 scores from some of the 11 recruits who had not yet undergone reassignment surgery. Time point 2 (after hormone therapy) SCL-90 information was missing for 10, but included SCL-90 scores from some of the 11 recruits who had not yet undergone reassignment surgery. At time point 3, 42 (91.3% of those who underwent reassignment surgery) patients completed some part of the SCL-90 survey and the psychosocial questionnaires. Some questionnaires were incomplete. The investigators reported response rates of 73.7% for the psychosocial questionnaires and 82.5% for the SCL-90.

Of those who responded at follow-up after surgery, 88.1% reported having good friends; 52.4% reported the absence of a relationship; 47.6% had no sexual contacts; 42.9% lived alone; 40.5% were unemployed, retired, students, or otherwise not working; 2.4% reported alcohol abuse; and 9.3% had attempted suicide. The frequency of these parameters reportedly did not change statistically during the study interval, but there was no adjustment for the inclusion of patients who did not undergo surgery.

In a cross-sectional, self-report mood survey, of the 42 study entrants who completed the entire treatment regimen including reassignment surgery and the final assessment (refers to the initial 57) reported improved body-related experience (97.6%), happiness (92.9%), mood (95.2%), and self-confidence (78.6%) and reduced anxiety (81.0%). Of participants, 16.7% reported thoughts of suicide. Patients also reported on the intervention phase that they believed was most helpful: hormone initiation (57.9%), reassignment surgery (31.6%), and diagnostic-psychotherapy phase (10.5%).

The global "psycho-neuroticism" SCL-90R score, along with scores of 7 of the 8 subscales, at baseline were statistically more pathologic than the general population. After hormone therapy, the score for global "psycho-neuroticism" normalized and remained normal after reassignment surgery. More specifically the range for the global score is 90 to 450 with higher scores being more pathologic. The score for the general population was 118.3 ± 32.4 . The respective scores for the various gender dysphoric cohorts were 157.7 ± 49.8 at initial presentation, 119.7 ± 32.1 after hormone therapy, and 127.9 ± 37.2 after surgery. The scores for the general population and the scores after either hormone treatment or surgical treatment did not differ.

Kockott and Fahrner conducted a single center (Munich, Germany) prospective, observational study using a longitudinal design. Treatment cohorts were used as controls, and patients served as their own controls. The investigators assessed psychosocial adjustment in patients with gender identity issues. Patients were to have met DSM III criteria. Trans-sexuality, transvestitism, and homosexuality were differentiated. The criteria required for patients to receive hormone therapy and/or reassignment surgery were not delineated. After receiving hormone therapy, patients were later classified by surgical reassignment status (pre-operative and post-operative) and desire for surgery (unchanged desire, hesitant, and no longer desired).

The first investigative tool was a semi-structured in-person interview consisting of 125 questions. The second investigative tool was a scale that organized the clinical material into nine domains which were then scored on a scale. The Psychological Integration of Trans-sexuals (PIT) instrument developed according to the scale used by Hunt and Hampson (1980) for assessment of 17 post-operative patients. There were 15 interviews and two separate interviewers. There were 80 patients identified, but 58 (72.5%) patients (26 pre-operative; 32 post-operative) were ultimately included in the analysis. The duration of follow-up was longer for post-operative patients (6.5 years) than for pre-operative patients (4.6 years) (including time for one patient subsequently excluded). The mean age of the post-operative patients was 35.5 ± 13.1 years, and the age of the patients who maintained a continued desire for surgery was 31.7 ± 10.2 years. The age of the patients who hesitated about surgery was somewhat older, 40.3 ± 9.4 years. The age of the patients who were no longer interested in surgery was 31.8 ± 6.5 years. All were employed or in school at baseline. Patients with hesitation were financially better-off, had longer-standing relationships even if unhappy, and had a statistical tendency to place less value on sex than those with an unchanged wish for surgery.

Post-operative patients more frequently reported contentment with the desired gender and the success of adaption to the gender role than the pre-operative patients with a persistent desire for surgery. Post-operative patients more frequently reported sexual satisfaction than pre-operative patients with a continuing desire for surgery. Post-operative patients also more frequently reported financial sufficiency and employment than pre-operative patients with a persistent desire for surgery. Suicide attempts were stated to be statistically less frequent in the post-surgical cohort.

Psychosocial adjustment scores were in the low end of the range with "distinct difficulties" (19-27) at the initial evaluation for the post-operative patients (19.7), the pre-operative patients with a persistent wish for surgery (20.2), and the hesitant patients (19.7). At initial evaluation, psychosocial adjustment scores for patients no longer wanting surgery were at the high end of the range with "few difficulties" (10-18). At the final evaluation, Psychosocial adjustment scores were at the high end of the range "few difficulties" (10-18) for the post-operative patients (13.2) and the patients no longer wanting surgery (16.5). Psychosocial adjustment scores at the final evaluation were in the borderline range between "few difficulties" (10-18) and "distinct difficulties" (19-27) for both the pre-operative patients with a persistent desire for surgery (18.7), and the hesitant patients (19.1).

The changes in the initial score and the final follow-up score within each group were tracked and reported to be statistically significant for the post-operative group, but not for the other groups. Statistical differences between groups were not presented. Moreover, the post-operative patients had an additional test immediately prior to surgery. The first baseline score (19.7) would have characterized the patients as having "distinct difficulties" in
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psychosocial adjustment while the second baseline score (16.7) would have categorized the patients as having "few difficulties" in psychosocial adjustment despite the absence of any intervention except the prospect of having imminent reassignment surgery. No statistics reporting on the change between scores of the initial test and the test immediately prior to surgery and the change between scores of the test immediately prior to surgery and the final follow-up were provided.

Meyer JK, Reter DJ. Sex reassignment. Follow-up. Arch Gen Psychiatry. 1979 Aug;36(9):1010-5. (United States study)

Meyer and Reter conducted a single-center (Baltimore, Maryland, U.S.) prospective, non-blinded, observational study using a longitudinal design and retrospective baseline data. Interview data were scored with a self-designed tool. There were treatment control cohorts, and patients served as their own controls. The investigators assessed patients with gender dysphoria. The 1971 criteria for surgery required documented cross-sex hormone use as well as living and working in the desired gender for at least one year in patients subsequently applying for surgery. Clinical data including initial interviews were used for baseline data. In follow-up, the investigators used extensive two to four hour interviews to collect information on (a) objective criteria of adaptation, (b) familial relationships and coping with life milestones, and (c) sexual activities and fantasies. The objective criteria, which were the subject of the publication, included employment status (Hollingshead job level), cohabitation patterns, and need for psychiatric intervention. The investigators designed a scoring mechanism for these criteria and used it to determine a global adjustment score. The score value or the change score that was considered to be biologically significant was not pre-specified in the methods.

The clinic opened with 100 patients, but when the follow-up was completed, 52 patients were interviewed and 50 gave consent for publication. Of these, 15 (four female-to-male, 11 male-to-female; ratio 1:2.8) were part of the initial operative cohort, 14 (one female-to-male; 13 male-to-female; ratio 1:13) later underwent reassignment surgery at the institution or elsewhere, and 21 (five female-to-male; 16 male-to-female; ratio 1:3.2) did not undergo surgery. The mean ages of these cohorts were 30.1, 30.9, and 26.7 years respectively. The mean follow-up time was 62 months (range 19-142) for those who underwent surgery and 25 months (range 15-48) for those who did not. Socioeconomic status was lowest in those who subsequently underwent reassignment surgery.

Of patients initially receiving surgery, 33% had some type of psychiatric contact prior to the initial clinic evaluation and 8% had psychiatric contact during the follow-up. Of the patients who had not undergone surgery or who had done so later, 72% had some type of psychiatric contact prior to the initial clinic evaluation and 28% had psychiatric contact during follow-up. There was a single female-to-male patient with multiple surgical complications who sought partial reassignment surgery reversal.

The adjustment scores improved over time with borderline statistical significance for the initial operative group and with statistical significance for the never operated group. The absolute score value at follow-up was the same for both groups (1.07+1.53 and 1.10+1.97 respectively). By contrast, the adjustment scores did not improve for those who were not in the cohort initially approved for surgery, but who subsequently underwent surgery later. This was particularly true if the surgery was performed elsewhere. The absolute score value at follow-up was 0.21+1.89.

Related papers include Meyer et al. (1971), Meyer et al. (1974a-d), and Derogatis et al. (1978) along with commentary response by Fleming et al. (1980).

Rakic Z, Starcevic V, Maric J, Kelin K. The outcome of sex reassignment surgery in Belgrade: 32 patients of both sexes. Arch Sex Behav. 1996 Oct;25(5):515-25.

Rakic et al. single-center (Belgrade, Yugoslavia) conducted a prospective, non-blinded, observational study using a cross-sectional design and an investigator- designed quality of life tool that asked longitudinal (pre- and post-treatment) questions. Patients served as their own controls. The authors state that the study was not designed to assess the predictors of poor outcomes.

The investigators assessed global satisfaction, body image, relationships, employment status, and sexual function in patients with gender dysphoria who underwent reassignment surgery between 1989 and 1993 and were at least six months post-operative. The criteria to qualify for gender surgery were delineated (1985 standards from the Harry Benjamin International Gender Dysphoria Association) and included cross-gender behavior for at least one year and sexual orientation to non-natal sex. The questionnaire consisted of 10 questions using yes/no answers or Likert-type scales. Findings were descriptive without statistical analysis. As such, changes or differences considered to be biologically significant were not pre-specified, and there were no adjustments for multiple comparisons.

Of the 38 patients who had undergone reassignment surgery, 34 were eligible for the study and 32 participated in the study (two were lost to follow-up and four were in the peri-operative period) - 10 (31.2%) female-to-male and 22 (68.8%) male-to-female (ratio 1:2.2). The duration of follow-up was 21.8 ± 13.4 months (range 6 months to 4 years). The age was female-to-male 27.8 ± 5.2 (range 23-37) and male-to-female 26.4 ± 7.8 (range 19-47).

Using an investigator-designed quality of life tool, all patients reported satisfaction with having undergone the surgery. Of the total participants, four (12.5%) (all male-to-female) and eight (25%) (87.5% male-to-female) reported complete dissatisfaction or partial satisfaction with their appearance. Regarding relationships, 80% of female-to-male and 100% of male-to-female patients were dissatisfied with their relationships with others prior to surgery; whereas, no female-to-male patients and 18.1% of male-to-female patients were dissatisfied with relationships after surgery. Regarding sexual partners, 60% of female-to-male and 72.7% of male-to-female patients reported not having a sexual partner prior to surgery; whereas, 20% of female-to-male patients and 27.3% of male-to-female patients did not have a sexual partner after surgery. Of those with partners at each time interval, 100% of female-to-male and 50% of male-to-female patients reported not experiencing orgasm prior to surgery; whereas, 75% of female-to-male and 37.5% of male-to-female patients reported not experiencing orgasm after surgery.

Ruppin U, Pfäfflin F. Long-term follow-up of adults with gender identity disorder. Arch Sex Behav. 2015 Jul;44(5):1321-9. Epub 2015 Feb 18.
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Ruppin and Pfafflin conducted a single-center (Ulm, Germany) partially prospective, non-blinded, observational study using a longitudinal design and non-specific psychometric tests and a self-designed interview tool and questionnaire. Patients served as their own controls.

The investigators assessed psychological symptoms, interpersonal difficulties, gender role stereotypes, personality characteristics, societal function, sexual function, and satisfaction with new gender role in patients with gender dysphoria. Patients were required to have met the ICD-10 criteria for trans-sexualism, been seen by the clinic by prior to 2001, and completed an official change in gender including name change prior to 2001. Assessment tools included German versions of standardized surveys with normative data: the SCL 90R, the Inventory of Interpersonal Problems (IIP), Bem Sex Role Inventory (BSRI), and the Freiburg Personality Inventory (FPI-R), along with semi-structured interviews with self-designed questionnaires. The prospective survey results were compared to retrospective survey results. Changes or inter-group differences considered to be biologically significant were not pre-specified. Diagnostic cut points were not provided. Statistical corrections for multiple comparisons were not included.

Overall, 140 patients received recruitment letters and then 71 (50.7%) agreed to participate. Of these participants, 36 (50.7%) were female-to-male; 35 (49.3%) were male-to-female (ratio 1:0.97). The ages of the patients were: 41.2 ± 5.78 years (female-to-male) and 52.9 ± 10.82 years (male-to-female). The intervals for follow-up were 14.1 ± 1.97 years and 13.7 ± 2.17 years, respectively.

All female-to-male patients had undergone mastectomy; 91.7% had undergone oophorectomy and/or hysterectomy; 61.1% had undergone radial forearm flap phalloplasty or metaoidioplasty. Of male-to-female patients, 94.3% had undergone vaginoplasty and perhaps an additional procedure (breast augmentation, larynx surgery, or vocal cord surgery). Two male-to-female patients had not undergone any reassignment surgery, but were still included in the analyses.

A total of 68 patients ranked their well-being as 4.35 ± 0.86 out of five (three patients did not respond to this question). Of respondents, 40% reported not being in a steady relationship. Regular sexual relationships were reported by 57.1% of 35 female- to-male respondents and 39.4% of 33 male-to-female respondents (three patients did not respond to this question). A total of 11 patients reported receiving out-patient psychotherapy; 69 did not express a desire for gender role reversal (two did not respond to this question). The response rate was less than 100% for most of the self-designed survey questions.

Changes from the initial visit to the follow-up visit were assessed for the SCL-90R in 62 of 71 patients. The effect size was statistically significant and large only for the "Interpersonal Sensitivity" scale (one of 10 parameters). The absolute magnitude of mean change was small: from 0.70 ± 0.67 to 0.26 ± 0.34 (scale range 0-4). The duration of follow-up did not correlate with the magnitude of change on the various scales. Differences in baseline SCL-90R scores of 62 participants were compared with the score of 63 of the 69 eligible recruits who declined to enter the study and were notable for higher "Depression" scores for the latter.

Changes from the initial visit to the follow-up visit were assessed for the IIP in 55 of 71 patients. The effect size was statistically significant and large only for the "Overly Accommodating" scale (one of eight parameters). The absolute magnitude of mean change was small: from 11.64 ± 5.99 to 7.04 ± 4.73 (scale range 0-32). The duration of follow-up did not correlate with the magnitude of change on the various scales.

Changes from the initial visit to the follow-up visit were assessed for the FPI-R in 58 of 71 patients. The effect size was statistically significant and large only for the "Life Satisfaction" scale (one of 12 parameters). The absolute magnitude of mean change was substantive: from 4.43 ± 2.99 to 8.31 ± 2.63 (scale range 0-12). The duration of follow-up did not correlate with the magnitude of change on the various scales.

Changes from the initial visit to the follow-up visit were assessed for the BSRI in 16 of 36 female to male patients and 19 of 35 male to female patients. The "Social Desirability" score increased for the female-to-male respondents. At endpoint, both categories of respondents reported androgynous self-images.

This current report is an update of prior publications by Pfafflin including work with Junge which was published in a variety of formats and initially in German.

Smith YL, Van Goozen SH, Kuiper AJ, Cohen-Kettenis PT. Sex reassignment: outcomes and predictors of treatment for adolescent and adult transsexuals. Psychol Med. 2005 Jan;35(1):89-99.

Smith et al. conducted a single-center (Amsterdam, Netherlands) prospective, non-blinded, observational study using a longitudinal design and psychological function tools. Patients served as their own control prior to and after reassignment surgery. The investigators assessed gender dysphoria, body dissatisfaction, physical appearance, psychopathology, personality traits, and post-operative function in patients with gender dysphoria. Patients underwent some aspect of reassignment surgery. The test instruments included the Utrecht Gender Dysphoria Scale (12 items), the Body Image Scale adapted for a Dutch population (30 items), Appraisal of Appearance Inventory (3 observers, 14 items), the Dutch Short MMPI (83 items), the Dutch version of the Symptom Checklist (SCL)(90 items), and clinic-developed or modified questionnaires. Pre-treatment data was obtained shortly after the initial interview. Post- surgery data were acquired at least one year post reassignment surgery.

Three hundred twenty five consecutive adolescents and adults were screened for the study. One-hundred three (29 [28.2%] female-to-male patients and 74 [71.8%] male-to-female patients [ratio 1:2.6]) never started hormone therapy; 222 (76 [34.2%] female-to-male patients and 146 [65.8%] male-to-female patients [ratio 1:1.9]) initiated hormone therapy. Of the patients who started hormone therapy, 34 (5 [14.7%] female-to-male patients and 29 [85.3%] male-to-female patients [ratio 1:5.8]) discontinued hormone therapy.

Subsequently, the study analysis was limited to adults. One hundred sixty-two (58 [38.9%] female-to-male and 104 [64.2%] male-to-female [ratio 1:1.8]) were eligible and provided pre-surgical test data, and 126 (77.8% of eligible adults) (49 [38.9%] female-to-male and 77 [61.1%] male-to-female [ratio 1:1.6]) provided post-surgical data. For those patients who completed reassignment, the mean age at the time of surgical request was 30.9 years (range 17.7-68.1) and 35.2 years (range 21.3-71.9) years at the time of follow-up. The intervals between hormone treatment initiation and surgery and surgery and follow-up were 20.4 months (range 12 to 73) and 21.3 months (range 12 to 47) respectively.

Of the 126 adults who provided post-surgical data, 50 (40.0%) reported having a steady sexual partner, three (2.3%) were retired, and 58 (46.0%) were unemployed. Regarding regret, six patients expressed some regret regarding surgery, but did not want to resume their natal gender role, and one male-to-female had significant regret and would not make the same decision.

Post-surgery Utrecht dysphoria scores dropped substantially and approached reportedly normal values. The patients' appearance better matched their new gender. No one was dissatisfied with his/her overall appearance at follow-up. Satisfaction with primary sexual, secondary sexual, and non-sexual body traits improved over time. Male-to-female patients, however, were more dissatisfied with the appearance of primary sex traits than female-to-male patients. Regarding mastectomy, 27 of 38 (71.1%) female-to-male respondents (not including 11 non-respondents) reported incomplete satisfaction with their mastectomy procedure. For five of these patients, the incomplete satisfaction was because of scarring. Regarding vaginoplasty, 20 of 67 (29.8%) male-to-female respondents (not including 10 non-respondents) reported incomplete satisfaction with their vaginoplasty.

Most of the MMPI scales were already in the normal range at the time of initial testing and remained in the normal range after surgery. SCL global scores for psycho- neuroticism were minimally elevated before surgery 143.0 ± 40.7 (scoring range 90 to 450) and normalized after surgery 120.3 ± 31.4 . (An analysis using patient level data for only the completers was not conducted.)

Udeze B, Abdelmawla N, Khoosal D, Terry T. Psychological functions in male-to- female people before and after surgery. Sexual and Relationship Therapy. 2008 May; 23(2):141-5. (Not in PubMed) and Megeri D, Khoosal D. Anxiety and depression in males experiencing gender dysphoria. Sexual and Relationship Therapy. 2007 Feb; 22(1):77-81. (Not in PubMed)

Udeze et al. conducted a single-center (Leicester, United Kingdom) prospective, non-blinded, longitudinal study assessing a randomized subset of patients who had completed a non-specific psychological function tool prior to and after male-to-female reassignment surgery. Patients served as their own controls. The investigators used the WPATH criteria for patient selection. Psychiatric evaluations were routine. All patients selected for treatment were routinely asked to complete the self-administered SCL-90R voluntarily on admission to the program and post-operatively. A post-operative evaluations (psychiatric and SCL-90R assessment) were conducted within six months to minimize previously determined loss rates. The patient pool was domestic and international. There were 546 gender dysphoric patients from all over the United Kingdom and abroad, of whom 318 (58.2%) progressed to surgery. Of these, 127 were from the local Leicester area in the United Kingdom and 38 (29.9%) progressed to surgery. The mean age for the selected male-to-female patients at the time of study was 47.33 ± 13.26 years (range 25 to 80) and reflected an average wait time for surgery of 14 months (range 2 months to 6 years). For this investigation, 40 male-to-female subjects were prospectively selected.

Roht Decl. Ex. 1001

The raw SCL-90 global scores for psycho-neuroticism were unchanged over time: 48.33 prior to surgery and 49.15 after surgery. If the scale was consistent with T-scoring, the results were non-pathologic. No psychiatric disorders were otherwise identified prior to or after surgery.

Investigators from the same clinical group (Megeri, Khoosal, 2007) conducted additional testing to specifically address anxiety and depression with the Beck Depression Inventory, General Health Questionnaire (with 4 subscales), HADS, and Spielberger State and Trait Anxiety Questionnaire (STAI-X1 and STA-X2). The test population and study design appear to be the same. No absolute data were presented. Only changes in scores were presented. There were no statistically significant changes.

e. Randomized, surgical patients, longitudinal, with controls

Mate-Kole C, Freschi M, Robin A. A controlled study of psychological and social change after surgical gender reassignment in selected male transsexuals. Br J Psychiatry. 1990 Aug;157:261-4.

Mate-Kole et al. conducted a prospective, non-blinded, controlled, randomized, longitudinal study using investigator-designed patient self-report questionnaires and non-specific psychological tests with some normative data. The investigators assessed neuroticism and sex role in natal males with gender dysphoria who had qualified for male-to-female reassignment surgery at a single-center specialty clinic (London, United Kingdom). Forty sequential patients were alternately assigned to early reassignment surgery or to standard wait times for reassignment surgery. Patients were evaluated after acceptance and 2 years later. The criteria used to qualify for gender surgery were the 1985 standards from the Harry Benjamin International Gender Dysphoria Association. These included a ≥ 2 year desire to change gender, a ≥ 1 year demonstrable ability to live and be self-supporting in the chosen gender, and psychiatric assessment for diagnosis and reassessment at six months for diagnostic confirmation and exclusion of psychosis.

Reassignment surgery was defined as orchidectomy, penectomy, and construction of a neo-vagina. The instruments used were the CCEI for psychoneurotic symptoms and the Bem Sex Role Inventory along with an incompletely described investigator-designed survey with questions about social life and sexual activity.

The mean age and range of the entire cohort was 32.5 years (21-53). Members of the early surgery cohort had a history of attempted suicide (one patient), psychiatric treatment for non-gender issues (six patients), and first degree relatives with psychiatric histories (four patients). Members of the standard surgery cohort were similar, with a history of attempted suicide (two patients), psychiatric treatment for non-gender issues (five patients), and first degree relatives with psychiatric histories (six patients). The early surgery group had surgery approximately 1.75 years prior to the follow-up evaluation. In both groups, cross-dressing began at about age 6.

Roth Decl. Ex. 1001

At baseline, the Bem Sex Role Inventory femininity scores were slightly higher than masculinity scores for both cohorts and were similar to Bem North American female normative scores. The scores did not change in either group over time.

At baseline, the scores for the CCEI individual domains (free floating anxiety, phobic anxiety, somatic anxiety, depression, hysteria, and obsessionality) were similar for the cohorts. The total CCEI scores for the two cohorts were consistent with moderate symptoms (Birchnell et al. 1988). Over the two year interval, total CCEI scores increased for standard wait group and approached the relatively severe symptom category. During the same interval, scores dropped into the asymptomatic range for the post-operative patients.

The investigator-designed survey assessed changes in social and sexual activity of the prior two years, but the authors only compared patients in a given cohort to themselves. Though the researchers did not conduct statistical studies to compare the differences between the two cohorts, they did report increased participation in some, but not all, types of social activities such as sports (solo or group), dancing, dining out, visiting pubs, and visiting others. Sexual interest also increased. By contrast, pre-operative patients did not increase their participation in these activities.

2. External Technology Assessments

- a. CMS did not request an external technology assessment (TA) on this issue.
- b. There were no AHRQ reviews on this topic.
- c. There are no Blue Cross/Blue Shield Health Technology Assessments written on this topic within the last three years.

There were two publications in the COCHRANE database, and both were tangentially related. Both noted that there are gaps in the clinical evidence base for gender reassignment surgery.
Twenty Years of Public Health Research: Inclusion of Lesbian, Gay, Bisexual, and Transgender Populations
Boehmer U. *Am J Public Health*. 2002; 92: 1125–30.

“Findings supported that LGBT issues have been neglected by public health research and that research unrelated to sexually transmitted diseases is lacking.”

A systematic review of lesbian, gay, bisexual and transgender health in the West Midlands region of the UK compared to published UK research. West Midlands Health Technology Assessment Collaboration. Health Technology Assessment Database. Meads, et al., 2009. No.3.

“Further research is needed but must use more sophisticated designs with comparison groups. This systematic review demonstrated that there are so many gaps in knowledge around LGBT health that a wide variety of studies are needed.”

- e. There were no National Institute for Health and Care Excellence (NICE) reviews/guidance documents on this topic.

There was a technology assessment commissioned by the New Zealand Ministry of Health and conducted by New Zealand Health Technology Assessment (NZHTA) (Christchurch School of Medicine and the University of Otago).

*Tech Brief Series: Transgender Re-assignment Surgery Day P. NZHTA Report. February 2002;1(1).
http://nzhta.chmeds.ac.nz/publications/trans_gender.pdf*

The research questions included the following:

1. Are there particular subgroups of people with transsexualism who have met eligibility criteria for gender reassignment surgery (GRS) where evidence of effectiveness of that surgery exists?

2. If there is evidence of effectiveness, what subgroups would benefit from GRS?"

The authors concluded that there was not enough evidence to answer either of the research questions.

3. Medicare Evidence Development & Coverage Advisory Committee (MEDCAC) Meeting

CMS did not convene a MEDCAC meeting.

4. Evidence-Based Guidelines

a. American College of Obstetricians and Gynecologists (ACOG)

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Though ACOG did not have any evidence-based guidelines on this topic, they did have the following document: Health Care for Transgender Individuals: Committee Opinion Committee on Health Care for Underserved Women; The American College of Obstetricians and Gynecologists. Dec 2011, No. 512. Obstet Gynecol. 2011;118:1454-8.

"Questions [on patient visit records]

should be framed in ways that do not make assumptions about gender identity, sexual orientation, or behavior. It is more appropriate for clinicians to ask their patients which terms they prefer. Language should be inclusive, allowing the patient to decide when and what to disclose. The adoption and posting of a nondiscrimination policy can also signal health care providers and patients alike that all persons will be treated with dignity and respect. Assurance of confidentiality can allow for a more open discussion, and confidentiality must be ensured if a patient is being referred to a different health care provider. Training staff to increase their knowledge and sensitivity toward transgender patients will also help facilitate a positive experience for the patient."

b. American Psychiatric Association

Report of the American Psychiatric Association Task Force on Treatment of Gender Identity Disorder. Byne, W, Bradley SJ, Coleman E, Eyler AE, Green R, Menvielle EJ, Meyer-Bahlburg HFL, Richard R. Pleak RR, Tompkins DA. Arch Sex Behav. 2012; 41:759-96.

The American Psychiatric Association (APA) was unable to identify any Randomized Controlled Trials (RCTs) regarding mental health issues for transgender individuals.

"There are some level B studies examining satisfaction/regret following sex reassignment (longitudinal follow-up after an intervention, without a control group); however, many of these studies obtained data retrospectively and without a control group (APA level G). Overall, the evidence suggests that sex reassignment is associated with an improved sense of well-being in the majority of cases, and also indicates correlates of satisfaction and regret. No studies have directly compared various levels of mental health screening prior to hormonal and surgical treatments on outcome variables; however, existing studies suggest that comprehensive mental health screening may be successful in identifying those individuals most likely to experience regrets."

[B] Clinical trial. A prospective study in which an intervention is made and the results of that intervention are tracked longitudinally. Does not meet standards for a randomized clinical trial.”

[G] Other. Opinion-like essays, case reports, and other reports not categorized above.”

c. Endocrine Society

Endocrine Treatment of Transsexual Persons: an Endocrine Society Clinical Practice Guideline.

Hembree WC, Cohen-Kettenis P, Delemarre-van de Waal HA, Gooren LJ, Meyer WJ 3rd, Spack NP, Tangpricha V, Montori VM; Endocrine Society. J Clin Endocrinol Metab. 2009; 94:3132-54.

This guideline primarily addressed hormone management and surveillance for complications of that management. A small section addressed surgery and found the quality of evidence to be low.

“This evidence-based guideline was developed using the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) system to describe the strength of recommendations and the quality of evidence, which was low or very low.”

d. World Professional Association for Transgender Health (WPATH)

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Standards of Care for the Health of Transsexual, Transgender, and Gender-Nonconforming People (Version 7). Coleman E, Bockting W, Botzer M, Cohen-Kettenis P, DeCuypere G, Feldman J, Fraser L, Green J, Knudson G, Meyer WJ, Monstrey S, Adler RK, Brown GR, Devor AH, Ehrbar R, Ettner R, Eyler E, Garofalo R, Karasic DH, Lev AI, Mayer G, Meyer-Bahlburg H, Hall BP, Pfäfflin F, Rachlin K, Robinson B, Schechter LS, Tangpricha V, van Trotsenburg M, Vitale A, Winter S, Whittle S, Kevan R. Wylie KR, Zucker K. www.wpath.org/_files/140/files/Standards%20of%20Care,%20V7%20Full%20Book.pdf *Int J Transgend.* 2011;13:165–232.

The WPATH is “an international, multidisciplinary, professional association whose mission is to promote evidence-based care, education, research, advocacy, public policy, and respect in transsexual and transgender health.”

WPATH reported, “The standards of care are intended to be flexible in order to meet the diverse health care needs of transsexual, transgender, and gender-nonconforming people. While flexible, they offer standards for promoting optimal health care and guiding the treatment of people experiencing gender dysphoria—broadly defined as discomfort or distress that is caused by a discrepancy between a person’s gender identity and that person’s sex assigned at birth (and the associated gender role and/or primary and secondary sex characteristics) (Fisk, 1974; Knudson, De Cuypere, & Bockting, 2010b).”

The WPATH standards of care (SOC) “acknowledge the role of making informed choices and the value of harm-reduction approaches.”

The SOC noted, “For individuals seeking care for gender dysphoria, a variety of therapeutic options can be considered. The number and type of interventions applied and the order in which these take place may differ from person to person (e.g., Bockting, Knudson, & Goldberg, 2006; Bolin, 1994; Rachlin, 1999; Rachlin, Green, & Lombardi, 2008; Rachlin, Hansbury, & Pardo, 2010). Treatment options include the following:

- Changes in gender expression and role (which may involve living part time or full time in another gender role, consistent with one’s gender identity);
- Hormone therapy to feminize or masculinize the body;
- Surgery to change primary and/or secondary sex characteristics (e.g., breasts/chest, external and/or internal genitalia, facial features, body contouring);
- Psychotherapy (individual, couple, family, or group) for purposes such as exploring gender identity, role, and expression; addressing the negative impact of gender dysphoria and stigma on mental health; alleviating internalized transphobia; enhancing social and peer support; improving body image; or promoting resilience.”

e. American Psychological Association

Suggested citation until formally published in the American Psychologist: American Psychological Association. (2015). *Guidelines for Psychological Practice with Transgender and Gender Nonconforming People Adopted by the Council of Representatives, August 5 & 7, 2015*. www.apa.org/practice/guidelines/transgender.pdf

"The purpose of the Guidelines for Psychological Practice with Transgender and Gender Nonconforming People (hereafter Guidelines) is to assist psychologists in the provision of culturally competent, developmentally appropriate, and trans-affirmative psychological practice with TGNC people."

"These Guidelines refer to psychological practice (e.g., clinical work, consultation, education, research, training) rather than treatment."

5. Other Reviews

a. Institute of Medicine (IOM)

The Health of Lesbian, Gay, Bisexual, and Transgender People: Building a Foundation for Better Understanding. Robert Graham (Chair); Committee on Lesbian, Gay, Bisexual, and Transgender Health Issues and Research Gaps and Opportunities. (Study Sponsor: The National Institutes of Health). Issued March 31, 2011. <http://www.nationalacademies.org/hmd/Reports/2011/The-Health-of-Lesbian-Gay-Bisexual-and-Transgender-People.aspx>

"To advance understanding of the health needs of all LGBT individuals, researchers need more data about the demographics of these populations, improved methods for collecting and analyzing data, and an increased participation of sexual and gender minorities in research. Building a more solid evidence base for LGBT health concerns will not only benefit LGBT individuals, but also add to the repository of health information we have that pertains to all people."

"Best practices for research on the health status of LGBT populations include scientific rigor and respectful involvement of individuals who represent the target population. Scientific rigor includes developing and

monitoring culturally competent study designs, such as the use of appropriate measures to identify participants and implementation processes adapted to the unique characteristics of the target population. Respectful involvement refers to the involvement of LGBT individuals and those who represent the larger LGBT community in the research process, from design through data collection to dissemination.”

b. National Institutes of Health (NIH)

National Institutes of Health Lesbian, Gay, Bisexual, and Transgender (LGBT) Research Coordinating Committee. Consideration of the Institute of Medicine (IOM) report on the health of lesbian, gay, bisexual, and transgender (LGBT) individuals. Bethesda, MD: National Institutes of Health; 2013.
http://report.nih.gov/UploadDocs/LGBT%20Health%20Report_FINAL_2013-01-03-508%20compliant.pdf

In response to the IOM report, the NIH LGBT research Coordinating Committee noted that most of the health research for this set of populations is “focused in the areas of Behavioral and Social Sciences, HIV (human immunodeficiency virus)/AIDS, Mental Health, and Substance Abuse. Relatively little research has been done in several key health areas for LGBT populations including the impact of smoking on health, depression, suicide, cancer, aging, obesity, and alcoholism.”

6. Pending Clinical Trials

ClinicalTrials.gov

There is one currently listed and recently active trial directed at assessment of the clinical outcomes pertaining to individuals who have had gender reassignment surgery. The study appears to be a continuation of work conducted by investigators cited in the internal technology assessment.

NCT01072825 (Ghent, Belgium sponsor) European Network for the Investigation of Gender Incongruence (ENIGI) is assessing the physical and psychological effects of the hormonal treatment of transgender subjects in two years prior to reassignment surgery and subsequent to surgery. This observational cohort study started in 2010 and is still in progress.

7. Consultation with Outside Experts

Consistent with the authority at 1862(l)(4) of the Act, CMS consulted with outside experts on the topic of treatment for gender dysphoria and gender reassignment surgery.

Given that the majority of the clinical research was conducted outside of the United States, and some studies either took place in or a suggested continuity-of-care and coordination-of-care were beneficial to health outcomes, we conducted expert interviews with centers across the U.S. that provided some form of specialty-focused or coordinated care for transgender patients. These interviews informed our knowledge about the current healthcare options for transgender people, the qualifications of the professionals involved, and the uniqueness of treatment options. We are very grateful to the organizations that made time to discuss treatment for gender dysphoria with us.

From our discussions with the all of the experts we spoke with, we noted the following practices in some centers: (1) specialized training for all staff about transgender healthcare and transgender cultural issues; (2) use of an intake assessment by either a social worker or health care provider that addressed physical health, mental health, and other life factors such as housing, relationship, and employment status; (3) offering primary care services for transgender people in addition to services related to gender-affirming therapy/treatments; (4) navigators who connected patients with name-change information or other legal needs related to gender; (5) counseling for individuals, groups, and families; (6) an informed-consent model whereby individuals were often referred to as “clients” instead of “patients,” and (7) an awareness of depression among transgender people (often measured with tools such as the Adult Outcomes Questionnaire and the Patient Health Questionnaire).

8. Public Comments

We appreciate the thoughtful public comments we received on the proposed decision memorandum. In CMS’ experience, public comments sometimes cite the published clinical evidence and give CMS useful information. Public comments that give information on unpublished evidence such as the results of individual practitioners or patients are less rigorous and therefore less useful for making a coverage determination. CMS uses the initial public comments to inform its proposed decision. CMS responds in detail to the public comments on a proposed decision when issuing the final decision memorandum. All comments that were submitted without personal health information may be viewed in their entirety by using the following link: <https://www.cms.gov/medicare-coverage-database/details/nca-view-public-comments.aspx?NCAId=282&ExpandComments=n#Results>

During the initial comment period, we received 103 comments. Of those, 78% supported coverage of gender reassignment surgery, 15% opposed, and 7% were neutral. The majority of comments supporting coverage were from individuals and advocacy groups.

b. Second Comment Period: June 2, 2016 – July 2, 2016

During the second 30-day public comment period, we received a total of 45 public comments, 7 of which were not posted on the web due to personal health information content. Overall, 82% supported coverage of gender reassignment surgery, 11% opposed, and 7% were neutral or silent in their comment whether they supported or opposed coverage. Half of the comments were submitted by individuals who expressed support for coverage of gender reassignment surgery (51%). We also received comments from physicians, providers, and other health professionals who specialize in healthcare for transgender individuals (17%). We received one comment from a municipality, the San Francisco Department of Public Health. Associations (American Medical Association, American College of Physicians, American Academy of Nursing, American Psychological Association, and LGBT PA Caucus) and advocates (Center for American Progress with many other signatories, Jamison Green & Associates) also submitted comments.

Below is a summary of the comments CMS received. In some instances, commenters identified typographical errors, context missed, and opportunities for CMS to clarify wording and classify articles for ease of reading in the memorandum. As noted earlier, when appropriate and to the extent possible, we updated the decision memorandum to reflect those corrections, improved the context, and clarified the language. In light of public comments, we re-evaluated the evidence and our summaries. We updated our summaries of the studies and clarified the language when appropriate.

1. Contractor Discretion and National Coverage Determination

Comment: Some commenters, including advocates, associations, and providers, supported CMS' decision for MAC contractor discretion/case-by-case determination for gender reassignment surgery. One stakeholder stated, "We agree with the conclusion that a NCD is not warranted at this time."

Response: We appreciate the support and understanding among stakeholders for our proposed decision to have the MACs determine coverage on a case-by-case basis. We have clarified in this final decision memorandum that

coverage is available for gender reassignment surgery when determined reasonable and necessary and not otherwise excluded by any other relevant statutory requirements by the MAC on a case-by-case basis. "The case-by-case model affords more flexibility to consider a particular individual's medical condition than is possible when the agency establishes a generally applicable rule." (78 Fed. Reg. 48165 (August 7, 2013)).

Comment: Some commenters cautioned that CMS' choice to not issue a NCD at this time must not be interpreted as a national non-coverage determination or used in any way to inappropriately restrict access to coverage for transgender Medicare beneficiaries or other transgender individuals. Multiple commenters indicated their disappointment that CMS did not propose a National Coverage Determination (NCD) and, instead, chose to continue to have local MACs make the coverage decisions on a case-by-case basis. Commenters stated this could result in variability in coverage.

Response: We appreciate the comments. We are not issuing a NCD at this time because the available evidence for gender reassignment surgery provides limited data on specific health outcomes and the characteristics of specific patient populations that might benefit from surgery. In the absence of a NCD, the MAC's use the same statutory authority as NCDs, section 1862(a)(1)(A) of the Social Security Act (the Act). Under section 1862(a)(1)(A) an item or service must be reasonable and necessary for the diagnosis or treatment of illness or injury or to improve the functioning of a malformed body member. While CMS did not have enough evidence to issue a NCD, we believe the MACs will be able to make appropriate coverage decisions on a case-by-case basis taking into account individual characteristics of the Medicare beneficiary.

Comment: Some commenters sought a NCD that would establish guidelines for coverage and include elements such as a prescribed set of surgeries and a shared decision making element.

Response: For the reasons stated above, we are not issuing a NCD at this time and, therefore, are not establishing specific gender reassignment surgery coverage guidelines for the Medicare program. We generally agree that shared decision-making is a fundamental approach to patient-centered health care decisions and strongly encourage providers to use these types of evidence based decision aids. We have not found a shared decision aid on GRS and encourage the development of this necessary element to conduct formal shared-decision making.

Comment: Some commenters expressed concern that there is a misunderstanding of transgender individuals as having a disorder or being abnormal. Some commenters indicated a history of bias and discrimination within society as a whole that has occurred when transgender individuals have sought health care services from the medical community. Some commenters are concerned that the decision not to make a NCD will subject individuals seeking these services to corporate bias by Medicare contractors.

Response: We acknowledge the public comments and that there has been a transformation in the treatment of individuals with gender dysphoria over time. In this NCA, we acknowledge that gender dysphoria is a recognized Diagnostic and Statistical Manual of Mental Disorders (DSM) condition. With respect to the concern about potential bias by Medicare contractors, we have no reason to expect that the judgments made on specific claims will be influenced by an overriding bias, hostility to patients with gender dysphoria, or discrimination. Moreover, the Medicare statute and our regulations provide a mechanism to appeal an adverse initial decision if a claim is denied and those rights may include the opportunity for judicial review. We believe the Medicare appeals process would provide an opportunity to correct any adverse decision that was perceived to have been influenced by bias.

Comment: Commenters mentioned the cost of gender reassignment surgery could influence MAC decision making.

Response: The decisions on whether to cover gender reassignment surgery in a particular case are made on the basis of the statutory language in section 1862 of the Social Security Act that establish exclusions from coverage and would not depend on the cost of the procedure.

2. Coverage with Evidence Development and Research

Comment: In our proposed decision memorandum, we specifically invited comments on whether a study could be developed that would support coverage with evidence development (CED). One organization commented, "We strongly caution against instituting a CED protocol." Commenters were opposed to coverage limited in clinical trials, suggesting that such coverage would restrict access to care. Several commenters provided suggested topics for clinical research studies for the transgender population. For example, one commenter suggested a study of non-surgical treatment for transgender children prior to puberty.

Response: While we appreciate the comments supporting further research, in general, for gender reassignment surgery, we agree that CED is not the appropriate coverage pathway at this time. While CED is an important mechanism to support research and has the potential to be used to help address gaps in the current evidence, we are not aware of any available, appropriate studies, ongoing or in development, on gender reassignment surgery for individuals with gender dysphoria that could be used to support a CED decision.

3. Gender Reassignment Surgery as Treatment

Comment: One group of commenters requested that CMS consider that, “The established medical consensus is that GRS is a safe, effective, and medically necessary treatment for many individuals with gender dysphoria, and for some individuals with severe dysphoria, it is the only effective treatment.”

Response: We acknowledge that GRS may be a reasonable and necessary service for certain beneficiaries with gender dysphoria. The current scientific information is not complete for CMS to make a NCD that identifies the precise patient population for whom the service would be reasonable and necessary.

4. Physician Recommendations

Comment: Several commenters stated that gender reassignment surgery should be covered as long as it was determined to be necessary, or medically necessary by a beneficiary’s physician.

Response: Physician recommendation is one of many potential factors that the local MAC may consider when determining whether the documentation is sufficient to pay a claim.

5. WPATH Standards of Care

Comment: Several commenters suggested that CMS should recommend the WPATH Standards of Care (WPATH) as the controlling guideline for gender reassignment surgery. They asserted it could satisfy Medicare’s reasonable and necessary criteria for determining coverage on a case-by-case basis.

Response: Based on our review of the evidence and conversations with the experts and patient advocates, we are aware some providers consult the WPATH Standards of Care, while others have created their own criteria and requirements for surgery, which they think best suit the needs of their patients. As such, and given that WPATH acknowledges the guidelines should be flexible, we are not in the position to endorse exclusive use of WPATH for coverage. The MACs, Medicare Advantage plans, and Medicare providers can use clinical guidelines they determine useful to inform their determination of whether an item or service is reasonable and necessary. When making this determination, local MACs may take into account physician’s recommendations, the individual’s clinical characteristics, and available clinical evidence relevant to that individual. Roth Decl. Ex. 1001

6. Scope of the NCA Request

Comment: One commenter stated that CMS did not address the full scope of the NCA request.

Response: The formal request for a NCD is publicly available on our tracking sheet. (<https://www.cms.gov/Medicare/Coverage/DeterminationProcess/downloads/id282.pdf>) The letter did not explicitly seek a national coverage determination related to counseling or hormone therapies, but focused on surgical remedies. CMS is aware that beneficiaries with gender dysphoria use a variety of therapies.

Comment: Other commenters stated the scope of the proposed decision is unnecessarily broad because it discussed therapies other than surgery. They suggested this discussion could lead to the unintended consequence of restricting access to those services for transgender Medicare beneficiaries and other transgender individuals.

Response: As we noted in our proposed decision, our decision focused only on gender reassignment surgery. In the course of reviewing studies related to those surgeries, occasionally authors discussed other therapies that were mentioned in our summaries of the evidence. To the extent possible, we have modified our decision to eliminate the discussion of other therapies which were not fully evaluated in this NCA.

7. NCA Question

Comment: Some commenters expressed concern about the phrasing of the question in this NCA.

Response: The phrasing of the research question is consistent with most NCAs and we believe it is appropriate.

8. Evidence Summary and Analysis

Comment: Several commenters disagreed with our summary of the clinical evidence and analysis. A few commenters contended that the overall tone of the review was not neutral and seemed biased or flawed. One commenter noted that the Barrett publication was available on the Internet.

Response: We appreciate the comments that identified technical errors, and we made the necessary revisions to this document. However, we disagree with the contention that our evidence review was not neutral and seemed biased or flawed. We believe that the summary and analysis of the clinical evidence are objective. As with previous NCAs, our review of the evidence was rigorous and methodical. Additionally, we reviewed the Barrett publication, but it did not meet our inclusion criteria to be included in the Evidence section.

9. Evidence Review with Transgender Experts

Comment: Several commenters requested that CMS re-review the clinical evidence discussed in the proposed decision memorandum with outside experts in the field of transgender health and transition/gender reassignment-related surgeries. Several offered the expertise within their organization to assist in this effort.

Response: We appreciate these comments and the transgender health community's willingness to participate. For this NCA we discussed gender reassignment surgery protocols with experts, primarily in coordinated care settings. Additionally, the public comment periods provide opportunities for expert stakeholder input. According to our process for all NCAs, we do not jointly review evidence with external stakeholders but have carefully reviewed the very detailed comments submitted by a number of outside experts in transgender health care.

10. Previous Non-Coverage NCD

Comment: One commenter noted that they thought research studies for gender reassignment surgery could not take place when the old NCD that prohibited coverage for gender reassignment surgery was in effect.

Response: CMS does not directly conduct clinical studies or pay for research grants. Some medical services are non-covered by Medicare; however, national non-coverage does not preclude research via a number of avenues and other funding entities such as the National Institutes of Health. In this instance, the previous NCD did not preclude interested parties from funding research for gender reassignment surgery that could have been generalizable to the Medicare population.

11. How the Medicare Population Differs from the General Population

Comment: One commenter questioned how the Medicare population differed from the general population, and why any differences would be important in our decision-making.

Response: The Medicare population is different from the general population in age (65 years and older) and/or disability as defined by the Social Security Administration. Due to the biology of aging, older adults may respond to health care treatments differently than younger adults. These differences can be due to, for example, multiple health conditions or co-morbidities, longer duration needed for healing, metabolic variances, and impact of reduced mobility. All of these factors can impact health outcomes. The disabled Medicare population, who are younger than age 65, is different from the general population and typical study populations due to the presence of the causes of disability such as psychiatric disorders, musculoskeletal health issues, and cardiovascular issues.

12. Medicare Evidence Development & Coverage Advisory Committee (MEDCAC)

Comment: One commenter suggested CMS should have convened a MEDCAC for this topic.

Response: We appreciate the comment. Given the limited evidence, we did not believe a MEDCAC was warranted according to our guidance document entitled "Factors CMS Considers in Referring Topics to the Medicare Evidence Development & Coverage Advisory Committee" (<https://www.cms.gov/Regulations-and-Guidance/Guidance/FACA/MEDCAC.html>).

Comment: Some commenters asserted that by not explicitly covering gender reassignment surgery at the national level, CMS was discriminating against transgender beneficiaries in conflict with Section 1557 of the Affordable Care Act (ACA).

Response: This decision does not affect the independent obligation of covered entities, including the Medicare program and MACs, to comply with Section 1557 in making individual coverage decisions. In accordance with Section 1557, MACs will apply neutral nondiscriminatory criteria when making case-by-case coverage determinations related to gender reassignment surgery.

14. Medicaid

Comment: Some commenters observed that some states cover gender reassignment surgery through Medicaid or require commercial insurers operating in the state to cover the surgery.

Response: We appreciate the information about Medicaid and state requirements; however, State decisions are separate from Medicare coverage determinations. We make evidence-based determinations based on our statutory standards and processes.

15. Commercial Insurers

Comment: In several instances, commenters told us that the healthcare industry looks to CMS coverage determinations to guide commercial policy coverage.

Response: CMS makes evidence-based national coverage determinations based on our statutory standards and processes as defined in the Social Security Act, which may not be the same standards that are used in commercial insurance policies or by other health care programs. In addition as noted above, the Medicare population is different (e.g., Medicare covers 95% of adults 65 and older) than the typical population under

16. Healthcare for Transgender Individuals

Comment: Numerous professional associations wrote to CMS to explain their support for access to healthcare for transgender individuals.

Response: CMS recognizes that transgender beneficiaries have specific healthcare needs. Many health care treatments are available. We encourage all beneficiaries to utilize their Medicare benefits to help them achieve their best health.

17. Intended Use of the Decision Memorandum

Comment: Several commenters expressed concern that the analysis provided in the proposed and final decision memorandums may be used by individuals, entities, or payers for purposes unrelated to Medicare such as denial of coverage for transgender-related surgeries.

Response: The purpose of the decision memoranda is to memorialize CMS' analysis of the evidence, provide responses to the public comments received, and to make available the clinical evidence and other data used in making our decision consistent with our obligations under the § 1862 of the Act. The NCD process is open and transparent and our decisions are publicly available. Congress requires that we provide a clear statement of the basis for our determinations. The decision memoranda are an important part of the record of the NCD. Our focus is the Medicare population which, as noted above, is different than the general population in a number of ways. Other entities may conduct separate evidence reviews and analyses that are suited for their specific populations.

18. Cost Barriers to Care and Effects

Comment: A few commenters stated that without Medicare coverage, surgery is difficult to afford and there may be a risk of negative consequences for the individual. One commenter suggested that CMS should consider prior-authorization for these surgeries.

Response: CMS is aware that paying out-of-pocket for medical care is a strain on a beneficiary's finances. We are also aware of beneficiaries' hesitancy to undergo surgery prior to knowing whether or not Medicare will pay the claim. Gender reassignment surgeries are not the only procedures whereby payment is not determined until after the provider submits the claim to Medicare. Importantly, documentation for the claims need to be explicit about what procedures were performed and include the appropriate information in the documentation to justify using the code or codes for surgery. Of note, CMS has claims data that indicate Medicare has paid for gender reassignment surgeries in the recent past. Determining which services are designated for prior-authorization is outside of the scope of the NCA process.

19. Surgical Risks and Benefits

Comment: A number of commenters conveyed the benefits of gender reassignment surgery, while other commenters expressed concern that gender reassignment surgery was harmful.

Response: We appreciate these comments.

20. Expenditure of Federal Funds

Comment: Some commenters opposed spending Medicare program funds on gender reassignment surgery for a variety of reasons. For example, some commenters believe it is an "elective" procedure. Other commenters suggested that funds should first be spent on other priorities such as durable medical equipment (DME) or mobility items such as power chairs; increasing reimbursement to providers; or that spending should be limited to the proportion to the transgender adult population in the Medicare program.

Response: The purpose of this NCA is to determine whether or not CMS should issue a NCD to cover surgery for patients who have gender dysphoria. NCAs do not establish payment amounts or spending priorities and, therefore, these comments are outside the scope of this consideration.

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VIII. CMS Analysis

National coverage determinations are determinations by the Secretary with respect to whether or not a particular item or service is covered nationally under § 1862(l)(6) of the Act. In general, in order to be covered by Medicare, an item or service must fall within one or more benefit categories contained within Part A or Part B and must not be otherwise excluded from coverage.

Moreover, in most circumstances, the item or service must be reasonable and necessary for the diagnosis or treatment of illness or injury or to improve the functioning of a malformed body member (§1862(a)(1)(A)). The Supreme Court has recognized that “[t]he Secretary’s decision as to whether a particular medical service is ‘reasonable and necessary’ and the means by which she implements her decision, whether by promulgating a generally applicable rule or by allowing individual adjudication, are clearly discretionary decisions.” *Heckler v. Ringer*, 466 U.S. 602, 617 (1984). See also, 78 Fed. Reg. 48,164, 48,165 (August 7, 2013)

When making national coverage determinations, we consider whether the evidence is relevant to the Medicare beneficiary population. In considering the generalizability of the results of the body of evidence to the Medicare population, we carefully consider the demographic characteristics and comorbidities of study participants as well as the provider training and experience. This section provides an analysis of the evidence, which included the published medical literature and guidelines pertaining to gender dysphoria, that we considered during our review to answer the question:

Is there sufficient evidence to conclude that gender reassignment surgery improves health outcomes for Medicare beneficiaries with gender dysphoria?

CMS carefully considered all the studies listed in this decision memorandum to determine whether they answered the question posed in this NCA. While there appears to be many publications regarding gender reassignment surgery, it became clear that many of the publications did not meet our inclusion/exclusion criteria as explained earlier in the decision memorandum.

Thirty-three papers were eligible based on our inclusion/exclusion criteria for the subsequent review (Figure 1). All studies reviewed had potential methodological flaws which we describe below.

A. Quality of the Studies Reviewed

Overall, the quality and strength of evidence were low due to mostly observational study designs with no comparison groups, subjective endpoints, potential confounding (a situation where the association between the intervention and outcome is influenced by another factor such as a co-intervention), small sample sizes, lack of validated assessment tools, and considerable lost to follow-up (Appendices C and F). The impact of a specific therapeutic intervention can be difficult to determine when there are multiple serial treatments such as psychotherapy, hormone treatment and surgery. To reduce confounding, outcome assessment just prior to and after surgery such as in a longitudinal study would be helpful. The objective endpoints included psychiatric treatment, attempted suicide, requests for surgical reversal, morbidity (direct and indirect adverse events), and mortality (Appendix F). CMS agrees with the utility of these objective endpoints. Quality of life, while important, is more difficult to measure objectively (Appendix E).

Of the 33 studies reviewed, published results were conflicting – some were positive; others were negative. Collectively, the evidence is inconclusive for the Medicare population. The majority of studies were non-longitudinal, exploratory type studies (i.e., in a preliminary state of investigation or hypothesis generating), or did not include concurrent controls or testing prior to and after surgery. Several reported positive results but the potential issues noted above reduced strength and confidence. After careful assessment, we identified six studies that could provide useful information (Figure 1). Of these, the four best designed and conducted studies that assessed quality of life before and after surgery using validated (albeit non-specific) psychometric studies did not demonstrate clinically significant changes or differences in psychometric test results after GRS. (Heylens et al., 2014; Ruppín, Pfafflin, 2015; Smith et al., 2005; Udeze et al., 2008) (Appendix C Panel A and Appendix G.)

Two studies (three articles) assessed functional endpoints (request for surgical reassignment reversal and morbidity/mortality) (Dhejne et al., 2011; Dhejne et al., 2014 along with Landén et al., 1998) (Figure 1 and Appendix C, Panel A and Appendix G). Although the data are observational, they are robust because the Swedish national database is comprehensive (including all patients for which the government had paid for surgical services) and is notable for uniform criteria to qualify for treatment and financial coverage by the government. Dhejne et al. (2014) and Landén et al. (1998) reported cumulative rates of requests for surgical reassignment reversal or change in legal status of 3.3% while Dhejne et al. (2014) reported 2.2%. The authors indicated that the later updated calculation had the potential to be an underestimate because the most recent surgical cohorts were larger in size and had shorter periods of follow-up.

Dhejne et al., (2011) tracked all patients who had undergone reassignment surgery (mean age 35.1 years) over a 30 year interval and compared them to 6,480 matched controls. The study identified increased mortality and psychiatric hospitalization compared to the matched controls. The mortality was primarily due to completed suicides (19.1-fold greater than in control Swedes), but death due to neoplasm and cardiovascular disease was increased 2 to 2.5 times as well. We note, mortality from this patient population did not become apparent until after 10 years. The risk for psychiatric hospitalization was 2.8 times greater than in controls even after adjustment for prior psychiatric disease (18%). The risk for attempted suicide was greater in male-to-female patients regardless of the gender of the control. Further, we cannot exclude therapeutic interventions as a cause of the observed excess morbidity and mortality. The study, however, was not constructed to assess the impact of gender reassignment surgery *per se*.

We believe at minimum study designs should have a pre-test/post-test longitudinal design accompanied by characterization of all patients lost to follow-up over the entire treatment series as well as those patients who did not complete questionnaires, and the use of psychometric quality-of-life tools which are well validated with linkage to “hard” (objective) patient outcomes in this particular patient population (Trentacosti 2007, PRO 2009) (Appendices C and D).

Patient Care

Clinical evidentiary questions regarding the care of patients with gender dysphoria remain. Many of the publications focused on aspects of surgical technique as opposed to long-term patient outcomes. The specific type(s) of gender/sex reassignment surgery (e.g., genital, non-genital) that could improve health outcomes in adults remain(s) uncertain because most studies included patients who had undertaken one or more of a spectrum of surgical procedures or did not define the specific types of surgical procedures under study. Furthermore, surgical techniques have changed significantly over the last 60 years and may not reflect current practice (Bjerrome Ahlin et al., 2014; Doornaert, 2011; Green, 1998; Pauly, 1968; Selvaggi et al., 2007; Selvaggi, Bellringer, 2011; Tugnet et al., 2007; Doornaert, 2011).

The WPATH care recommendations present a general framework and guidance on the care of the transgender individual. The standards of care are often cited by entities that perform gender reassignment surgery. WPATH notes, “More studies are needed that focus on the outcomes of current assessment and treatment approaches for gender dysphoria.” Appendix D in the WPATH Standards of Care briefly describes their evidence base and acknowledges the historical problems with evidentiary standards, the preponderance of retrospective data, and the confounding impact of multiple interventions, specifically distinguishing the impact of hormone therapy from surgical intervention.

Additionally, CMS met with several stakeholders and conducted several interviews with centers that focus on healthcare for transgender individuals in the U.S. Primary care rather than gender reassignment surgery was often the main focus. Few of the U.S.-based reassignment surgeons we could identify work as part of an integrated practice, and few provide the most complex procedures.

Psychometric Tools

CMS reviewed psychometric endpoints because gender dysphoria (inclusive of prior nomenclature) describes an incongruence between the gender assigned at birth and the gender(s) with which the person identifies.

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The psychometric tools used to assess outcomes have limitations. Most instruments that were specific for gender dysphoria were designed by the investigators themselves or by other investigators within the field using limited populations and lacked well documented test characterization. (Appendices E and F) By contrast, test instruments with validation in large populations were non-specific and lacked validation in the gender dysphoric patient populations. (Appendices E and F). In addition, the presentation of psychometric results must be accompanied by enough information about the test itself to permit adequate interpretation of test results. The relevant diagnostic cut-points for scores and changes in scores that are clinically significant should also be scientifically delineated for interpretation.

Generalizability

It is difficult to generalize these study results to the current Medicare population. Many of the studies are old given they were conducted more than 10 years ago. Most of these studies were conducted outside of the U.S. in very different medical systems for treatment and follow-up. Many of the programs were single-site centers without replication elsewhere. The study populations were young and without significant physical or psychiatric co-morbidity (Appendix D). As noted earlier, psychiatric co-morbidity may portend poor outcomes (Asscheman et al., 2011; Landén et al., 1998).

Knowledge Gaps

This patient population faces complex and unique challenges. The medical science in this area is evolving. This review has identified gaps in the evidentiary base as well as recommendations for good study designs. The Institute of Medicine, the National Institutes of Health, and others also identified many of the gaps in the data. (Boehmer, 2002; HHS-HP, 2011; IOM, 2011; Kreukels-ENIGI, 2012; Lancet, 2011; Murad et al., 2010; NIH-LGBT, 2013) The current or completed studies listed in ClinicalTrials.gov are not structured to assess these gaps. These gaps have been delineated as they represent areas in which patient care can be optimized and are opportunities for much needed research.

B. Health Disparities

Four studies included information on racial or ethnic background. The participants in the three U.S. based studies were predominantly Caucasian (Beatrice, 1985; Meyer, Reter, 1979; Newfield et al., 2009). For the participants

in the single Asian study were Chinese (Isoi, 1993). Additional research is needed in this area.

C. Summary

Based on an extensive assessment of the clinical evidence as described above, there is not enough high quality evidence to determine whether gender reassignment surgery improves health outcomes for Medicare beneficiaries with gender dysphoria and whether patients most likely to benefit from these types of surgical intervention can be identified prospectively.

The knowledge on gender reassignment surgery for individuals with gender dysphoria is evolving. Much of the available research has been conducted in highly vetted patients at select care programs integrating psychotherapy, endocrinology, and various surgical disciplines. Additional research of contemporary practice is needed. To assess long-term quality of life and other psychometric outcomes, it will be necessary to develop and validate standardized psychometric tools in patients with gender dysphoria. Further, patient preference is an important aspect of any treatment. As study designs are completed, it is important to include patient-centered outcomes.

Because CMS is mindful of the unique and complex needs of this patient population and because CMS seeks sound data to guide proper care of the Medicare subset of this patient population, CMS strongly encourages robust clinical studies with adequate patient protections that will fill the evidence gaps delineated in this decision memorandum. As the Institute of Medicine (IOM, 2011) importantly noted: "Best practices for research on the health status of LGBT populations include scientific rigor and respectful involvement of individuals who represent the target population. Scientific rigor includes incorporating and monitoring culturally competent study designs, such as the use of appropriate measures to identify participants and implementation processes adapted to the unique characteristics of the target population. Respectful involvement refers to the involvement of LGBT individuals and those who represent the larger LGBT community in the research process, from design through data collection to dissemination."

IX. Decision

Currently, the local Medicare Administrative Contractors (MACs) determine coverage of gender reassignment surgery on a case-by-case basis. We have received a complete, formal request to make a national coverage determination on surgical remedies for gender identity disorder (GID), now known as gender dysphoria. The Centers for Medicare & Medicaid Services (CMS) is not issuing a National Coverage Determination (NCD) at this time on gender reassignment surgery for Medicare beneficiaries with gender dysphoria because the clinical evidence is inconclusive for the Medicare population.

In the absence of a NCD, coverage determinations for gender reassignment surgery, under section 1862(a)(1)(A) of the Social Security Act (the Act) and any other relevant statutory requirements, will continue to be made by the local MACs on a case-by-case basis. To clarify further, the result of this decision is not national non-coverage rather it is that no national policy will be put in place for the Medicare program. In the absence of a national policy, MACs will make the determination on whether or not to cover gender reassignment surgery based on whether gender reassignment surgery is reasonable and necessary for the individual beneficiary after considering the individual's specific circumstances. For Medicare beneficiaries enrolled in Medicare Advantage (MA) plans, the initial determination of whether or not surgery would be reasonable and necessary will be made by the MA plans.

Consistent with the request CMS received, the focus of this National Coverage Analysis (NCA) was gender reassignment surgery. Specific types of surgeries were not individually assessed. We did not analyze the clinical evidence for counseling or hormone therapy treatments for gender dysphoria. As requested by several public commenters, we have modified our final decision memorandum to remove language that was beyond the scope of the specific request. We are not making a national coverage determination relating to counseling, hormone therapy treatments, or any other potential treatment for gender dysphoria.

While we are not issuing a NCD, CMS encourages robust clinical studies that will fill the evidence gaps and help inform which patients are most likely to achieve improved health outcomes with gender reassignment surgery, which types of surgery are most appropriate, and what types of physician criteria and care setting(s) are needed to ensure that patients achieve improved health outcomes.

A. Appendix A

Diagnostic & Statistical Manual of Mental Disorders (DSM) Criteria for Disorders of Gender Identity since 1980

DSM Version	Condition Name	Criteria	Criteria	Comments
DSM III 1980 <i>Chapter: Psychosexual Disorders</i>	<i>Trans-sexualism</i> <i>302.5x [Gender Identity Disorder of Child-hood (302.6)]</i>	Required A (cross- gender identification) and B (aversion to one's natal gender) criteria Dx excluded by physical intersex condition Dx excluded by another mental disorder, e.g., schizophrenia	Sense of discomfort and inappropriateness about one's anatomic sex. Wish to be rid of one's own genitals and to live as a member of the other sex. The disturbance has been continuous (not limited to periods of stress) for at least 2 years.	Further characterization by sexual orientation Distinguished from Atypical Gender Identity Disorder 302.85

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DSM Version	Condition Name	Criteria	Criteria	Comments
DSM III-Revised 1987 <i>TS classified as an Axis II dx (personality disorders and mental retardation) in a different chapter. GID included under Disorders Usually First Evident in Infancy, Childhood, Adolescence</i>	Trans-sexualism (TS) (302.50) <i>[GID of C]</i>	Required A and B criteria	Persistent discomfort and sense of inappropriateness about one's assigned sex. Persistent preoccupation for at least 2 years with getting rid of one's 1° and 2° sex characteristics and acquiring the sex characteristics of the other sex. Has reached puberty	Further characterization by sexual orientation Distinguished from Gender Identity Disorder of Adolescence or Adulthood, Non-transsexual Type •e.g., cross-dressing not for the purposes of sexual excitement Gender Identity Disorder Not Otherwise Specified 302.6 •e.g., intersex conditions Gender Identity Disorder Not Otherwise Specified 302.85 •e.g., persistent preoccupation with castration or penectomy w/o desire to acquire the sex traits of the other sex
	GID of adulthood , non-trans-sexual type, added			
DSM IV 1994 <i>Chapter: Sexual & Gender Identity Disorders</i>	Gender Identity Disorder in Adolescents and Adults (302.85) (Separate criteria & code for children, but same name)	Required A and B criteria Dx excluded by physical intersex condition	Cross-gender identification •e.g., Stated desire to be another sex •e.g., Desire to live or be treated as a member of the other sex •e.g., conviction that he/she has the typical feelings and reactions of the other sex •e.g., frequent passing as the other sex Persistent discomfort with his/her sex or sense of inappropriateness in the gender role of that sex. •e.g., belief the he/she was born the wrong sex •e.g., preoccupation with getting rid of 1° and 2° sex characteristics &/or acquiring sexual traits of the other sex •Clinically significant distress or impairment in social, occupational, or other important areas of functioning	Further characterization by sexual orientation Distinguished from Gender Identity Disorder Not Otherwise Specified 302.6 •e.g., intersex conditions •e.g., stress related cross-dressing •e.g., persistent preoccupation with castration or penectomy w/o desire to acquire the sex traits of the other sex
DSM IV-Revised 2000 <i>Chapter: Sexual & Gender Identity Disorders</i>	Gender Identity Disorder (Term trans-sexual-ism eliminated)	Required A & B criteria Dx excluded by physical intersex condition	Cross-gender identification •e.g., stated desire to be the other sex •e.g., desire to live or be treated as the other sex •e.g., conviction that he/she has the typical feelings & reactions of the other sex	Outcome may depend on time of onset Further characterization by sexual orientation Distinguished from Gender Identity Disorder Not Otherwise Specified 302.6

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DSM Version	Condition Name	Criteria	Criteria	Comments
			•e.g., frequent passing as the other sex - Persistent discomfort with his or her sex OR sense of inappropriateness in the gender role of that sex •e.g., belief the he/she was born the wrong sex •e.g., preoccupation with getting rid of 1° and 2° sex characteristics &/or acquiring sexual traits of the other sex - Clinically significant distress or impairment in social, occupational, or other important areas of functioning	•e.g., intersex conditions •e.g., stress related cross-dressing •e.g., persistent preoccupation with castration or penectomy w/o desire to acquire the sex traits of the other sex
DSM V 2013 <i>Separate Chapter from Sexual Dysfunctions & Paraphilic Disorders</i>	Gender Dysphoria (302.85)	Gender nonconformity itself not considered to be a mental disorder The dysphoria associated with the gender incongruence is Eliminates A & B criteria Considers gender incongruence to be a spectrum Considers intersex/ "disorders of sex development" to be a subsidiary and not exclusionary to dx of GD	•Marked discordance between natal 1° and 2° sex characteristics* and experienced/expressed gender •Conviction that he/she has the typical feelings & reactions of the other sex (or some alternative gender) •Marked desire to be the other sex (or some alternative gender) •Marked desire to be treated as the other sex (or some alternative gender) •Marked desire to be rid of natal 1° and 2° sex characteristics** •Marked desire to acquire 1° and 2° sex characteristics of the other sex (or some alternative gender) - Clinically significant distress or impairment in social, occupational, or other important areas of functioning * or in young adolescents, the anticipated 2° sex characteristics ** or in young adolescents, prevent the development of the anticipated 2° sex characteristics ≥ 6 month marked discordance between natal gender & experienced/expressed gender as demonstrated by ≥ 6 criteria: •Strong desire to be of the other gender or an insistence that one is of another gender.	Includes diagnosis for post transition state to permit continued treatment access Includes disorders of sexual development such as congenital hyperplasia and androgen insensitivity syndromes

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DSM Version	Condition Name	Criteria	Criteria	Comments
			•Strong preference for cross-gender roles in make-believe play. •Strong preference for the toys, games, or activities of the other gender. •Strong preference for playmates of the other gender. •In boys, strong preference for cross-dressing; in girls, strong preference for wearing masculine clothing •In boys, rejection of masculine toys, games, activities, avoidance of rough and tumble play; in girls, rejection of feminine toys, games, and activities.	
	Unspecified Gender Dysphoria (302.6) (F64.9)		This category applies to presentations in which sx c/w gender dysphoria that cause clinically significant distress or impairment, but do not meet the full criteria for gender dysphoria & the reason for not meeting the criteria is not provided.	
	Specified Gender Dysphoria 302.6 (F64.8)		If the reason that the presentation does not meet the full criteria is provided then this dx should be used	

C/W=consistent with Dx=diagnosis GD=gender dysphoria Sx=symptoms TS=transsexual 1^o=primary 2^o=secondary

B. Appendix B

1. General Methodological Principles of Study Design

When making national coverage determinations, CMS evaluates relevant clinical evidence to determine whether or not the evidence is of sufficient quality to support a finding that an item or service is reasonable and necessary. The overall objective for the critical appraisal of the evidence is to determine to what degree we are confident that: 1) the specific assessment questions can be answered conclusively; and 2) the intervention will improve health outcomes for patients.

generalizability of findings from individual studies to the Medicare population, and 3) overarching conclusions that can be drawn from the body of the evidence on the direction and magnitude of the intervention's potential risks and benefits.

The methodological principles described below represent a broad discussion of the issues we consider when reviewing clinical evidence. However, it should be noted that each coverage determination has its unique methodological aspects.

Assessing Individual Studies

Methodologists have developed criteria to determine weaknesses and strengths of clinical research. Strength of evidence generally refers to: 1) the scientific validity underlying study findings regarding causal relationships between health care interventions and health outcomes; and 2) the reduction of bias. In general, some of the methodological attributes associated with stronger evidence include those listed below:

- Use of randomization (allocation of patients to either intervention or control group) in order to minimize bias.
- Use of contemporaneous control groups (rather than historical controls) in order to ensure comparability between the intervention and control groups.
- Prospective (rather than retrospective) studies to ensure a more thorough and systematic assessment of factors related to outcomes.
- Larger sample sizes in studies to demonstrate both statistically significant as well as clinically significant outcomes that can be extrapolated to the Medicare population. Sample size should be large enough to make chance an unlikely explanation for what was found.
- Masking (blinding) to ensure patients and investigators do not know to which group patients were assigned (intervention or control). This is important especially in subjective outcomes, such as pain or quality of life, where enthusiasm and psychological factors may lead to an improved perceived outcome by either the patient or assessor.

Regardless of whether the design of a study is a randomized controlled trial, a non-randomized controlled trial, a cohort study or a case-control study, the primary criterion for methodological strength or quality is the extent to which differences between intervention and control groups can be attributed to the intervention studied. This is known as internal validity. Various types of bias can undermine internal validity. These include:

- Different characteristics between patients participating and those theoretically eligible for study but not participating (selection bias).
- Co-interventions or provision of care apart from the intervention under evaluation (performance bias).
- Differential assessment of outcome (detection bias).
- Occurrence and reporting of patients who do not complete the study (attrition bias).

In principle, rankings of research design have been based on the ability of each study design category to minimize these biases. A randomized controlled trial minimizes systematic bias (in theory) by selecting a sample of participants from a particular population and allocating them randomly to the intervention and control groups. Thus, in general, randomized controlled studies have been typically assigned the greatest strength, followed by non-randomized clinical trials and controlled observational studies. The design, conduct and analysis of trials are important factors as well. For example, a well-designed and conducted observational study with a large sample size may provide stronger evidence than a poorly designed and conducted randomized controlled trial with a small sample size. The following is a representative list of study designs (some of which have alternative names) ranked from most to least methodologically rigorous in their potential ability to minimize systematic bias:

- Randomized controlled trials
- Non-randomized controlled trials
- Prospective cohort studies
- Retrospective case control studies
- Cross-sectional studies
- Surveillance studies (e.g., using registries or surveys)
- Consecutive case series
- Single case reports

When there are merely associations but not causal relationships between a study's variables and outcomes, it is important not to draw causal inferences. Confounding refers to independent variables that systematically vary with the causal variable. This distorts measurement of the outcome of interest because its effect size is mixed with the effects of other extraneous factors. For observational, and in some cases randomized controlled trials, the method in which confounding factors are handled (either through stratification or appropriate statistical modeling) are of particular concern. For example, in order to interpret and generalize conclusions to our population of Medicare patients, it may be necessary for studies to match or stratify their intervention and control groups by patient age or co-morbidities.

Methodological strength is, therefore, a multidimensional concept that relates to the design, implementation and analysis of a clinical study. In addition, thorough documentation of the conduct of the research, particularly study selection criteria, rate of attrition and process for data collection, is essential for CMS to adequately assess and consider the evidence.

Generalizability of Clinical Evidence to the Medicare Population

The applicability of the results of a study to other populations, settings, treatment regimens and outcomes assessed is known as external validity. Even well-designed and well-conducted trials may not supply the evidence needed if the results of a study are not applicable to the Medicare population. Evidence that provides accurate information about a population or setting not well represented in the Medicare program would be considered but would suffer from limited generalizability.

The extent to which the results of a trial are applicable to other circumstances is often a matter of judgment that depends on specific study characteristics, primarily the patient population studied (age, sex, severity of disease and presence of co-morbidities) and the care setting (primary to tertiary level of care, as well as the experience and specialization of the care provider). Additional relevant variables are treatment regimens (dosage, timing and route of administration), co-interventions or concomitant therapies, and type of outcome and length of follow-up.

The level of care and the experience of the providers in the study are other crucial elements in assessing a study's external validity. Trial participants in an academic medical center may receive more or different attention than is typically available in non-tertiary settings. For example, an investigator's lengthy and detailed explanations of the potential benefits of the intervention and/or the use of new equipment provided to the academic center by the study sponsor may raise doubts about the applicability of study findings to community practice.

Given the evidence available in the research literature, some degree of generalization about an intervention's potential benefits and harms is invariably required in making coverage determinations for the Medicare population. Conditions that assist us in making reasonable generalizations are biologic plausibility, similarities between the populations studied and Medicare patients (age, sex, ethnicity and clinical presentation) and similarities of the intervention studied to those that would be routinely available in community practice.

A study's selected outcomes are an important consideration in generalizing available clinical evidence to Medicare coverage determinations. One of the goals of our determination process is to assess health outcomes. These outcomes include resultant risks and benefits such as increased or decreased morbidity and mortality. In order to make this determination, it is often necessary to evaluate whether the strength of the evidence is adequate to draw conclusions about the direction and magnitude of each individual outcome relevant to the intervention under study. In addition, it is important that an intervention's benefits are clinically significant and durable, rather than marginal or short-lived. Generally, an intervention is not reasonable and necessary if its risks outweigh its benefits.

If key health outcomes have not been studied or the direction of clinical effect is inconclusive, we may also evaluate the strength and adequacy of indirect evidence linking intermediate or surrogate outcomes to our outcomes of interest.

Assessing the Relative Magnitude of Risks and Benefits

Generally, an intervention is not reasonable and necessary if its risks outweigh its benefits. Health outcomes are one of several considerations in determining whether an item or service is reasonable and necessary. CMS places greater emphasis on health outcomes actually experienced by patients, such as quality of life, functional status, duration of disability, morbidity and mortality, and less emphasis on outcomes that patients do not directly experience, such as intermediate outcomes, surrogate outcomes, and laboratory or radiographic responses. The direction, magnitude, and consistency of the risks and benefits across studies are also important considerations. Based on the analysis of the strength of the evidence, CMS assesses the relative magnitude of an intervention or technology's benefits and risk of harm to Medicare beneficiaries.

Appendix C

Patient Population: Enrolled & Treated with Sex Reassignment Surgery Loss of Patients & Missing Data

Panel A (Controlled Studies)

Author	Study Type	Recruitment Pool	Enrolled	% GRS	Completion
Dhejne 2011	Longitudinal Controlled	804 w GD	324	324 (100%)	-
Dhejne 2014 Landén	Longitudinal for test variable Controlled	767 applied for SRS 25 applications denied. 61 not granted full legal status 15 formal applications for surgical reversal	681	681 (100%)	NA: Clinical data extracted retrospectively in earlier paper
Heylens	Longitudinal Controlled	90 applicants for SRS 33 excluded 11 later excluded had not yet received SRS by study close.	57 (46)	46 (80.7%) Only those w SRS evaluated	Psycho-social survey missing data for 3 at baseline & 4 after SRS. SCL90 not completed by 1 at baseline, 10 after hormone tx, & 4 after SRS missing data for another 1.1% to 11.1%.
Kockott	Longitudinal Controlled	80 applicants for SRS 21 excluded	59	32 (54.2%) went to surgery	1 preoperative patient was later excluded b/c lived completely in aspired gender w/o SRS. Questions on financial sufficiency not answered by 1 surgical pt.

Author	Study Type	Recruitment Pool	Enrolled	% GRS	Completion
					Questions on sexual satisfaction & gender contentment not answered by 1 & 2 patients awaiting surgery respectively.
Mate-Kole 1990	Longitudinal Controlled	40 sequential patients of accepted patients. The number in the available patient pool was not specified.	40	20 (50%) went to surgery	-
Meyer	Longitudinal Controlled	Recruitment pool: 100 50 were excluded.	50	15 (30%) had undergone surgery 14 (28%) underwent surgery later	The assessments of all were complete
Rakic	Longitudinal Controlled	92 were evaluated 54 were excluded from surgery 2 post SRS were lost to follow-up 2 post SRS were excluded for being in the peri-operative period	32	32 (100%)	Questionnaire completed by all.
Ruppin	Longitudinal Controlled	The number in the available patient pool was not specified. 140 received recruitment letters. 69 were excluded	71	69 (97.2%)	The SCL-90, BSRI, FPI-R, & IPP tests were not completed by 9, 34, 13, & 16 respectively. Questions about romantic relationships, sexual relationships, friendships, & family relationships were not answered by 1, 3, 2, & 23 respectively. Questions regarding gender security & regret & were not answered by 1 & 2 respectively.
Smith	Longitudinal Controlled	The number in the available adult patient pool was not specified. 325 adult & adolescent applicants for SRS were recruited. 103 were excluded from additional tx	162	162 (100%)	36 to 61 (22.2%-37.6% of those adults w pre-SRS data) did not complete various post-SRS tests.
Udeze Megeri	Longitudinal Controlled	International patient w GD 546 & post SRS 318. 40 M to F subjects were prospectively selected.	40	40 (100%)	-
Ainsworth	Internet/convention Survey Cross-sectional Controlled	Number of incomplete questionnaires not reported	247	72 (29.1%) 75 (30.6%) facial 147 (59.5%) had received neither facial nor reassignment surgery	-
Beatrice	Cross-sectional		40	10 (25%)	Roth Decl. Ex. 1001

Author	Study Type	Recruitment Pool	Enrolled	% GRS	Completion
	Controlled	14 excluded for demographic matching reasons			The assessments were completed by all
Haraldsen	Cross-sectional Controlled	Recruitment pool: 99	86	59 (68.6%)	-
Kraemer	Cross-sectional Controlled	The number in the available patient pool was not specified.	45	22 (48.9%)	-
Kuhn	Cross-sectional Controlled	The number in the available patient pool was not specified.	75	55 (73.3%)	-
Mate-Kole 1988	Cross-sectional Controlled	150 in 3 cohorts. Matched on select traits. The number in the available patient pool was not specified.	150	50 (66.7%)	-
Wolfradt	Cross-sectional Controlled	The number in the available patient pool was not specified.	90	30 (33.3%)	-

Panel B (Surgical Series: No Concurrent Controls)

Author	Study Type	Recruitment Pool	Enrolled	% GRS	Completion
Blanchard et al.	Cross-sectional Control: Normative test data	294 clinic patients w GD had completed study questionnaire 116 authorized for GRS. 103 completed GRS & 1 yr post-operative. 24 excluded	79	79(100%)	-
Weyers et al.	Cross-sectional Control: Normative test data	>300 M to F patients had undergone GRS 70 eligible patients recruited 20 excluded	50	50 (100%)	SF-26 not completed by 1
Wierckx et al.	Cross-sectional except for recall questions Control: Normative test data	79 F to M patients had undergone GRS & were recruited. 3 additional non-clinic patients were recruited by other patients. 32 excluded initially; 1 later.	49	49 (100%)	SF-36 test not completed by 2. Questions regarding sexual relationship, sex function, & surgical satisfaction were answered by as few as 27, 28, 32 respectively.
Eldh et al.	Cross-sectional except for 1 variable Control: Self for 1 variable-employment	136 were identified. 46 excluded	90	90 (100%)	Questions regarding gender identity, sex life, acceptance, & overall satisfaction were not answered by 13, 14, 14 & 16 respectively. Employment data missing for 11.
Hess et al.	Cross-sectional		119	119 (100%)	Roth Decl. Ex. 1001

Author	Study Type	Recruitment Pool	Enrolled	% GRS	Completion
	No control	254 consecutive eligible patients post GRS identified & sent surveys. 135 excluded.			Questions regarding the esthetics, functional, and social outcomes of GRS were not answered by 16 to 28 patients.
Lawrence	Cross-sectional No control	727 eligible patients were recruited. 495 were excluded	232	232 (100%)	-
Salvador et al.	Cross-sectional No control	243 had enrolled in the clinic 82 completed GRS 69 eligible patients were identified. 17 excluded.	52	52 (100%)	-
Tsoi	Cross-sectional No control	The number in the available patient pool was not specified.	81	81 (100%)	-

Panel C (Mixed Treatment Series: No Direct Control Groups)

Author	Study Type	Recruitment Pool	Enrolled	% GRS	Completion
Gómez-Gil et al. 2012	Cross-sectional No direct control: Analysis of variance	200 consecutive patients were recruited. 13 declined participation or were excluded for incomplete questionnaires.	187	79 (42.2%)	See prior box.
Hepp et al.	Cross-sectional No direct control: Analysis of variance	The number in the available patient pool was not specified.	31	7 (22.6%)	HADS test not completed by 1
Motmans et al.	Cross-sectional No direct control: Analysis of variance & regression	255 with GD were identified. 77 were excluded.	148 (140)	Not clearly stated. At least 103 underwent some form of GRS.	8 later excluded for incomplete SF-36 tests. 37 w recent GRS or hormone initiation were excluded from analysis of SF-36 results103.
Newfield et al.	Internet survey Cross-sectional No direct control: Analysis of variance	Number of incomplete questionnaires not reported 446 respondents; 384 U.S respondents 62 non-U.S. respondents excluded from SF-36 test results 8 U.S. respondents excluded	376 (U.S.)	139 to 150 (37.0-39.9%) in U.S.	-
Gomez-Gil et al. 2014	Cross-sectional No direct control: Analysis w regression	The number in the available patient pool was not specified. 277 were recruited. 25 excluded	252(193)	80 (41.4%) non-genital surgery	59 were excluded for incomplete questionnaires. See prior box.
Asscherman	Longitudinal		1331	1177 (88.4%)	-

Roth Decl. Ex. 1001

Author	Study Type	Recruitment Pool	Enrolled	% GRS	Completion
	No analysis by tx status	The number in the available patient pool was not specified.			
Johansson et al.	Cross-sectional except for 1 variable No analysis by tx status except for 1 question	60 eligible patients 18 excluded.	42	32 (76.2% of enrolled & 53.3% of eligible) (genital surgery)	-
Leinung et al.	Cross-sectional No analysis by tx status	242 total clinic patients	242	91 (37.6%)	Employment status data missing for 81 of all patients

*Data obtained via a survey on a website and distributed at a conference

B/C=because

BSRI=Bem Sex Role Inventory

F=Female

FP-R=Freiberg Personality Inventory

GD=Gender dysphoria

GID=Gender identity disorder

HADS=Hospital Anxiety & Depression Scale

IPP=Inventory of Interpersonal Problems

M=Male

NA=Not applicable

SCL-90=Symptom Checklist-90

SF-36=Short Form 36

GRS=Sex reassignment surgery

Tx=Treatment

W/o=without

Appendix D

Demographic Features of Study Populations

Panel A (Controlled Studies)

Author	Age (years; mean, S.D., range)	Gender	Race
Ainsworth	Only reassignment surgery: 50 (no S.D.) Only facial surgery: 51 (no S.D.) Both types of surgery: 49 (no S.D.) Neither surgery: 46 (no S.D.)	247 M to F	-
Beatrice	Pre-SRS M to F: 32.5 (27-42), Post-SRS: 35.1 (30-43)	20 M to F plus 20 M controls	100% Caucasian

Roth Decl. Ex. 1001

Author	Age (years; mean, S.D., range)	Gender	Race
Dehjne 2011	Post-SRS: all 35.1±9.7 (20-69), F to M 33.3±8.7 (20-62), M to F 36.3±10.1(21-69)	133 (41.0%) F to M, 191 (59.0%) M to F; ratio 1:1.4	-
Dhejne 2014 Landén	F to M SRS cohort: median age 27 M to F SRS cohort: median age 32 F to M applicants for reversal: median age 22 M to F applicants for reversal: median age 35	767 applicants for legal/surgical reassignment 289 (37.7%) F to M, 478 (62.3%) M to F; ratio 1:1.6 681 post SRS & legal change 252 (37.0%) F to M, 429 (63.0%) M to F; ratio 1:1.7 15 applicants for reversal 5 (33.3%) F to M, 10 (66.7%) M to F; ratio 1:2	-
Haraldsen	Pre-SRS & Post-SRS: F to M 34±9.5, F to M 33.3±10.0 Post-SRS cohort reportedly older. No direct data provided.	Pre & Post SRS 35 (40.7%) F to M, 51 (59.3%) M to F; ratio 1:1.5	-
Heylens	-	11 (19.3% of 57) F to M, 46 (80.7%); ratio 1:4.2 (80.7% underwent surgery)	-
Kockott	Pre-SRS (continued wish for surgery): 31.7±10.2 Post-SRS: 35.5±13.1	Pre-SRS (continued wish for surgery) 3 (25%) F to M, 9 (75%) M to F; ratio 1:3 Post SRS: 14 (43.8%) F to M, 18 (56.2%) M to F; ratio 1:1.3	-
Kraemer	Pre-SRS: 33.0±11.3, Post-SRS: 38.2±9.0	Pre-SRS 7 F to M (30.4%), 16 M to F (69.6%); ratio 1:2.3 Post-SRS 8 F to M (36.4%), 14 M to F (63.6%); ratio 1:1.8	-
Kuhn	All post SRS: median (range): 51 (39-62) (long-term follow-up)	3 (5.4%) F to M, 52 (94.5%) M to F; ratio 1:17.3.	-
Mate-Kole 1988	Initial evaluation: 34, Pre-SRS: 35, Post-SRS: 37	150 M to F	-
Mate-Kole 1990	Early & Usual wait SRS: 32.5 years (21-53)	40 M to F	-
Meyer	Pre-SRS: 26.7 Delayed, but completed SRS: 30.9 Post-SRS: 30.1	Pre-SRS: 5 (23.8%) F to M, 16 (76.2%) M to F; ratio 1:3.2 Delayed, but completed SRS: 1 (7.1%) F to M, 13 (92.9%) M to F; ratio 1:13 Post-SRS: 4 (26.7%) F to M, 11 (73.3%) M to F; ratio 1:2.8	86% Caucasian
Rakic	All: 26.8±6.9 (median 25.5, range 19-47), F to M: 27.8±5.2 (median 27, range 23-37), M to F: 26.4±7.8 (median 24, range 19-47).	10 (31.2%) F to M, 22 (68.8%) M to F; ratio 1:2.2	-
Ruppin	All: 47.0±10.42 (but 2 w/o SRS) (13.8±2.8 yrs post legal name change) (long-term follow-up) F to M: 41.2±5.78, M to F 52.9±10.82	36 (50.7%) F to M, 35 (49.3%) M to F; ratio 1:0.97	-
Smith	Time of surgical request for post-SRS: 30.9 (range 17.7-68.1) Time of follow-up for post-SRS: 35.2 (range 21.3-71.9)	Pre-SRS: 162: 58 (35.8%) F to M, 104 [64.2%] M to F; ratio 1:1.8 Post-SRS: 126: 49 (38.9%) F to M, 77 (61.1%) M to F; ratio 1:1.6	-
Udeze Megeri	M to F: 47.33±13.26 (range 25-80).	40 M to F	-
Wolfradt	Patients & controls: 43 (range 29-67).	30 M to F plus 30 F controls plus 30 M controls.	-

*Data obtained via a survey on a website and distributed at a conference SD=Standard deviation

Roth Decl. Ex. 1001

Author	Age (years; mean, S.D., range)	Gender	Caucasian
Blanchard et al.	F to M: 32.6, M to F w M partner preference: 33.2, F to M w F partner preference: 47.7 years	Post-GRS: 47 (45.6%) F to M, 56 (54.4%) M to F; ratio 1:1.19. In study: 38 (48.1%) F to M, 32 (40.5%) M to F w M partner preference, 9 (11.4%) M to F w F partner preference; ratio 1:0.8: 0.2	-
Weyers et al.	Post-GRS M to F: 43.1 ±10.4 (long-term follow-up)	50 M to F	-
Wierckx et al.	Time of GRS: 30±8.2 years (range 16 to 49) Time of follow-up: 37.1 ±8.2.4 years (range 22 to 54)	49 M to F	-
Eldh et al.	-	50 (55.6%) F to M, 40 (44.4%) M to F; ratio 1:0.8 There is 1 inconsistency in the text suggesting that these should be reversed.	-
Hess et al.	-	119 M to F	-
Lawrence	Time of GRS: 44±9 (range 18-70)	232 M to F	-
Salvador et al.	Time of follow-up for post-GRS: 36.28±8.94 (range 18-58) (Duration of follow-up: 3.8±1.7 [2-7])	52 M to F	-
Tsoi	Time of initial visit: All: 24.0±4.5, F to M: 25.4±4.4 (14-36), M to F: 22.9±4.6 (14-36). Time of GRS: All: 25.9±4.14, F to M: 27.4±4.0 (20-36), M to F: 24.7±4.3 (20-36).	36 (44.4%) F to M, 45 (55.6%) M to F; ratio 1:1.25	0% 100% Asian

Panel C (Mixed Treatment Series: No Direct Control Groups)

Author	Age (years; mean, S.D., range)	Gender	Caucasian
Gómez-Gil et al. 2012	W & W/O GRS: All: 29.87±9.15 (range 15-61), W/O hormone tx: 25.9±7.5, W current hormone tx: 33.6±9.1. (At hormone initiation: 24.6±8.1).	W/O hormone tx: 38 (56.7%) F to M, 29 (43.3%) M to F; ratio 1:0.8. W hormone tx: 36 (30.0%) F to M, 84 (70.0%) M to F; ratio 1:2.3. Post-GRS: 29 (36.7%) F to M, 50 (63.3%) M to F; ratio 1:1.7.	-
Hepp et al.	W & W/O GRS: 32.2±10.3	W & W/O GRS: 11 (35.5%) F to M; 20 (64.5%) M to F; ratio 1:1.8.	-
Motmans et al.	W & W/O GRS: All (n=140) : 39.9±10.2, F to M: 37.0±8.5, M to F: 42.3±10.4	W & W/O GRS: N=140 63(45.0%) F to M, 77 (55.0%) M to F; ratio 1:1.2 N=103 49 (47.6%) F to M; 54 (52.4%) M to F; ratio 1:1.1	-
Newfield et al.	W & W/O GRS: U.S.+ non-U.S. : 32.8±11.2, U.S. 32.6±10.8	W & W/O GRS: U.S.+ non-U.S.: F to M, 438, U.S.: F to M: 376	89% of 336 respondents Caucasian
Gomez-Gil, et al. 2014	W & W/O Non-genital GRS: 31.2±9.9 (range 16-67).	Roth	Decl. Ex. 1001

Author	Age (years, mean, S.D., range)	Gender	Caucasian
		W & W/O Non-genital GRS: 74 (38.3%) F to M, 119 (61.7%) M to F; ratio 1:1.6.	
Asscherman	Time of hormone tx: F to M: 26.1±7.6 (16-56), M to F: 31.4±11.4 (16-76)	Met hormone tx requirements: 365 (27.4%) F to M, 966 (72.6%) M to F; ratio 1:2.6. Post-GRS: 343 (29.1%) F to M, 834 (70.9%) M to F; ratio 1:2.4.	-
Johanssen	Time of initial evaluation: F to M: 27.8 (18-46), M to F 37.3 (21-60). Time of GRS: F to M: 31.4 (22-49), M to F 38.2 (22-57). Time of follow-up for post-GRS: F to M: 38.9 (28-53), M to F 46.0 (25-69) (Long-term follow-up)	Approved for GRS: 21 (35%) F to M, 39 (65%) M to F; ratio 1:1.9) Post GRS: 14 (43.8%) F to M; 18 (56.2%) M to F; ratio 1:1.3)	-
Leinung et al.	Time of hormone initiation : F to M: 27.5, M to F 35.5	W & W/O GRS: 50 (20.7%) F to M, 192 M to F (79.3%); ratio 1:3.8. Post-GRS: 32 F to M (35.2%); 59 (64.8%) M to F; ratio 1:1.8.	-

Appendix E

Psychometric and Satisfaction Survey Instruments

Instrument Name and Developer	Development and Validation Information
APGAR Family Adaptability, Partner-ship Growth, Affection, and Resolve <i>Smilkstein</i>	Published in 1978 Initial data: 152 families in the U.S. A "friends" component was added in 1983. Utility has challenged by many including Gardner 2001
Beck Depression Inventory <i>Beck, Ward, Mendelson, Mock, & Erbaugh</i>	Published initially in 1961 with subsequent revisions It was initially evaluated in psychiatric patients in the U.S.A. Salkind (1969) evaluated its use in 80 general outpatients in the UK. It is copyrighted and requires a fee for use
Bem Sex Role Inventory <i>Bem</i>	Published 1974 Initial data: 100 Stanford Undergraduates 1973 update: male 444; female 279 1978 update: 470; female 340
Body Image Questionnaire <i>Clement & Lowe</i>	Validity study published 1996 (German) Population: 405 psychosomatic patients, 141 medical students, 208 sports students
Body Image Scale <i>Lindgren & Pauly</i> <i>(Kuiper, Dutch adaptation 1991)</i>	1975 Initial data: 16 male and 16 female transsexual patients in Oregon
Crown Crisp Experiential Index (formerly Middlesex Hospital Questionnaire)	Developed circa 1966 Manual published 1970

Roth Decl. Ex. 1001

Instrument Name and Developer	Development and Validation Information
<i>Crown & Crisp</i>	Initial data: 52 nursing students while in class in the UK
(2nd) European Quality of Life Survey <i>Anderson, Mikulić, Vermeylen, Lyly-Yrjanainen, & Zigante,</i>	Published in 2007 The pilot survey was tested in the UK and Holland with 200 interviews. The survey was revised especially for non-response questions. Another version was tested in 25 persons of each of the 31 countries to be surveyed. Sampling methods were devised. 35,634 Europeans were ultimately surveyed. Additional updates
Female Sexual Function Index <i>Rosen, Brown, Heiman, Leblum, Meston, Shabsigh, Ferguson, D'Agostino Wiegel, Meston, & Rosen</i>	Published in 2000 Initial data: 131 normal controls & 128 age-matched subjects with female sexual arousal disorder from 5 U.S. research centers. Updated 2005: the addition of those with hypoactive sexual desire disorder, female sexual orgasm disorder, dyspareunia/vaginismus, & multiple sexual dysfunctions (n=568), plus more controls (n=261).
Fragebogen zur Beurteilung des eigenen Körpers <i>Strauss</i>	Published 1996 (German)
Freiberg Personality Inventory <i>Fahrenberg, Hampel, & Selg</i>	7 th edition published 2001, 8 th edition in 2009 (Not in PubMed) German equivalent of MMPI
"gender identity disorder in childhood" <i>Smith, van Goozen, Kuiper, & Cohen-Kettenis</i>	11 items derived from the Biographical Questionnaire for Trans-sexuals (Verschoor Poortinga 1988) (Modified by authors of the Smith study)
Gender Identity Trait Scale <i>Altstotter-Gleich</i>	Published 1989 (German)
General Health Questionnaire <i>Goldberg & Blackwell (initial study)</i> <i>Goldberg & Williams (manual)</i>	Initial publication 1970 Manual published ?1978, 1988 (Not in PubMed) Initial data: 553 consecutive adult patients in a single UK primary care practice were assessed. Sample of 200 underwent standardized psychiatric interview. Developed to screen for hidden psychological morbidity. Proprietary test. Now 4 versions.
Hospital Anxiety & Depression Scale <i>Zigmond & Snaith</i>	Published in 1983 Initial data: Patients between 16 & 65 in outpatient clinics in the UK >100 patients; 2 refusals. 1 st 50 compared to 2 nd 50.
Inventory of Interpersonal Problems <i>Horowitz</i>	Published 1988 Initial data: 103 patients about to undergo psychotherapy; some patients post psychotherapy (Kaiser Permanente-San Francisco) Proprietary test
King's Health Questionnaire <i>Kelleher, Cardozo, Khullar, & Salvatore</i>	1997 Initial data: 293 consecutive women referred for urinary incontinence evaluation in London Comparison to SF-36
Minnesota Multi-phasic Personality Inventory <i>Hathaway & McKinley</i>	Published in 1941 Updated in 1989 with new, larger, more diverse sample.

Instrument Name and Developer	Development and Validation Information
<i>Butcher, Dahlstrom, Graham, & Tellegen</i>	MMPI-2: 1,138 men & 462 women from diverse communities & several geographic regions in the U.S.A. The test is copyrighted.
Modified Androphilia-Gynephilia Index	Neither the underlying version or the Blanchard modified version could be located in PubMed (Designed by the author of the Blanchard et al. study)
"post-operative functioning 13 items" <i>Doorn, Kuiper, Verschoor, Cohen-Kettenis</i>	Published 1996 (Dutch) (Not in PubMed) (Designed by 1 of the authors of the Smith study)
"post-operative functioning 21 items" <i>Doorn, Kuiper, Verschoor, Cohen-Kettenis</i>	Published 1996 (Dutch) (Not in PubMed) (Designed by 1 of the authors of the Smith study)
Scale for Depersonalization Experiences <i>Wolfradt</i>	Unpublished manuscript 1998 (University of Halle) (Designed by 1 of the authors of the Wolfradt study)
"sex trait function" <i>Cohen-Kettenis & van Goozen</i>	Published 1997 Assessed in 22 adolescents (Designed by 1 of the authors of the Smith Study)
Self-Esteem Scale <i>Rosenberg</i>	Published 1965 (Not in PubMed) Initial data: 5,024 high-school juniors & seniors from 10 randomly selected New York schools
Short-Form 36 <i>RAND</i> <i>Ware & Sherbourne 1992</i> <i>McHorney, Ware, & Raczek 1993</i>	Originally derived from the Rand Medical Outcomes Study (n=2471 in version 1; 6742 in version 2 1989). The earliest test version is free. Alternative scoring has been developed. There is a commercial version with a manual.
Social Anxiety & Distress Scale <i>Watson & Friend</i>	Initial publication in 1969 Requires permission for use
Social Support Scale <i>Van Tilburg 1988</i>	Published 1988 (Dutch) (Not in PubMed)
Spielberger State & Trait Anxiety Questionnaire <i>Spielberger, Gorsuch, Lushene, Vagg, & Jacobs</i>	Current format published in 1983 Proprietary test
Symptom Checklist-90 <i>Derogatis, Lipman, Covi</i> <i>Derogatis & Cleary</i>	Published in 1973 & 1977 Reportedly with normative data for psychiatric patients (in- & out-patient) & normal subjects in the U.S. Has undergone a revision Requires qualification for use
Tennessee Self-Concept Scale <i>Fitts & Warren</i>	In use prior to 1988 publication. Initial data: 131 psychiatric day care patients. Updated manual published 1996. Update population >3000 with age stratification. No other information available. Requires qualification for use
Utrecht Gender Dysphoria Scale <i>Cohen-Kettenis & van Goozen</i>	Published in 1997 Initial population: 22 transgender adolescents who underwent reassignment surgery. (Designed by 1 of the authors of the Smith study)

Instrument Name and Developer	Development and Validation Information
WHO-Quality of Life (abbreviated version) <i>Harper for WHO group</i>	Field trial version released 1996 Tested in multiple countries. The Seattle site consisted of 192 of the 8294 subjects tested). Population not otherwise described. The minimal clinically important difference has not been determined. Permission required

Althof et al., 1983; Greenberg, Frank, 1965; Gurtman, 1996; Lang, Vernon, 1977; Paap et al., 2012; Salkind et al., 1969; Vacchiano, Strauss, 1968.

Appendix F

Endpoint Data Types and Sources

Panel A (Controlled Studies)

Author	National Data	Instrument w Substantive Normative Data	Instrument w/o Substantive &/or Accessible Normative Data	Investigator-designed	Other	Other
Dhejne 2011	Yes	-	-	-	-	Mortality (Suicide, Cardiovascular Disease [possible adverse events from Hormone Tx], Cancer), Psych hx & hospitalization, Suicide attempts
Dhejne Landén	Yes	-	-	-	Includes demographics*	Education, Employment, Formal application for reversal of status, Psych dx & tx, Substance abuse** More elements in earlier paper
Beatrice	-	MMPI form R, TSCS	-	-	Demographic	Education, Income, Relationships
Haraldsen	-	SCL-90/90R	-	-	Demographic	Education, Income, Relationships

Author	National Data	Instrument w Substantive Normative Data	Instrument w/o Substantive &/or Accessible Normative Data	Investigator-designed	Other	Other
						DSM Axis 1, II, V (GAF), Substance abuse
Heylens	-	SCL-90	-	Yes-2	Demographic	Employment, Relationships, Substance abuse, Suicide attempts
Ainsworth	-	Likely SF-36v2*	-	Yes-1	Demographic	-
Ruppin	-	SCL-90R	BSRI, FPI-R, IIP	Yes-2	Demographic	Adverse events from surgery, Employment, Psych tx, Relationships, Substance abuse
Smith	-	MMPI-short, SCL-90?R	BIS, UGDS, ? Cohen-Kettenis', Doorn's x2, (Gid-c, SSS)	Yes-1 or 2	Demographic	Adverse events from surgery, Employment, Relationships
Udeze Megeri	-	SCL-90R	BDI, GHQ, HADS, STAI-X1, STAI-X2	-	-	Psych eval & ICD-10 dx
Kuhn	-	-	KHQ	Yes-1	Demographic	Relationships
Mate-Kole 1990	-	-	BSRI, CCEI	Yes-1	Demographic	Employment (relative change), Psych hx, Suicide hx
Wolfradt	-	-	BIQ, GITS, SDE, SES	Yes-1	-	-
Kraemer	-	-	FBeK	-	Demographic	-
Mate-Kole 1988	-	-	BSRI, CCEI	-	Demographic	Employment, Psych hx, Suicide hx,
Kockott	-	-	-	Yes-1	Demographic	Employment, Income, Relationships, Suicide attempts
Meyer	-	-	-	Yes-1	Demographic	Education, Employment, Income, Psych tx, Phallus removal request
Rakic	-	-	-	Yes-1	Demographic	Employment, Relationships

Author	National Data	Instrument w Substantive Normative Data	Instrument w/o Substantive &/or Accessible Normative Data	Investigator-designed	Other	Other
Weyers	-	SF-36	FSFI	Yes-2	Demographic	Hormone levels, Adverse events from surgery, Relationships
Blanchard	-	SCL-90R	(AG)	Yes-1	Demographic	Education, Employment, Income, Relationships, Suicide (Incidental finding)
Wierckx	-	SF-36	-	Yes-3	Demographic	Hormone levels, Adverse events from surgery, Relationships
Eldh	-	-	-	Yes-1	-	Adverse events from surgery, Employment, Relationships, Suicide attempts
Hess	-	-	-	Yes-1	-	-
Lawrence	-	-	-	Yes-4	Demographic	Adverse events from surgery
Salvador	-	-	-	Yes-1	Demographic	Relationships
Tsoi	-	-	-	Yes-1	Demographic	Education, Employment, Relationships (relative change)

Panel C (Mixed Treatment Series: No Direct Control Groups)

Author	National Data	Instrument w Substantive Normative Data	Instrument w/o Substantive &/or Accessible Normative Data	Investigator-designed	Other	Other
Asscheman et al.	Yes	-	-	-	Demographic	

Author	National Data	Instrument w Substantive Normative Data	Instrument w/o Substantive &/or Accessible Normative Data	Investigator-designed	Other	Other
						Mortality (HIV, Possible adverse events from Hormone Tx, Substance abuse, Suicide)
Motmans et al.	-	SF36 EQOLS (2 nd)	-	-	Demographic	Education, Employment, Income, Relationships
Newfield et al.	-	SF-36v2	-	-	Demographic	Income
Gómez-Gil et al. 2014	-	WHOQOL-BREF	APGAR	Yes-1	Demographic	Education, Employment, Relationships
Gómez-Gil et al. 2012	-	-	HADS, SADS	-	Demographic	Education, Employment, Living arrangements
Hepp et al.	-	-	HADS	-	Demographic	DSM Axis 1& II Psych dx
Johansson et al.	-	-	-	Yes-1	Demographic	Axis V change (Pt & Clinician) Employment (relative change) Relationship (relative change)
Leinung et al.	-	-	-	-	Demographic	Employment, Disability, DVT, HIV status, Psych dx

*Listed as San Francisco-36 in manuscript

** From medical charts & verdicts ?=Possibly self-designed

AG=Androphilia-Gynephilia Index (investigator designed 1985) (used more for classification)

APGAR=Family Adaptability, Partnership growth, Affection, and Resolve

BDI=Beck Depression Inventory

BIQ=Body Image Questionnaire

BIS=Body Image Scale

BSRI=Bem Sex Role Inventory

CCEI=Crown Crisp Experiential Index

Cohen-Kettenis'= Sex trait function (An author helped design)

Dorn's x2= Post-operative functioning 13 items (An author helped design)

Post-operative functioning 21 items (An author helped design)

EQOLS (2nd)=2nd European Quality of Life Survey

FBeK=Fragebogen zur Beurteilung des eigenen Körpers

FPI-R=A version of the Freiberg Personality Inventory

FSFI+Female Sexual Function Index

GHQ=General Health Questionnaire

Gid-c=Gender identity disorder in childhood (used more for predictors) (An author helped design)

GITS=Gender Identity Trait Scale

HADS=Hospital Anxiety Depression Scale

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IIP=Inventory of Interpersonal Problems
 KHQ=King's Health Questionnaire
 MMPI=Minnesota Multi-phasic Personality Inventory
 SADS=Social Anxiety & Distress Scale
 SCL-90 ($\pm$ R)=A version of the Symptom Checklist 90
 SDE=Scale for Depersonalized Experiences (An author designed)
 SES=Self-Esteem Scale
 SF-36 (v2)=Short Form-36(version2)
 SSS=Social Support Scale (used more for predictors)
 STAI-X1, STAI-X2=Spielberger State and Trait Anxiety Questionnaire
 TSCS=Tennessee Self-Concept Scale
 UGDS=Utrecht Gender Dysphoria Scale (An author helped design)
 WHOQOL-BREF=World Health Organization-Quality of Life (abbreviated version)

Appendix G.

Longitudinal Studies Which Used Patients as Their Own Controls and Which Used Psychometric Tests with Extensive Normative Data or Longitudinal Studies Which Used National Data Sets

Author	Test	Patient and Data Loss	Results
Psychometric Test			
Heylens et al. Belgium 2014	SCL-90R	90 applicants for SRS were recruited. •8 (8.9%) declined participation. •12 (13.3%) excluded b/c GID-NOS dx. •12 (13.3%) did not complete the treatment sequence b/c of psychiatric/physical comorbidity, personal decision for no tx, or personal decision for only hormone tx. •1 (1.1%) committed suicide during follow-up. 57 (63.3% of recruited) entered the study. •1 (12.2% of initial recruits) had not yet received SRS by study close. 46 (51.1% of recruited) underwent serial evaluation •The test was not completed by 1 at t=0, 10 at t=1 (after hormone tx), & 4 at t=2 (after SRS) missing data for another 1.1% to 11.1%.	At t=0, the mean global "psychoneuroticism" SCL-90R score, along with scores of 7 of 8 subscales, were statistically more pathologic than the general population. After hormone tx, the mean score for global "psychoneuroticism" normalized & remained normal after reassignment surgery.
Ruppin,Pfafflin, Germany 2015	SCL-90R	The number in the available patient pool was not specified.	

Author	Test	Patient and Data Loss	Results
		140 received recruitment letters. •2 (1.4% of those with recruitment letters) had died. •1 (0.7%) was institutionalized. •5 (3.6%) were ill. •8 (5.7%) did not have time. •8 (5.7%) stated that GD was no longer an issue. •8 (5.7%) provided no reason. •28 (20.0%) declined further contact. •9 (6.4%) were lost to follow-up. 71 (50.7%) agreed to participate. •2 (1.4%) had not undergone SRS •The test was not completed by 9. missing data for another 6.4%.	At t=0, the "global severity index "SCL-90R score was 0.53 ± 0.49. At post-SRS follow-up the score had decreased to 0.28 ± 0.36. The scores were statistically different from one another, but are of limited biologic significance given the range of the score for this scale: 0-4. In the same way, all of the subscale scores were statistically different, but the effect size was reported as large only for "interpersonal sensitivity": 0.70 ± 0.67 at t=0 and 0.26 ± 0.34 post-SRS.
Smith et al. Holland 2005	MMPI SCL-90	The number in the available adult patient pool was not specified. 325 adult & adolescent applicants for SRS were recruited. •103 (31.7%) were not eligible to start hormone tx & real-life experience. •34 (10.7%) discontinued hormone tx 162 (an unknown percentage of the initial recruitment) provided pre-SRS test data. •36 to 61 (22.2%-37.6% of those adults w pre-SRS data) did not complete post-SRS testing.	Most of the MMPI scales were already in the normal range at the time of initial testing. At t=0, the global "psychoneuroticism" SCL-90 score, which included the drop-outs, was 143.0 ± 40.7. At post SRS-follow-up, the score had decreased to 120.3 ± 31.4. The scores were statistically different from one another, but are of limited biologic significance given the range of the score for this scale: 90 to 450, with higher scores consistent with more psychological instability.
Udeze, et al. 2008 Megeri, Khoosal 2007 UK	SCL-90R	The number in the available patient pool was not specified. 40 subjects were prospectively selected. •Post-operative testing was conducted within 6 months to minimize previously determined loss rates.	At t=0, the mean raw global score was 48.33. At post-SRS follow-up, the mean score was 49.15.

Author	Test	Patient and Data Loss	Results
			There were no statistically significant changes in the global score or for any of the subscales.
National Databases			
Dehjne Sweden 2011	Swedish National Records	804 with GID in Sweden 1973 to 2003 were identified. •480 (59.7%) did not apply or were not approved for SRS 324 (40.3%) underwent SRS. •All were followed. 3240 controls of the natal sex and 3240 controls of the reassigned gender were randomly selected from national records	All cause mortality was higher (n=27[8%]) than in controls (H.R. 2.8 [1.8-4.3]) even after adjustment for covariants. Divergence in survival curves was observed after 10 years. The major contributor was completed suicide (n=10 [3%]; adjusted H.R. 19.1 [5.8-62.9]). Suicide attempts were more common (n= 29 [9%]) than in controls (adjusted H.R. 4.9 [2.9-8.5]). Hospitalizations for psychiatric conditions (not related to gender dysphoria) were more common n= 64 [20%] than in controls (H.R. 2.8 [2.0-3.9]) even after adjusting for prior psychiatric morbidity.
Dhejne et al. 2014 Landén et al. 1998 Sweden	Swedish National Registry	767 applied for SRS/legal status (1960-2010) •25 (3.3%) applications denied. •61 (8.0%) not granted full legal status 681 (88.7%) underwent SRS. •All were followed.	15 formal applications for reversal to natal/original gender (2.2% of the SRS population) were identified thus far (preliminary number). (Does not reflect other manifestations of regret such as suicide.)

GID=NOS=Gender Identity Disorder-Not Otherwise Specified HR=Hazard Ratio SRS=Sex reassignment surgery
Tx=Treatment [Back to Top](#)

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IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF WISCONSIN

ALINA BOYDEN and SHANNON
ANDREWS,

Plaintiffs,

v.

Case No. 17-CV-264

STATE OF WISCONSIN DEPARTMENT
OF EMPLOYEE TRUST FUNDS, et
al.

Defendants.

Deposition of LAWRENCE S. MAYER
Laguna Niguel, California
Friday, June 15, 2018 - 9:17 a.m.

Reported By:

Patricia Y. Schuler

Job no: 21911

Page 2

Deposition of LAWRENCE S. MAYER, taken on behalf of the Plaintiff at 23175 Avenida De La Carlota Laguna Hills, California 92653, beginning at 9:17 a.m. and ending at 3:51 p.m., on June 15, 2018, before PATRICIA Y. SCHULER, Certified Shorthand Reporter No. 11949.

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I-N-D-E-X
WITNESS: EXAMINATION
LAWRENCE S. MAYER
MR. KNIGHT 5

E-X-H-I-B-I-T-S
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LAGUNA NIGUEL, CALIFORNIA; FRIDAY, JUNE 15, 2018
10:00 a.m.

LAWRENCE S. MAYER,
having been administered an oath, was examined and testified as follows:

EXAMINATION
BY MR. KNIGHT:

Q. Dr. Mayer, I'm one of the attorneys for the plaintiffs, and we are here for your deposition today. You have been named as an expert in this case. Could you go ahead and give your full name and spell it for the record.

A. It is Lawrence Stephen Mayer. Lawrence is with a W, Stephen with P-H, Mayer is M-A-Y-E-R.

MR. KNIGHT: And before you go any further, I want to get on the record that I have a colleague who is on the line, Leslie Cooper is another attorney with the ACLU.

MS. COOPER: Good morning.

BY MR. KNIGHT:

2 (Pages 2 to 5)

Page 6	Page 8
1 Q. I'd like to talk first about your education, 2 Dr. Mayer. So you have a psychology degree, and you 3 got that in 1967? 4 A. I have an undergraduate degree -- yes, sir, 5 in psychology, and premed, yes, sir. 6 Q. And you went to medical school -- 7 A. Yes. 8 Q. -- then, at Ohio State; is that right? 9 A. Yes, sir. 10 Q. Did you receive a degree from there? 11 A. No, sir. 12 Q. Then did you at some point receive a medical 13 degree? 14 A. Yes, sir. 15 Q. Where was that from? 16 A. London, England, at Guy's Medical School. 17 Q. And was that an MD? 18 A. Well, it is the equivalent of an MD, so it's 19 called an MD, but the actual degree is an MB. It's a 20 Bachelor of Medicine. It's a quite different system. 21 Q. Did you at some point receive an MD? 22 A. I received the English MD. I've received the 23 degree that qualifies you to practice medicine. The MD 24 is an American degree. I did not receive an American 25 MD; that is correct.	1 What is this? Yes, sir. I think this is correct. 2 Q. When you received your MB degree in London, 3 was there any clinical experience as a part of that? 4 A. Yes, sir. 5 Q. And for what period of time? 6 A. About a little over a year. 7 Q. A year of clinical experience? 8 A. In London, yes, sir. 9 Q. And that is the only clinical experience you 10 have had, then? 11 A. No, sir. I went to the British health system 12 and spent another year, approximately a year. 13 Q. And was that another degree or what was that? 14 When did you spend this year at the British health 15 service? 16 A. It's equivalent to a residency -- or an 17 internship in this country, so you go and do additional 18 training. When you get an MD degree in this country, 19 you're not licensed to practice medicine, you do an 20 internship, and if you want, a residency -- this is 21 back then. It is quite different now. 22 So I went out as a junior house officer, 23 which is the equivalent of an intern. I went to the 24 British health service. 25 Q. And what kind of clinical experience did you
Page 7	Page 9
1 Q. So it's the MB that you received, but not an 2 MD? 3 A. There is no MD. 4 Q. Got you. 5 Are you licensed to practice medicine? 6 A. No, sir, I have never practiced medicine. 7 MR. KNIGHT: And why don't I -- why don't we 8 go ahead and mark this as Exhibit 1. I think we're 9 just doing this in order for the deposition. 10 (Exhibit 1 was marked for identification.) 11 (Exhibit 2 was marked for identification.) 12 (Exhibit 3 was marked for identification.) 13 BY MR. KNIGHT: 14 Q. Dr. Mayer, I'm showing you what is marked 15 deposition Exhibit 1. Can you identify that? 16 A. Yes, sir. 17 Q. This is your report with some appendixes to 18 it. So this is a report in this matter, in the Boyden 19 case? 20 A. It appears to be, yes, sir. 21 Q. Well, I would like to turn to, first of all, 22 to your professional vitae, which is appendix B. 23 So is this a complete and accurate 24 professional vitae for you? 25 A. I believe so, yes, sir. Oh, let me see here.	1 have during that one year? 2 A. Well, I was interested in a combination of 3 epidemiology and psychiatry. Epidemiology was just 4 getting going as a major division primarily growing out 5 of infectious disease. And at the time, we must be the 6 first, one of the first to believe if we applied these 7 methods to psychiatric illness -- the DSM-3 had just 8 come out -- we applied psychiatric illness, we could 9 cure mental illness worldwide. Pretty idealistic. So 10 I was always interested in that interaction. Then when 11 I found statistics, I really became interested in 12 research. 13 Q. So when you talk about that as clinical 14 experience, were you actually seeing patients? 15 A. Yes, sir. 16 Q. But they were -- so they were patients 17 presenting with mental health issues or what kind of 18 patients? 19 A. Primarily psychiatric patients, because there 20 were four of us in a clinic and nobody else. They were 21 all infectious disease. So I didn't see -- the first 22 year it's like an internship, you see a bit of 23 everything. But, yes, overwhelmingly. I would never 24 hold myself out as an expert in clinical -- clinical 25 medicine. I saw a very limited number of patients, and

3 (Pages 6 to 9)

Page 10 1 they were primarily psychiatric patients. 2 Q. I understand. And were any of those 3 patients, patients, I guess -- what -- let me back up. 4 So what year was this that you did this year 5 of clinical experience at the British -- I'm sorry, the 6 British health service? 7 A. Yes. 8 It was '69 and '70 is the academic year, I 9 believe. 10 Q. And during that time period, did you work 11 with anyone who identified with gender issues or what 12 has come to be known as gender dysphoria? Or do you 13 recall? 14 A. Well, it was a different time. I think that 15 if you mean were there people struggling, if I can use 16 some of the old terms like transvestites, people like 17 that who are concerned about identifying with the 18 opposite sex, yes, there were patients. 19 But this was -- I didn't do in-depth 20 psychoanalysis of people, so I would say my experience 21 was rather limited. I'm a little worried because when 22 you say, like transgender, I don't know if, in the 23 '60s, I knew what that term meant. But there was 24 certainly no focus on that. 25 Q. Do you recall whether -- I mean, do you	Page 12 1 not a large number, but I don't think I can be precise 2 there. 3 Q. Overall it would have been a small number 4 then? 5 A. Yes, sir. 6 Q. Even then? 7 A. Yes, sir. 8 Q. So you don't have a license, then, to provide 9 clinical treatment to a patient at this stage? 10 A. That is correct. 11 Q. Do you have any kind of license to practice 12 medicine? 13 A. I have never practiced medicine. At one time 14 I qualified under the English, the British health 15 service, but we're talking about 50 years ago. I have 16 no license. I've never applied for a license to 17 practice other than my educational license. 18 Q. And so other than that one year, you have 19 never practiced psychiatry then? 20 A. That is right. To be clear, I supervise 21 residents in teaching hospitals, so I have supervision 22 still. But I have no direct clinical practice where I 23 am the attending physician. I just want to be 24 absolutely precise with you. 25 Q. Right. And when you talk about
Page 11 1 recall any specific patient or how many patients you 2 might have seen with gender issues at that time period? 3 A. Well, could gender issues be anyone 4 struggling with being a little boy or a little girl, 5 for example? Or do you mean something more profound? 6 I want to be precise. 7 Q. Right. I think it can be as general as that. 8 Someone struggling with -- but I guess what really I'm 9 asking you about is someone who is coming to you 10 identifying, explaining that, while they have been 11 identified as male, they don't believe they are, in 12 fact, male. 13 A. That's what I -- I think I'm to the narrow 14 sense and the wide sense, that's the narrow sense. I 15 definitely didn't see anything like that that I can 16 remember. It has been many years, but not that I 17 remember. 18 Q. More broadly, in terms of the way you're 19 talking about it, do you recall how many patients you 20 would have seen? 21 A. Well, struggling with their sexual identity 22 is pretty common both for kids and also for people 23 facing kind of mid-age, mid-age crisis. So 24 specifically, you have to go back to time. Remember 25 how primitive our medicines were and all of that. It's	Page 13 1 "supervision," what kind of supervision are we talking 2 about? 3 A. Well, it would usually be on the team 4 rounding, and my role would be the clinical 5 epidemiologist trying to determine how can results in 6 the epidemiological literature be used in analysis of 7 specific patients. So my role there would be to at 8 least understand what is going on, then to reflect on 9 it. I taught a journal club. We would talk about 10 these cases. I just want to point out I do have 11 relatively hands-on relationship with patients, but not 12 as a treating -- not as a treating physician, never as 13 a treating physician. 14 Q. What time period did you have this 15 relationship with -- supervisory relationship? 16 A. Well, I had it at Hopkins -- I'm going to say 17 for the last 25 years. I'll just take a guess. 25 18 years. 19 Q. But you were saying you were rounding with 20 students in seeing patients and addressing what 21 exactly? 22 A. Well, you say rounding patients. We have 23 conference for the patient, we have a mortality 24 conference. I taught at a medical school, and part of 25 that is rounding. These aren't students in your sense,

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1 they are residents, and there is a team -- if you've
2 ever been in a hospital -- and the people would have
3 different people.

4 Oftentimes I would be on that team to
5 represent research, in particular, how does one use
6 whoever doing brain research, scanning research about
7 transgenders, how do they use that in facing this
8 patient. That is clinical epidemiology. Takes the
9 general statistical framework and applies it to an
10 individual patient.

11 Q. And when you were -- were you actually seeing
12 the patient or were you rounding simply with residents
13 who had seen the patients?

14 A. Both. I'd see patients every -- probably
15 every week at least one patient. I wouldn't see -- I'm
16 not doing that anymore, but I saw patients regularly.

17 Q. But you were not providing clinical advice
18 with respect to those patients?

19 A. That's care. If you notice, I'm very careful
20 not to comment on any clinical issue. I will try to
21 represent myself as a research physician, I'm not one.
22 There is a more of a track for that in Europe than
23 there is in this country, but we have more and more
24 "mud-fuds," (phonetic) we call them. That's MD/Ph.D.,
25 coming out. They are academic physicians and not

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1 clinicians.

2 Q. But I --

3 A. Sorry about that.

4 Q. You told me several things, and I just want
5 to make sure that I understand what the bottom line is.

6 You are not providing clinical advice to
7 patients?

8 A. Oh, no, I would not provide any clinical
9 advice, no, sir.

10 By the way, I also did this, if you're
11 interested, in toxicology and cardiology with two other
12 areas, because it is similar. I didn't want you to
13 attach it too close to the psychiatry.

14 Q. Well, that is a good point. When you talk
15 about rounding, what are the areas that you covered?

16 A. Well, rounding would primarily be in
17 psychiatry, and then it would be toxicology, internal
18 medicine, and cardiology.

19 Q. And how much of that was psychiatry? You
20 said you did this for a period of 25 years.

21 A. At Johns Hopkins, it was almost all
22 psychiatry. In Phoenix it would be -- Phoenix would be
23 mostly nonpsychiatry. It would be areas focused on
24 subspecialties in medicine such as toxicology,
25 cardiology.

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1 Q. And the period of time you were at Johns
2 Hopkins was when, exactly?

3 A. I went in '89. I was there until last year.
4 I'm a little weak on dates, forgive me. I'm going to
5 do my best. But I think I was there until 2000, would
6 be '16. That is right. I think that's right, yes.

7 Q. Over the period of time you were rounding at
8 Johns Hopkins, how many of the patients presented with
9 gender dysphoria?

10 A. I don't remember any specifically. I say
11 that because I was part of an Alzheimer's group, a
12 dementia group. So it was primarily people that had
13 neuropsychiatric disorders. There may have been some
14 in the general clinic or presentation, but I don't
15 remember specifically, other than a grand rounds
16 presentation. There was a gender identity program at
17 Hopkins. I do remember a grand rounds presentation.

18 Q. Let me make sure I understand. So you were
19 primarily rounding Johns Hopkins with respect to
20 Alzheimer's?

21 A. I would say the majority of patients I
22 rounded on -- Hopkins is very large in psychiatry.
23 There are hundreds and hundreds of doctors, so it is
24 split up by subspecialty. There is a special group
25 that does gender identity. There is a group that does

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1 memory, Alzheimer's, dementia. I would say the
2 psychological characters of aging, that's the group I
3 worked with, yes, sir.

4 Q. So you worked with an Alzheimer group, not
5 the gender identity group while you were at Johns
6 Hopkins?

7 A. That is correct. I did my gender identity
8 research, but that was in the School of Public Health,
9 which is separate.

10 Q. So you don't recall, then, doing rounding
11 about anyone who presented with gender dysphoria at
12 Johns Hopkins at this point?

13 A. Well, we would have to get into exactly what
14 you mean by gender dysphoric, because it is used all
15 sorts of different ways. But in general, we rounded on
16 in service, in bed, in service patients. I don't
17 remember any with a diagnosis of gender dysphoria.
18 There may have been some. Again, it has been 20 years.
19 You know, I don't have a perfect memory. I don't
20 remember any.

21 Q. And then you talked about that you did some
22 work at the School of Public Health?

23 A. Yes.

24 Q. And over what period of time was that?

25 A. It would be the same. It was the same work.

5 (Pages 14 to 17)

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1 The work shifted from the School of Public Health to
2 the School of Medicine, so it would have been to '89 to
3 2016.

4 Q. So you were working in both departments
5 during that time period?

6 A. Yes, sir, very closely connected, yes. The
7 Psychiatric research is a Department of Mental Health
8 in the School of Public Health. The psychiatric care
9 is in the School of Medicine.

10 Q. Have you had any education or training
11 related to gender dysphoria or gender discordance?

12 A. Well, you'd have to tell me exactly what you
13 mean by that.

14 Q. Are you familiar with the diagnosis in the
15 DSM for gender dysphoria?

16 A. Yes, sir.

17 Q. So that is what I'm asking about.

18 A. I've not had any clinical updates of any
19 kind, including gender dysphoria.

20 Q. And what do you mean by clinical updates?

21 A. Well, I thought that is what you were talking
22 about, a continuing education program, something where
23 you go and study about these issues specifically for
24 clinicians. If not, I don't know what you mean.

25 Q. Well, I'm talking about any training. And so

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1 if you're saying that would be the relevant training,
2 then that is my question.

3 A. I've had no specific training in dealing with
4 gender dysphoria, no, sir.

5 Q. Okay. And --

6 A. I don't know where that training would have
7 been up until the last few years, but I have not had
8 any since then.

9 Q. And I just want to make sure, my question was
10 broad, and I think you talked about clinical updates,
11 and I'm just talking about anytime since medical
12 school, have you had that kind of training?

13 A. Well, the problem is, I'm a professor, so I
14 go to training every day with the students, so I'm in
15 their training. And so it's a little hard. It's not
16 like a clinician that goes back to a program or
17 something. Since I'm training with the kids every day.
18 But specifically, did I role in a program? No. There
19 was no problem I was enrolled in. But I read five, six
20 hours a day, I probably spend almost that with my
21 students.

22 Q. Other than the two articles that you wrote in
23 the New Atlantis, have you published any research or
24 other articles addressing gender dysphoria?

25 A. No, sir.

Page 20

1 Q. Transgender people?

2 MR. KILPATRICK: Objection; vague.

3 THE WITNESS: I'm sorry. I didn't understand
4 the sentence. It was a noun, transgender people.

5 BY MR. KNIGHT:

6 Q. It was part of the previous question. Have
7 you published any research or other articles regarding
8 transgender people?

9 A. No, sir.

10 Q. Have you published any research or other
11 articles addressing gender discordance?

12 A. You will have to be precise, but in the most
13 general term, I have not.

14 Q. Have you given any presentations about gender
15 dysphoria, transgender people, or related issues?

16 A. No, sir. I'm sorry. You said, symposiums,
17 is that what you said?

18 Q. Presentations?

19 A. No, sir.

20 Q. You have a number of scholarly publications
21 listed in your CV. What are those addressing if you
22 can speak generally?

23 A. I'm primarily interested in the use of
24 statistics in epidemiology in analysis of complex
25 medical issues, where the biology is complex. There

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1 are real world implications like policy implications.
2 The data is complex. And I'm primarily interested in
3 the use of models, cross discipline. I've always been
4 interested in the use of how our models transferred
5 from one discipline to another. So it would be across
6 a broad spectrum. The commonness of every paper
7 includes statistics and data.

8 Q. Have those papers focused on specific kinds
9 of medical conditions?

10 A. I have written quite a few papers on
11 dementia. I would say that is the No. 1 condition. To
12 me, as a biostatistician, methodology is like the tail
13 on the dog. So it depends to me who the dog is.
14 They're the ones who really drive the work. A good
15 methodologist is a team player, brings strength to the
16 team.

17 So my topics have often wandered across
18 disciplines, but my interests have stayed very focused.
19 Also the limitations of inference from observational
20 data, very interested in that.

21 Q. Have you written other articles about the
22 efficacy of surgical treatment?

23 A. I have written on ethnic disparities in
24 surgical treatment. And I have done analysis as part
25 of a team of the efficacy. When I ran research for the

6 (Pages 18 to 21)

1 Banner Health System, I did a lot of that type of
2 evaluation. How much of it fell into articles that
3 would probably be used? Just as an example in an
4 article, it has never been a primary focus. For
5 example, I did work on the silicone breast implant
6 litigation, so that was evaluation of a whole surgical
7 procedure.

8 Q. Can you point me to that article, please?

9 A. I'm sorry, I thought you said where I
10 prepared a paper or did research. I don't publish on
11 the things I did my expert witnessing on. So I don't
12 believe -- there is a paper on surgical disparities.

13 Q. And really I'm not asking about disparities,
14 I'm asking about efficacy and safety of surgery.

15 A. Well, that comes into it. If you have
16 different procedures used, let's say, on black women
17 and white women, one of the questions is, what is the
18 efficacy? Is there some reason for that to be the
19 case? So efficacy is then. If you mean have I ever
20 evaluated the efficacy of a procedure, I'm not a
21 surgeon. How would I do that?

22 So I have not published anything on efficacy
23 of surgery in that sense.

24 Q. So if you have never treated patients with
25 gender dysphoria, what gives you the expertise to offer

1 opinions regarding their treatment?

2 A. Say that again.

3 Q. If you have not treated patients with gender
4 dysphoria, what makes you an expert regarding their
5 treatment?

6 A. I'm not an expert regarding the clinical
7 treatment of gender dysphoria. I'm not an expert in
8 that.

9 Q. Well, what is your expertise related to
10 gender dysphoria?

11 A. My expertise is to review the literature and
12 say, what does biology have to say, and to review these
13 different models of the relationship between gender and
14 sex, and try to figure out what the data -- what the
15 best data says is typical of what I do in my own
16 research and in these projects. Half the projects I do
17 aren't for litigation, and this is typically what I do.
18 But if you ask me if Mr. Smith should have transgender
19 surgery, I'm not an expert on that.

20 Q. Do you keep up with the scientific literature
21 regarding gender dysphoria?

22 A. The best I can -- it's immense literature,
23 but to the best I can, I do, yes, sir.

24 Q. When did you first begin to review literature
25 regarding -- in this area regarding gender dysphoria?

1 A. I think it would be Paul McHugh approached
2 me. I'm going to say -- I'm going to guess it was
3 2014.

4 Q. And why did Mr. McHugh -- or Dr. McHugh
5 approach you?

6 A. Actually, a colleague first approached me, my
7 colleague in psychiatry, the chair in psychiatry at the
8 time, Lyketsos. He approached me and said there was a
9 paper that could be quite controversial that Paul
10 McHugh was producing, and could I help him improve the
11 scientific standards of the paper. He was concerned
12 that the paper could be an embarrassment to Johns
13 Hopkins or the department. And so he asked me to look
14 into it, and I went to a colleague who was the deputy
15 director for Paul McHugh of the McHugh Center, and she
16 asked me if I would actually help him write it. But it
17 was in the 16th draft, I believe, when I came aboard,
18 so he had been doing this for many, many years.

19 Q. So why did you choose to take this on?

20 A. Well, I chose to take it on because Paul
21 McHugh is one of the great psychiatrists of the 20th
22 Century, certainly extreme in some of his views, and
23 some of his view bother me, bother me a great deal.
24 But I thought it was an honor to try to work for the
25 great man, or with the great man. And if I can

1 increase the scientific rigor of the paper -- and the
2 paper has been well-received in terms of content --
3 that I would get aboard and just try to help him.

4 So the choice of the papers to review, the
5 actual review was mine. I did the extensive review of
6 the papers. So I did the scientific work; he did more
7 the application to clinical work.

8 Q. You said that some of his views concern you
9 or bother you. What views are those?

10 A. Well, I don't want to say what he thinks, but
11 he's made statements that I would consider anti-gay,
12 anti-transgender. And sometimes he has strong
13 opinions, but he could influence people more if he
14 wasn't so extreme. People told me he could use words
15 like gender pretender. Or he's made analogies to
16 anorexia. And I don't think those are very helpful. I
17 also think they can be mean-spirited, quite frankly.

18 Q. So you started reviewing the literature in
19 2016 because you took on this project working with
20 Dr. McHugh, and you're saying you have continued doing
21 so since then?

22 MR. KILPATRICK: I will object. I believe he
23 said 2014.

24 BY MR. KNIGHT:

25 Q. I'm sorry. What was the year that you

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1 started looking into the literature?

2 A. I think it was 2014. The paper, I think, was
3 published in '16, the Mayer/McHugh monograph.

4 Q. Are you familiar with our experts in this
5 case, Dr. Budge and Dr. Schechter?

6 A. I don't know them personally, no, sir.

7 Q. Well, what do you think about them and their
8 expertise?

9 A. Well, take Dr. Schechter. I know more of
10 him. He's supposed to be an excellent plastic surgeon.
11 He does a lot of the -- what I'll call the gender
12 reassignment. I don't want to get lost in terminology.
13 I never try to be offensive to anybody, but gender
14 reassignment, has a good reputation. He's been a very
15 active advocate. He's a clinician, not a scientist.
16 He doesn't know how to do citations properly, drove me
17 crazy. But I think he is probably a very good plastic
18 surgeon. I have no reason to doubt that.

19 Budge is a counseling psychologist, and she
20 makes some amazing claims or pronouncements, but I have
21 less respect for her ability. She comes across as not
22 very knowledgeable about biology and the sciences. And
23 I think she makes some statements that are unfortunate,
24 they don't clarify anything. But both passionate
25 advocates for the patient.

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1 Q. Do you believe experts in the medical field
2 should be advocates for their patients?

3 A. Well, that's a complicated question. To the
4 degree to which they are experts, experts usually are
5 not the attending physician. So it would be
6 independent medical exam and all that, then they should
7 not be advocates for the patient specifically, but many
8 of the patients who are both and treating and
9 presenting -- I mean, physicians who are both treating
10 and presenting experts are advocates for their
11 patients.

12 Q. And shouldn't they be?

13 A. I think that's a very interesting question
14 among legal scholars. Some might say it dilutes their
15 independence as experts, other people might say it
16 makes them more familiar with the specific case.

17 I think it really depends, though, whether
18 you separate it -- general causation from individual
19 causation. In general causation, you know, does this
20 exposure cause this injury is probably not attractive.
21 But an individual causation, was this Ms. Smith damaged
22 by that exposure, then I think it's probably good.
23 It's an interesting bifurcation.

24 Q. You have been an expert witness in some other
25 cases?

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1 A. Yes, sir.

2 Q. Which ones have dealt with gender dysphoria?

3 A. Well, see, I really don't know what you mean
4 by "dealt with gender dysphoria," but I have been an
5 expert -- could that be any case in which gender
6 identity has come up as an issue? Could that be an
7 answer? Because you said in general about gender
8 dysphoria. I don't know if the bathroom case is about
9 gender dysphoria.

10 Q. Well, I know you were an expert hired in the
11 Carcaño case.

12 A. I don't know what that is.

13 Q. That was a case in North Carolina.

14 A. Carcaño. Sorry.

15 Q. This is the case involving a law passed in
16 the state of North Carolina.

17 A. Are we talking about the bathroom bill case?
18 I just want to be precise.

19 Q. I think bathrooms were a part of that case.

20 A. Okay. I remember a case I did. Yeah, I
21 believe you asked me about gender dysphoria. I don't
22 know if that case is about gender dysphoria. I thought
23 it was called the bathroom case.

24 Q. Let me ask more broadly. Have you worked on
25 any cases relating to transgender people or gender

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1 dysphoria?

2 A. Yes, sir.

3 Q. And so we've talked about the Carcaño case,
4 or the case in North Carolina.

5 A. The bathroom case. I'm going to call it the
6 bathroom case, because I don't know that name.

7 Q. Okay. The bathroom case.

8 A. Yes, sir.

9 Q. Any other cases?

10 A. Well, what about the little girl that wants
11 to use the restroom of her assigned gender in Virginia?
12 Isn't that Virginia?

13 Q. Are we talking about the Gavin Grimm case?
14 And Mr. Grimm is a boy.

15 A. Yes, sir. Yes, sir.

16 Q. And were you an expert in that case?

17 A. I'm sorry. I don't know what the definition
18 is of expert. I wrote something in that case, yes,
19 sir.

20 Q. And there you're talking about you wrote --
21 you were a writer of an amicus brief; is that right?

22 A. Yes, sir.

23 Q. Any other cases in which you have worked on,
24 worked or provided testimony related to transgender
25 people or gender dysphoria?

8 (Pages 26 to 29)

Page 30 1 A. I don't remember as I sit here. I think that 2 is it, yes, sir. 3 Q. Why don't you take a look at what I've shown 4 you, and I think you still have in front of you, your 5 report. And there's a list of cases there, appendix A? 6 A. Yes, sir. 7 Q. So there are cases there showing court 8 appearances and depositions. 9 A. Yes, sir. 10 Q. Do any of these cases involve transgender 11 people or gender dysphoria? 12 A. No, sir. 13 Q. So this is another list of cases. There is 14 some overlap, but this is the list of cases from the 15 case in North Carolina that we talked about. 16 So do any of these cases involve transgender 17 people or gender dysphoria? 18 A. When you say "involved transgender people," I 19 don't remember if the people like Robert Anthony Norman 20 might have been transgender, but you mean is it an 21 issue of the case, right? 22 Q. That is what I mean. 23 A. Let me just look quickly. So one is an 24 accident. That's a phony doctor. That's a novocaine. 25 No, no, none of them involve that.	Page 32 1 don't want to talk about. I'd have to go get 2 permission to talk about. But this comes under the 3 sexual tourism. Under the sexual tourism law, people 4 who go abroad for the purpose of having sex that would 5 be illegal in the United States, can be prosecuted for 6 that action, even if that conduct were not illegal in 7 the other country. 8 So what happened was the Department of 9 Justice used the sexual tourism to crack down on gay 10 people that have these sexual tours to Southeast Asia. 11 And I worked on that case for quite a while. 12 Q. Any other cases that specifically involved 13 gays? 14 A. No, certainly I've always been a supporter of 15 gay adoption, strong supporter of gay adoptions, but 16 I've never been in a case of it. 17 Q. Do you consider yourself to be an expert in 18 gender dysphoria? 19 A. You would have to say what you mean. Usually 20 when you talk like that, people will mean the 21 diagnosis, treatment, prognosis, and I'm not an expert 22 in those things, no. 23 Q. Are you an expert in anything related to 24 gender dysphoria? 25 A. I would say by now I'm probably an expert in
Page 31 1 Q. Have you worked on cases involving 2 homosexuality, gay people, or same sex couples, or 3 marriage of same sex couples? 4 A. Yes, sir. 5 Q. What case is that? 6 A. I have listed here appearances in 7 depositions. They represent about half of my 8 consulting, because about half the time I am asked to 9 consult, even on cases where I'm not necessarily a 10 listed expert or I don't even know the specific case, 11 if I know the case, I put it down here. But there were 12 two cases that were quite well-known. One was the -- 13 and I'll just describe it to you. It was the case 14 involving whether porn stars should have to wear 15 condoms in adult filmmaking. And this is quite 16 controversial and eventually lead to the proposition, 17 which I believe passed, that porn stars or adult film 18 actors and actresses in Los Angeles County have to wear 19 condoms. And my role in that was testifying for gay 20 people, that they were being singled out unfairly for 21 certain actions, and that the statistics that were 22 provided did not apply to them. This became very 23 controversial because Hopkins itself was on the other 24 side of this case. 25 The second case is a criminal case that I	Page 33 1 the epidemiology of gender dysphoria, having reviewed a 2 tremendous amount of literature on what the science has 3 to say. I would say that is my expertise of anything 4 is what does science really have to say about this 5 issue? What is it that we have to decide outside of 6 science? 7 Q. Would you agree that the scientific community 8 does not yet know what causes someone to have a gender 9 identity that's difference from their sex assigned at 10 birth? 11 A. I don't know what sex assigned at birth 12 means. There's only one sex, and rather than getting 13 lost in nomenclature or terminology, your sex is your 14 sex. So if you want to say that they are struggling 15 with the gender they're assigned at birth, the gender 16 corresponding to their sex, I can understand. But this 17 concept of sex assigned at birth, I'm not sure what 18 anybody is talking about. And that seems to be a 19 keynote problem, focal point. 20 Q. Can you answer my question? 21 A. Could you repeat the question, sir? 22 Q. My question is whether you agree that the 23 scientific community does not yet know what causes 24 someone to have a gender identity that is different 25 from their sex assigned at birth?

1 A. I don't know what sex assigned at birth
2 means, I'm sorry.

3 Q. Well, let me explain to you that sex assigned
4 at birth is the terminology for the sex that a doctor
5 says someone is when they are born. That is what I
6 mean by sex assigned at birth.

7 A. And when is another sex, sir? I agree that's
8 sex -- that's the only sex. It's the sex from the role
9 in the reproductive system. You are a boy, whether --
10 a doctor could declare you a mongoose. A boy is a boy.
11 Biologically now, speaking, a boy is a boy. We know
12 what that means. And so I have to be, as a scientist,
13 given that, and then go from there.

14 Q. You must understand that you're not -- not
15 everyone agrees with you with respect to this narrow
16 definition of sex; would you agree?

17 A. No, sir. I have found no credible scientist
18 that doesn't believe that sex, overwhelmingly is
19 defined by our chromosomes. Actually, by every cell in
20 our body. Boys have boy cells and girls have girl
21 cells. So the idea that a doctor just picks your sex
22 at birth, what if you're a little boy, and picks you're
23 a little girl?

24 Second of all, it's this idea that you're
25 born with some kind of identity. I don't know what

1 that even means. How can you be born with an identity?
2 So I'm trying to answer the question, but I have to
3 understand the question to answer it.

4 Q. You're familiar with the WPATH standards of
5 care?

6 A. No, sir.

7 (Reporter clarification.)

8 BY MR. KNIGHT:

9 Q. You understand that these standards are
10 recognized as the standards for treatment by the AMA,
11 the American Medical Association?

12 A. Standards of care for treatment of what? I'm
13 sorry, sir.

14 Q. For treatment of gender dysphoria.

15 A. Well, we have to be a little careful, because
16 when you break those down, some of them are about
17 access to care, some are about treatment, and some are
18 about treatment for gender identity disorder, which, of
19 course, doesn't exist. It is no longer a disorder. So
20 we have to be very careful. Because when I read WPATH,
21 it appears to me that they are giving indications of
22 how to treat transgenders, because they talk a great
23 deal about the transitioning process.

24 So you are treating people for being
25 transgender. If they're saying that -- let's say they

1 said that surgery was a major treatment for the
2 dysphoric part of being transgender. That may be true,
3 but where is the evidence? I couldn't find any
4 evidence. I searched and searched.

5 Q. I'm not sure that I understand what you just
6 told me. The -- so you would agree with me, then, that
7 the AMA recognizes the WPATH standards as the
8 appropriate standards for treating transgender people
9 who need medical care?

10 A. Well, this is really complicated, for
11 transgender people who need medical care. I actually
12 don't even understand that, because it has never been
13 clear to me whether to be gender dysphoria you have to
14 be transgender. If you are the WPATH, it appears to
15 say in order to be treated, you have to be transgender,
16 in transition, and struggling with dysphoria. You're
17 not functioning well in the world.

18 Why do you have to be transgender in the
19 sense that gender dysphoria you see often among kids
20 that are really struggling with their sex and their
21 feelings of, let's say, not being a little boy when, in
22 fact, they are biologically a little boy. Why, then,
23 do they have to be transgender? But if you say to me
24 it is a effective treatment for gender dysphoria, even
25 if they're just gender nonconforming or gender curious,

1 then the question is, what is the evidence? Because
2 the AMA offers practical guidance. And the focus, I
3 thought, of their guidance was that transgender
4 patients should be given equal access to care. Doctors
5 needed to learn how to treat transgender patients, and
6 I supported that very much, sir.

7 Q. The AMA has said specifically that "An
8 established body of medical research demonstrates the
9 effectiveness and medical necessity of mental health
10 care, hormone therapy, and sex reassignment surgery as
11 forms of therapeutic treatment for many people
12 diagnosed with gender identity disorder."

13 A. I agree they say that; we don't have gender
14 identity disorder. Because this is very important:
15 part of the treatment for gender identity disorder was
16 to treat people for being transgender. Now, we fought
17 hard. I supported the fight that it, just like gay, it
18 shouldn't be a diagnosis. Being transgender should not
19 be a diagnosis. These are perfectly healthy human
20 beings, and society needs to accept these human beings.

21 So the fact of the matter is, we don't treat
22 gender identity disorder, we treat gender dysphoria.
23 And contrary to what Budge says, the criteria you start
24 with aren't the critical criteria. It's the dysphoria
25 that is. So if you are saying to me, is there -- and

1 you're asking me is there a controlled clinical trial
2 that shows a hormone therapy, butt lifts, facial
3 feminization, or any of these actually reduces the
4 incidence or prevalence of gender dysphoria, I could
5 not find that paper.

6 Q. The diagnoses for the condition of gender
7 identity disorder are very similar to the diagnoses for
8 gender dysphoria, are they are not?

9 A. No. They are absolutely different because it
10 takes out being transgender. We fought hard for this.
11 Transgender is not part of the diagnosis any longer.
12 So gender identity disorder was anybody struggling with
13 their identity. Why do they have a disorder? Why
14 should a woman who identifies -- let's say she's
15 biologically a woman in my terminology -- identifies
16 with being a man, a sincere persistent identification,
17 why shouldn't she be treated with respect. What does
18 it have to do with whether or not she's transgendered
19 or not. The social stigma is a real problem.

20 Q. So you are not understanding that the AMA
21 supports -- or you don't agree? Is that what you are
22 saying? You don't agree that the AMA supports these
23 kinds of medical treatments for persons who are
24 transgender, whether they have gender identity disorder
25 or gender dysphoria?

1 A. Why should a transgender person be treated?
2 What are you treating them for? We fought to get --
3 the same with gay. Gay is a diagnosis we fought for
4 20 years to get rid of that diagnosis. Being
5 transgender is not a condition that needs to be
6 treated. And I see in Budge a contradiction. On one
7 hand is saying, well, this is a normal part of
8 development. On the other hand, they need to
9 transition.

10 Why they are transitioning is to appear
11 differently, if you're talking about surgery, for
12 example, facial feminization, but the fact is appearing
13 different has nothing to do with what they think about
14 themselves. If they sincerely identify with being a
15 member of the opposite biological sex, then what are
16 they guilty of? What are they diagnosed as?

17 Q. They're diagnosed --

18 A. They're viable people.

19 Q. Isn't the gender dysphoria diagnosis a
20 diagnosis that relates to the clinical distress that
21 results from the difference between the -- your, as you
22 call it, your sex, which I would call your sex assigned
23 at birth and your gender identity, your understanding
24 that there is -- your dysphoria about that
25 incongruence? Isn't that what gender dysphoria is?

1 A. Wait a second. Gender dysphoria is your
2 inability to function. In this case, your inability to
3 function. We have to make you functional. We're
4 trying to make you functional. In this case, your lack
5 of being able to function is a distress, but it doesn't
6 have to be a contradiction. You can feel like you're
7 part man, part woman, you're struggling with your
8 gender. Who are you as a human being? That is what we
9 have to cure and help. The fact of the matter is these
10 transgender conditions, the conditions are conditions
11 we look for to see whether this person is struggling
12 with their gender identity. That is exactly right.
13 But the condition that we treat is gender dysphoria.

14 And let me go back to the AMA for a second.
15 I just want to make one comment. There is nothing that
16 the AMA has endorsed more than antidepressant drugs,
17 the SSRIs, the selective serotonin reuptake inhibitors.
18 These operate about 5 percent better than placebo.
19 5 percent better. But placebo interacts very, very
20 well.

21 So the question is to me, the AMA has made a
22 lot of mistakes in things it has recommended, but if
23 they are meaning that this is a way to treat the severe
24 disruption of life caused by gender dysphoria, I agree.
25 But we need to have a study of that, a precise,

1 controlled clinical trial. And one of the things I
2 looked at was a base of people who are transgender who
3 don't have gender dysphoria. There can be perfectly
4 well-adjusted people who are transgender, but it should
5 be well-adjusted.

6 Q. So the AMA supports treatment through hormone
7 therapy and surgery for the gender dysphoria, this
8 discordance --

9 A. I've never seen that.

10 Q. Do you understand that?

11 A. No, I've seen them -- they may have endorsed
12 it later. Again, it wouldn't bother me. At one time
13 they endorsed smoking. So it wouldn't bother me
14 because this is a highly political clinical
15 organization. There's absolutely no doubt about that.
16 And whatever clinical guidelines it has, I'm not here
17 to argue about clinical guidelines. But those
18 guidelines have got to be based on scientific studies,
19 and where are the studies? That is all I'm asking.

20 Q. Would you say that your view with respect to
21 gender dysphoria is a minority view?

22 A. I'm sorry. You would have to say explicitly
23 what view it is. I'm not sure what you are referring
24 to as "my view."

25 Q. Your view that transgender people -- that

1 surgery and hormone therapy is not safe, effective
2 treatment for gender dysphoria?

3 A. I've not been asked that question, have I?

4 Q. That is what I thought you were here
5 testifying about.

6 A. No, I testified it has not been demonstrated
7 to be safe and effective, particularly compared to its
8 competitors. I mean, to me, to do a study of -- give
9 people \$50,000 worth of plastic surgery and then ask
10 them if they feel better about themselves is a little
11 bit silly. The outcome has got to be dysphoria. And
12 we've got to look at the treatment versus an active
13 control. I bet anybody you do \$50,000 worth of
14 cosmetic surgery on feels better about themselves.

15 Q. Would you agree that gender dysphoria is a
16 serious illness?

17 A. Absolutely. I say that in my report. I'm
18 very concerned about it.

19 Q. And how do you think it should be treated?

20 A. I don't know. But one of the things we
21 should do is we should have studies about what
22 treatments are safe and effective. What are
23 comparative statics of this treatment versus other
24 treatments? And I'm not seeing studies. If you are
25 depressed and you have gender dysphoria, is this an

1 effective way versus directly treating your depression?

2 I don't know. By the way, there are lots of
3 studies in plastic surgery about breast augmentation
4 and what the effects are in the long run on people's
5 attitude toward themselves. And those are very
6 interesting studies to look at. Those results are
7 quite similar.

8 Q. So you don't know how gender dysphoria should
9 be treated?

10 A. Well, two things. One is, I'm not a
11 clinician. And number two, I can only talk to you
12 about what has been demonstrated in science. If you
13 say, is there a good paper deciding how gender
14 dysphoria ought to be treated, my answer is no. The
15 area is so political, it's a shame, but we aren't doing
16 serious research on how to treat it.

17 Q. You are suggesting that individuals with
18 gender dysphoria should come to accept their natal sex?

19 A. No, sir. I would never suggest that. I
20 think if the person has a long-term consistent -- I
21 think the WPATH long-term consistent persistent
22 insistent deeply held identification with the opposite
23 sex, they should be supported in that identification.
24 Why not?

25 Q. And should they be provided hormone therapy?

1 A. Well, I don't know. That is a separate
2 question. I would say to you that it has been
3 inadequately studied, and I worry because the advocates
4 will tell you that hormone blocking or even hormone
5 adding, which we wrote about the hormone blocking, are
6 without side effects. There is nothing that doesn't
7 have side effects in medicine. We all accept that. So
8 is it a safe, effective way? We need long-term
9 follow-up studies.

10 I have specific worries about children being
11 put on puberty blockers or being put in to supportive
12 environments as young as 18 months old. I have some
13 concerns about that. But I don't know what the best
14 way to treat it is. And I worry about it. High
15 suicide rate, they suffer tremendous discrimination.
16 Do I think we should have society more accepting? Yes.
17 Yes, why not? Why not?

18 Q. And I'm really asking about adults.

19 A. Yes, sir.

20 Q. And I'm asking about whether you would agree
21 that where clinicians find that effective treatment for
22 this patient is going to be hormone therapy, that that
23 should be provided to them?

24 A. The problem is when you say "provided,"
25 oftentimes issues in American medicine are about who

1 pays the bill, and I know very little about who pays
2 the bill. Because we talk about cosmetic surgery
3 versus reconstructive surgery, it often comes down to
4 who pays the bill. So with that caveat -- well,
5 actually, could you repeat the question so I get it
6 exactly right.

7 (Record read.)

8 THE WITNESS: I don't see any reason
9 provided. Let's suppose we're talking about somebody
10 that has all the money in the world, they have money to
11 pay for whatever they want, and they came and said, I
12 really identify with being a woman. I think that
13 identification would be enhanced if I had certain
14 physical characteristics.

15 I would probably support that in the
16 abstract. I can't see any reason not to support it.

17 BY MR. KNIGHT:

18 Q. You seem to be not answering my question.

19 A. I'm sorry.

20 Q. I'm asking about an individual whose natal
21 sex was -- is male, but identifies as female, and
22 whether -- and is -- and a physician sees that this
23 person is expressing such levels of distress and
24 dysphoria that the proper treatment for them should be
25 hormone therapy.

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1 Do you agree that that should be provided? 2 A. Well, I would have to see the patient, I'd 3 have to read about the patient. But in general -- 4 because I don't want to talk about specific patients -- 5 but in general, do such patients exist? I assume they 6 do. 7 Q. And you believe those patients should be 8 provided hormone therapy? 9 A. Well, not necessarily. Suppose there was 10 another treatment that was equally efficacious and much 11 cheaper or much safer. I mean, this reassignment 12 surgery, for example, is dramatic surgery. Now, 13 hormone therapy is not as dramatic, but if they had a 14 long-term consistent persistent identification with 15 members of the opposite sex, and they felt their 16 physical appearance was really causing them great 17 distress, I would say, without knowing the details, I 18 would come down on supporting the treatment, yeah. 19 Q. And you understand that the clinicians and 20 researchers have tried to offer other medications other 21 than hormone therapy unsuccessfully? 22 A. Well, when I read that, though, when I read 23 success -- notice that this literature is primary 24 plastic and reconstructive surgery. If you look even 25 at Dr. Schechter's website, there is great bragging	1 enemy is the dysphoria, not the physical appearance. 2 And steps should also be made to have them more 3 accepting of their own self. 4 Q. But you understand that the gender dysphoria 5 is about the physical appearance, the fact that the 6 individual's body does not conform to their 7 understanding of who they are? 8 A. But notice what you said there. They have to 9 have an understanding at birth for this to be true. 10 Their understanding -- you said their gender identity 11 is there at birth. So at birth, they already 12 understand that they don't identify with their 13 biological sex. How is that possible? 14 Second of all, the characteristics that we 15 identify as being male or female are very culturally 16 dependent. What if pregnant mom moves to Timbuktu 17 during her pregnancy? Is the baby born with a 18 different set of expectations? 19 Let me make -- can I make one more comment on 20 that? In general, though, people that want to talk 21 people out of being gay or being transgender seem to do 22 it from a moral crusade, that there is something wrong 23 with these people. I don't know if you notice that, I 24 certainly do. 25 Q. Do you support therapy to help people cease
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1 about how well the surgery goes. Success rates are, if 2 you excuse the expression, the ability to pass, the 3 ability to look like members of the opposite sex. So 4 let me go to the point here: You have a woman who is 5 cisgender, her breasts are sagging or something, she's 6 in her 40s. I support procedures for her. 7 So in general, yes, I support psychiatric 8 interventions. This would be a psychiatric 9 intervention, by the way. It's a psychiatric 10 intervention because we're trying to change the frame 11 of mind, right? But as a psychiatric intervention, 12 could a psychiatrist recommend hormone therapy with an 13 endocrinologist? I think so. I don't know that you 14 could stop it. 15 Q. Do you believe that a transgender person can 16 be talked out of being transgender? 17 A. I think the difficulty there has got to do 18 with at what stage they have long-term consistent 19 persistent deeply held beliefs. If they've been in 20 that for a long time, then I don't think they can be 21 talked out, nor why should they be talked out. 22 On the other hand, if they're struggling with 23 feelings that they're not a little boy, and they're 24 kids or young adults, I think they should be helped 25 with the dysphoria, no matter what that help is. The	1 to act on their same sex attractions? 2 A. Say again? 3 Q. Do you support therapy to help people cease 4 to act on their same sex attractions? 5 A. No, sir. 6 Q. Do you disagree with the DSM's inclusion of 7 gender dysphoria as a diagnosis? 8 A. No, sir. 9 Q. And I believe we've established you do not 10 oppose hormone treatment for adults? 11 A. But on -- 12 (Indecipherable simultaneous speaking.) 13 Q. -- gender dysphoria. 14 A. Do I oppose them ever receiving hormone 15 therapy? Is that the question? 16 Q. That is the question. 17 A. I would not oppose it. 18 Q. Do you oppose adults with long-standing 19 gender dysphoria receiving surgery? 20 A. I don't oppose it, but I would say there is 21 not scientific evidence to support it. There is not a 22 single study that shows the incidence of gender 23 dysphoria goes down as a function of plastic surgery or 24 reassignment surgery. 25 Q. I'm sorry, the incidence of gender dysphoria?

13 (Pages 46 to 49)

1 A. Yes, sir.

2 Q. What do you mean by the incidence of gender
3 dysphoria?

4 A. The number of cases per year doesn't go down.
5 In other words, gender dysphoria isn't about people
6 feeling better. That's how it's written in the classic
7 reconstruction -- they have a better self-image, better
8 body image.

9 Gender dysphoria is a very serious illness
10 leading to a high risk of suicide, for example. You
11 need to cure that dysphoria. So when they do this
12 surgery, and they talk about how beautiful the woman
13 is -- this is a male-to-female transgender and all
14 that -- we do not have long-term follow-up studies of
15 what percentage of them are still dysphoric.

16 It's the most obvious study to do. You'd
17 randomize people to either have one treatment or
18 another treatment or spend \$50,000 on them having a
19 trip to Bermuda.

20 The question is the people who feel better
21 about themselves often do so after they have a windfall
22 or a positive experience. Now, I support more cosmetic
23 surgery, woman and men in general, if people don't feel
24 good about their appearance and their cisgender.
25 They're 45 years old and have a mid-life crisis, I

1 support their use of -- including hormones, including
2 surgery. I think having people have a positive
3 psychological outlook on life is extremely important.
4 And the suicide rate among transgenders is a public
5 health crisis.

6 Q. So you believe that surgery to treat someone
7 with gender dysphoria is exactly the same as surgery to
8 treat a cisgender woman, for example, or a cisgender
9 person?

10 A. Well, it is not exactly the same, but I'm
11 glad you asked that question. I have three triplets.
12 Two are born boys, and one is born a girl by sex. And
13 they all three have very masculine faces. The three
14 little boys have masculine faces. These are fraternal,
15 not identical. The two little boys decide they're
16 transgender -- or discover they're transgender. I
17 don't want to offend anyone.

18 So now we have three little girls, very
19 similar faces, okay? All three are bothered that --
20 they're disabled, they're demoralized by the look of
21 their face. Now, one of them is transgender, but goes
22 s along with it and says, I don't like it. There's a
23 lot of stigma, but I'm not suffering bad enough that I
24 can't go to work, I can do it.

25 The other one says I'm transgender and I'm

1 suffering so bad I can't go to school. I'm clearly
2 dysphoric. And the third one says, I'm a little girl,
3 my sex is a little girl, but as a little girl, I don't
4 like having a masculine face. Do I believe all three
5 of them should have equal access to whatever it is?
6 Absolutely. Why should the one who is dysphoric have
7 different treatment than the other if the issue is how
8 you appear?

9 Q. Are we talking about real people --

10 A. Yes.

11 Q. -- or just something in your head?

12 A. No. We are talking about real people. I've
13 seen several cases now of twins and triplets I've been
14 asked to give input on or even be a witness in which
15 that is exactly the issue. What should something be
16 done -- why should something be different done for the
17 transgender patient that isn't done for the cisgendered
18 patient? I don't understand that. If they're equal,
19 which they are, then why should one be done more than
20 the other? What am I missing?

21 Q. Do you know anyone who is transgender?

22 A. Yes, sir.

23 Q. How many people?

24 A. Oh, probably -- well, that I know for certain
25 are transgender, half a dozen.

1 Q. Have they had medical treatment, hormone
2 therapy?

3 A. I'm not going to say -- they're too small a
4 sample. I'm not going to say anything about it.

5 Q. Are you aware that for some transgender
6 people having medical treatment can be a life or death
7 situation?

8 A. Well, I'm not sure how we would demonstrate
9 that. I have seen patients if I don't get surgery by
10 such and such, I will kill myself. I don't know -- I
11 don't know how you would measure whether it is a life
12 or death situation.

13 Q. Are you aware of the studies of people who
14 have been denied treatment for gender dysphoria who
15 engaged in self-surgery, for example?

16 A. Yes, sir.

17 Q. And wouldn't that indicate the seriousness of
18 the condition, that it's a life or death situation?

19 A. Well, for some patients. I thought you meant
20 as public health, is this a significant problem. The
21 suicide rate or self-harm rate is so high among
22 transgenders, I don't know how you separate it out. So
23 they're denied the surgery and then they go kill
24 themselves. And some have the surgery and kill
25 themselves. The problem is they kill themselves. This

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1 is a crisis. Let's do something about it.

2 Q. But you understand that your work here is
3 being used to prevent treatment that lowers suicide
4 rates?

5 MR. KILPATRICK: Argumentative.

6 THE WITNESS: Do I understand, I'm sorry?

7 BY MR. KNIGHT:

8 Q. Do you understand that your opinions are
9 being used here to -- to prevent getting -- prevent
10 people from getting the treatment that would lower
11 suicide rate for them --

12 MR. KILPATRICK: Objection.

13 MR. KNIGHT: -- or lower the risk of suicide?

14 MR. KILPATRICK: Objection.

15 THE WITNESS: Well, I'm not aware of that. I
16 don't necessarily believe it's true, but I would love
17 to see the study that really shows that, because I
18 think all these numbers are manipulated. These
19 transgender or gender dysphoric people have very high
20 suicide rates, treated or not.

21 You're saying there are people, a large
22 number of people who can show, had they not had
23 treatment, they would have been suicidal. I do not
24 know of that study. I would be interested if you'd
25 send it to me.

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1 BY MR. KNIGHT:

2 Q. Would you agree that medical decisions with
3 respect to the treatment that is provided involves not
4 only looking at research, but also looking at clinical
5 experience?

6 A. Clinical experience of the doctor, you mean?

7 Q. Oh, I'm sorry. All physicians who work with
8 this affected population.

9 A. I'm sorry. I don't understand the question.

10 Q. Isn't it standard that when the -- isn't it
11 typical that when the standards of care for treating a
12 condition such as gender dysphoria are established,
13 that they look at the research as well as clinical
14 experience?

15 A. Well, sometimes they do, but the Cochrane
16 Review that studied OB/GYN procedures found that
17 two-thirds of the things we do, including holding
18 babies up by their feet and spanking their butts are
19 actually harmful. So there is a great deal of folklore
20 in what we do in medicine, and we don't know why we do
21 it. We don't have indications. So I'm very suspicious
22 of the fact there are ramifications.

23 The other example that I worked on were
24 VBACs. A VBAC is a vaginal birth after cesarean
25 delivery. We'd forbid them in the United States. The

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1 AMA said they were dangerous. And yet when we finally
2 did a study of Canadian experiences versus ours, we
3 found out that VBACs were safe. That is the importance
4 of doing research.

5 What I would like is some very conservative
6 people on this issue, some very liberal people on this
7 issue to meet in the middle and let's get together and
8 decide on how to help this population of people. That
9 is my sincere desire.

10 Q. So you don't think that clinical experience
11 is at all important in deciding what kind of medical
12 care should be provided?

13 MR. KILPATRICK: Objection. Mischaracterizes
14 the testimony.

15 THE WITNESS: I think physicians have a
16 union, it's a very strong union, so it's an important
17 input. But can physicians be doing things incorrectly
18 for decades? Bloodletting. Leaches.

19 MR. KNIGHT: I would like to take a break for
20 about five minutes or so.

21 MR. KILPATRICK: Sure.

22 (Recess taken.)

23 MR. KNIGHT: Okay. Back on the record.

24 BY MR. KNIGHT:

25 Q. So, Dr. Mayer, I just want to go back to a

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1 couple things. I asked you about working with
2 students, and I just want to make sure that my question
3 covered everything related to this.

4 Have you, in any of your work over the last
5 25 years, supervised residents who had any involvement
6 with individuals with gender dysphoria, gender identity
7 disorder, transsexualism, any of those specific
8 diagnoses?

9 A. Yes, sir.

10 Q. And when and how many?

11 A. You asked me if I've ever talked to students
12 that they themselves have patients. That happens all
13 the time, so every -- every resident that worked in the
14 gender identity clinic or rotated through that clinic
15 could bring those topics up and we can discuss them.
16 Again, it would be in the context of science and
17 research papers.

18 And then I have a dear friend and colleague
19 who is a psychiatrist and an internist. And she
20 focuses on women in life transition, and has several
21 male-to-female patients they I've helped her with in
22 terms of the emerging understanding of gender -- of
23 gender dysphoria. Those are two very specific patients
24 that come to mind, and that is more direct. So the
25 answer is "yes."

15 (Pages 54 to 57)

1 Q. So two patients?

2 A. Yes. They're two specific patients that I
3 know of who are male-to-female transgenders.

4 Q. And when were -- who is the colleague you
5 were talking about?

6 A. I'm not going to say, if that's all right.
7 It has no relevance to this. I mentioned it
8 clinically.

9 Q. I think it does have relevance.

10 A. I'm not going to say. Because it might
11 identify the patients, and I'm not going to do that.

12 Q. I'm not going to ask you the name of the
13 patient. I'm just asking about who the colleague is
14 you're saying you worked with.

15 A. She's my student, so I'm not going to say.

16 Q. When was this?

17 A. Well, to my knowledge she still treats them,
18 but it's certainly been in the last four or five years.

19 Q. And, I'm sorry, you say "treats him." I
20 thought these were women who were transgender?

21 A. I'm sorry. I thought I said "treats them."
22 They are transgender women, yes, sir.

23 Q. And what kind of treatment is she providing
24 for them? Is she treating them as a psychiatrist?

25 A. Yes, sir.

1 Q. And what kind of treatment is she providing
2 to them? Is she providing them hormone therapy?

3 A. I'm not going to say. I don't know for sure,
4 but I'm not going to say. Because I wasn't involved.
5 I'm involved in understanding the research. For
6 example, one of the questions that came up is, do these
7 women truly believe they are women? That is the very
8 important question of whether they identify with being
9 women or truly believe they are women. What does that
10 mean if they truly believe? What does research show on
11 that topic?

12 So this would be about more general
13 discussions of what the data in epidemiology says, it
14 was never about the clinical treatment of the specific
15 patient. I don't do that.

16 Q. So you did not talk to these students nor
17 this one woman, female student about which kind of
18 treatment should be provided to these women who were
19 transgender?

20 A. No. We talked about the efficacy in general
21 of different treatments for gender dysphoria. I was
22 going to say this is about 2015 and '16 when this
23 research was blossoming. So she was interested in
24 understanding. She's a researcher like I am and she
25 was interested in understanding the implications of

1 research. And we went over papers. And also she
2 helped me with the Mayer/McHugh -- you know, the
3 subsequent one we did on puberty blockers. You're
4 aware we did that paper too. And she helped me with
5 that paper. She has a master's in neuroimmunology in
6 addition to being trained in psychiatry and internal
7 medicine.

8 Q. Also --

9 A. Let me just add. I apologize.

10 The brain research was just coming out very
11 big, and we also spent a lot of time going over the
12 brain research, scan research.

13 Q. But so you're saying when you talked to these
14 women, it was about the research, not about the
15 specific treatment for those patients?

16 A. Would that be correct, yes, sir.

17 Q. And you said that you have spoken to other
18 students regarding individuals with gender dysphoria,
19 transsexualism, or GID in the past?

20 A. Yes. They rotate through the clinic at Johns
21 Hopkins, and I have them for journal club where we
22 bring in articles and we read them, and then we discuss
23 the articles in light of a given patient. Or they
24 might be presenting a research conference, which means
25 you start with a particular patient and present them.

1 And I would help them with the research part of that,
2 not the individual patient part.

3 Q. And how many of them did you speak to about
4 this issue: Gender dysphoria, transsexualism, or
5 gender identity disorder, or a related condition?

6 A. Oh, we're talking about over 20 years it
7 would come up. I can't say. I think almost all our
8 residents rotated through those clinics. Do you mean
9 how many of them did the specific conversation come up,
10 I don't remember.

11 Q. I thought that you told me that you were not
12 looking that the research until 2014?

13 A. I wasn't looking at it specifically in terms
14 of trying to write a paper, interested in research. I
15 knew about the research in general, because I knew
16 about the fight over the gender identity disorder in
17 the DSM-4 and DSM-5. But I didn't get seriously
18 involved in this humongous effort until I got involved
19 with Paul McHugh.

20 Q. So do you believe that any psychiatrist or
21 epidemiologist who reads some studies about gender
22 dysphoria or gender identity disorder or transsexualism
23 is an expert in gender dysphoria?

24 A. I would say he's an expert in the
25 epidemiology of gender dysphoria. Just like a plastic

1 surgeon obviously knows no epidemiology. So the idea
2 is we each have a specialty, so I would consider a
3 person by reviewing the research to be an expert on the
4 scientific foundation. Someone's got to review it, and
5 certainly clinicians don't have time to do it. So,
6 yes, I would say you became an expert on the
7 epidemiology of a topic or the scientific foundation of
8 a topic by reading the scientific literature on that
9 topic.

10 Q. And that reading the studies make you an
11 expert?

12 A. No, no. I spent two years dissecting the
13 studies. I went back to the original data. I spent
14 two years day in and day out trying to find the best
15 studies and figure out what those studies said. It was
16 far greater -- I mean, you could say my whole career
17 has been reviewing and evaluating research papers.
18 That is what I do; I try to extend methodology. No,
19 reading the papers alone wouldn't make you an expert in
20 anything.

21 Q. We talked earlier about hormone therapy and
22 surgery as treatments for people with gender dysphoria.

23 Do you believe, though, that hormone therapy
24 is medically necessary for treating gender dysphoria in
25 adults with long-standing gender dysphoria?

1 A. Well, I have to know what its relative
2 efficacy is versus other treatments. I don't know,
3 because we don't have the data, we don't have the
4 analysis. Is this an effective treatment? I would
5 like to see people given hormones and people given the
6 reassignment surgery, and follow them up in 20 years or
7 whatever length of time, and see how well they're doing
8 compared to another group.

9 Science is about comparison. Where are the
10 transgender people who then don't undergo hormone
11 therapy to have a comparison group. Or an active
12 control would be spend \$50,000 on them by giving them a
13 trip to Bermuda, if you want, and see if that is
14 equally effective.

15 Q. So can you answer my question about whether
16 it is medically necessary?

17 A. I don't know what the question is, sorry.

18 Q. Well, the question, I will ask it again, is
19 hormone therapy medically necessary treatment for
20 adults with long-standing gender dysphoria?

21 A. Now you said "hormone therapy," correct?

22 Q. Correct.

23 A. I've seen no papers that demonstrate that
24 that is an effective and safe treatment.

25 Q. So is your answer "No"?

1 A. Well, I'm not an expert in what is medically
2 necessary. Medically necessary to me is about a
3 specific patient, looking at Mr. Smith and deciding
4 what is required for Mr. Smith. Could there be cases
5 in which it would be a good thing to do? Yes, I'm sure
6 there are. And are there cases where it's a bad thing
7 to do? I'm sure there are. We just don't know enough,
8 because the people that are supposed to be experts in
9 this are such advocates, they make their money off
10 this, that the fact of the matter is, there's very
11 little push for independent research.

12 It surprises me that the attorneys for ACLU
13 and others are not concerned about what the long-term
14 effects, particularly for young people, are going to
15 be. It concerns me a great deal.

16 Q. So is -- my question, again, I think that you
17 answered that in that you're not an expert with respect
18 to medical necessity, with respect to an individual
19 patient; is that right?

20 A. That is correct.

21 Q. And would you agree with me that hormone
22 therapy can be medically necessary for some patients
23 with gender dysphoria, long-standing gender dysphoria?

24 A. I'd have to see -- remember, we are treating
25 the gender dysphoria. All I'm asking for is a simple

1 study that shows this treatment is effective. There is
2 no such study. That's all I'm asking for.

3 Q. Now I'm just asking you a simple question.

4 A. Okay.

5 Q. Yes or no, is hormone therapy medically
6 necessary for some patients with gender dysphoria?

7 A. I don't know the answer to that, because I'm
8 not a clinician. I don't know the answer to that.

9 Q. And you're saying you don't know because you
10 don't believe there are studies that show it is safe
11 and effective; is that your answer?

12 A. Let's go back to this. It's as safe and
13 effective as surgery. That is what the studies say.
14 There are no studies -- let me make it clear -- I'm
15 willing to bet Dr. Schechter would show the incidence
16 and prevalence rate of gender dysphoria is
17 significantly decreased by hormone or reassignment
18 surgery compared to other modalities of treatment. So
19 if you mean, if it works as well as a 10 cent pill, is
20 that safe and effective? No.

21 The fact is that all surgery has side
22 effects. The fact is that all medicines have side
23 effects. Is the risk of those side effects warranted?
24 We just don't have the research; we don't have the
25 publications.

1 We have studies telling people feel better,
2 they like the way they look, they have less burden.
3 None of that is dysphoria. None of it is dysphoria.
4 Better body imagine, but do they actually have a
5 decreased risk of dysphoria, I do not know that. I do
6 not know it. I wish I did.

7 It is also interesting the results are almost
8 always in plastic surgery journals. If they are great
9 psychiatric interventions, why aren't they in
10 psychiatric journals? I've always wondered that: Why
11 aren't psychiatrists the leader in this, since this is
12 psychiatric, it's a psychiatric condition.

13 Q. Is there another kind of treatment other than
14 hormone therapy and surgery that you believe is safe
15 and effective for treating gender dysphoria?

16 A. We do not have a study of the long-term
17 follow-up affecting gender dysphoria. Now, if the
18 dysphoria is depression, there are treatments for
19 depression. We have a great experience with people
20 dissatisfied with their body appearance, and we do
21 plastic surgery on them. We have a great deal of
22 experience on that, what it does to their image and all
23 that. And we have evidence on medicine, like
24 depression.

25 The question is, what is their dysphoria?

1 Dysphoria is a general term. Is it anxiety? Is it
2 depression? Is it social withdrawal, social isolation?
3 And then you go after treating those characteristics.
4 Is that as effective? I don't know; we don't have the
5 papers.

6 Q. I will ask the question again.

7 Is there another kind of treatment that is
8 safe and effective for treating gender dysphoria other
9 than hormone therapy and surgery?

10 A. I never accepted that it was safe and
11 effective. How in the world can you say -- that's a
12 rude way to ask a question, in my opinion, sir. I
13 never said it was safe and effective.

14 Q. My question was, is there something else
15 other than hormone therapy and surgery that is safe and
16 effective to treat gender dysphoria?

17 A. It is not safe and effective. There is no
18 evidence for it.

19 Q. I didn't say it was safe and effective.

20 A. Yes, that's in the construction of the
21 sentence.

22 Q. My question is --

23 A. Let's go to the board and write out the
24 meaning of the sentence. I'd be glad to because the
25 sentence implies that it is a safe and effective

1 treatment. I specifically said a dozen times there is
2 no evidence for it.

3 Q. Is there another treatment?

4 A. You mean is there any treatment.

5 Q. Is there any treatment for gender dysphoria
6 that you believe is safe and effective?

7 A. I don't have the evidence that there is any
8 treatment that has been proven to be safe and
9 effective.

10 Q. And are you aware of other -- so what do you
11 think should be done for people with gender dysphoria?

12 A. I think we should treat them for gender
13 dysphoria the best we can. That might be supportive
14 therapy. It might be programs to reduce stigma. It
15 might be changing their physical appearance to make
16 them feel better about themselves, but I don't
17 understand the difference of why a transgender female
18 would be entitled to some surgery because she doesn't
19 like her appearance, and a cisgendered female would not
20 be entitled to it. Explain to me what the difference
21 is.

22 Q. So you think that people with gender
23 dysphoria should be -- one of the treatments should be
24 to try to make them comfortable with their natal
25 gender; is that what you are saying?

1 A. No, sir. Why -- I don't know what you mean
2 by natal gender. Maybe I misunderstood. What does
3 natal gender mean? I'm sorry. I don't know what that
4 term is. You mean their sex? I'm sorry.

5 Q. Natal sex? Is that what you are saying the
6 treatment should be --

7 A. Okay.

8 Q. -- to help someone to be comfortable with
9 their natal sex?

10 A. I'm sorry, I still don't -- let's talk about
11 a male-to-female transgender. Would the treatment be
12 to help her feel comfortable as what now? She's a
13 male-to-female transgender, I'm trying to understand.

14 Q. As a man.

15 A. As a man? She's a male to female -- no, as a
16 woman. As a woman, not as a man.

17 Q. But you just said that -- I understood you to
18 be saying that one of the treatments that should be
19 provided is to make that person comfortable with the
20 gender -- with their sex.

21 A. Well, I don't -- I'm surprised you believe
22 that. I don't believe that.

23 Q. I thought that is what you just said.

24 A. Well, if I did, I misspoke. I apologize. I
25 don't believe that at all. Why would you do that?

Page 70 1 These people are seriously -- they're transgender. 2 They identify with the other sex. Why wouldn't you 3 support them in that identification? 4 Q. So you are saying you should support them in 5 identifying in -- with their gender identity? So a 6 transgender woman should be supported in identifying as 7 a transgender woman; is that correct? 8 A. I think she should be supported as 9 identifying as a woman. Is that what you mean by a 10 transgender woman, as a woman? She is a woman, right? 11 I thought that's why we were here. 12 Q. Are your former colleagues at Johns Hopkins 13 aware that you are participating in this case? 14 A. I don't know. 15 Q. Are they aware of your -- I assume that they 16 are aware of your writing this publication in the New 17 Atlantis? 18 A. Yes, sir. 19 Q. And have you spoken to them about it? 20 A. Some of my colleagues, yes, sir. It has been 21 several years. 22 Q. And what did they say? 23 A. Different colleagues said different things. 24 Almost uniformly they liked the paper for its 25 scientific content, and they didn't like the paper in	Page 72 1 effective in surgery means safe and effective as 2 surgery. You can't mean it's safe and effective 3 treatment of dysphoria if you don't have any evidence. 4 And it's interesting to note that almost all the papers 5 published are in surgery journals. Why aren't they in 6 psychiatric journals if you're doing this in order to 7 help people with a psychiatric condition? 8 Q. Are you aware that the American Psychiatric 9 Association recognizes that social transition hormone 10 therapy and sex reassignment surgery is appropriate and 11 medically necessary care for some people with gender 12 dysphoria? 13 A. Yes, sir. 14 Q. And you disagree with the APA on this? 15 A. No, sir. I'd say there is insufficient 16 evidence to make conclusions, but I have no reason 17 to -- if you are saying there are some people who 18 probably benefit by some treatment, I have no doubt 19 that that is going to be the case. 20 Q. But you don't believe that insurance coverage 21 should be provided for it? 22 A. I don't know anything about -- I'm not an 23 expert on insurance coverage. I said at the start, 24 because in other countries you either need a procedure 25 or you don't. This distinction between elective
Page 71 1 the sense that it was picked up by people who have 2 rather extreme views. 3 Q. Well, I assume that you have seen the letter 4 that was written by clinicians at Johns Hopkins 5 disavowing the report on gender and sexuality, that -- 6 the New Atlantis publication? 7 A. They're not clinicians, but other than that 8 they were my colleagues at Bloomberg School of Public 9 Health, including the president of the university's 10 wife. I'm familiar with that. There was one, and then 11 there was another article condemning. But most of it, 12 as I say before, I condemn it for the strange 13 bedfellows as opposed to content. But there are 14 certainly people very happy with it and there are 15 certainly people unhappy with it. 16 Q. But you are aware that Johns Hopkins is 17 providing surgical treatment for gender dysphoria? 18 A. Yes, sir. 19 Q. And that, when they did so, they did so 20 because they believe that the treatment was safe and 21 effective? 22 A. Some people there do. Certainly the surgery 23 department does. And the psychiatry was actually 24 against the -- having the clinic. But let me say 25 something again about safe and effective. Safe and	Page 73 1 surgery and required surgery has much more to do with 2 who is paying than it does with the medical needs. 3 I would encourage more plastic surgery for 4 people in their 40s or 50s who are uncomfortable with 5 their appearance. Now, who should pay for it is a 6 separate question. 7 Q. So do you believe the State of Wisconsin 8 should be providing coverage for surgery and hormone 9 therapy for patients with gender dysphoria for state 10 employees with gender dysphoria? 11 MR. KILPATRICK: Objection to the extent it 12 calls for a legal conclusion. 13 THE WITNESS: Yeah, I don't even -- I don't 14 know anything about the state of -- I haven't been 15 asked anything related to what you're saying. I don't 16 know anything about the state of Wisconsin. 17 BY MR. KNIGHT: 18 Q. Well, do you know what this case is about? 19 A. I read a complaint in the case. It's an 20 open-ended question. I know a bit about it, what I've 21 read. Have I read a lot of reports in detail? No, 22 sir. 23 Q. Well, you understand this is a case involving 24 a ban on providing coverage for gender dysphoria and 25 surgery -- I'm sorry. For hormone therapy and surgery

1 for state employees with gender dysphoria?

2 A. Did I understand that is the case?

3 Q. Yes.

4 A. Can you repeat it again, the case is what?

5 Q. This is a case involving a state exclusion on
6 coverage for hormone therapy and surgery for state
7 employees with gender dysphoria.

8 MR. KILPATRICK: Objection to the extent it
9 mischaracterizes the description of the case.

10 BY MR. KNIGHT:

11 Q. Did you understand that?

12 A. I understood there are patients who are
13 seeking medical care. That is all I understood. The
14 rest of the legal part and the financial part, I don't
15 know anything about.

16 Q. Okay, but what I'm understanding is that you
17 agree that -- with the American Psychiatric Association
18 that social transition, hormone therapy, and sex
19 reassignment surgery is appropriate and medically
20 necessary for some people with gender dysphoria,
21 correct?

22 A. For some people, I think that is probably
23 their best judgment. Remember, they have to make the
24 decision under uncertainty. We don't know what the
25 long-term outcome would be. I'm very concerned about

1 altering the genitalia, for example, of young men, what
2 the implication is going to be 20 or 30 years -- 20 or
3 30 years later. I wish we did know, but we have to do
4 an experiment under naturalistic conditions. That is
5 what we are really doing is an experiment. Do we have
6 enough experience with them compared to other
7 procedures to know that it's safe and effective as a
8 psychiatric treatment? We don't, we just don't. I
9 wish we did.

10 Q. You seem to want to tell me about treatment
11 for young people, but you understand this is a case
12 about treatment of adults?

13 MR. KILPATRICK: Objection to the extent it
14 mischaracterizes the lawsuit.

15 THE WITNESS: I'm sorry. Do I know it's a
16 case about adults?

17 BY MR. KNIGHT:

18 Q. This is a case about an exclusion of coverage
19 for adults.

20 MR. KILPATRICK: Same objection.

21 THE WITNESS: You're asking me if sitting
22 here I know that? I don't know that. I don't know
23 explicitly -- I've not read about what it is that is
24 objectionable to people. Where would I have read that?

25 But it's a long way to go that some people

1 might benefit from a treatment, and, therefore we
2 should try that because this is a desperate population
3 versus that everyone should get that treatment. I
4 don't quite understand it.

5 BY MR. KNIGHT:

6 Q. So are you aware that the American Medical
7 Association supports gender transition including
8 hormone therapy and surgeries as treatment for gender
9 dysphoria?

10 A. I've seen a lot of documents about access. I
11 don't remember that particular -- exactly what you
12 said. I remember a statement about gender identity
13 disorder, but it would not surprise me.

14 Q. Well, assuming that it's true, do you agree
15 with that statement?

16 A. What is the statement again? Sorry.

17 Q. That the AMA should support gender
18 transition, including hormone therapy and surgeries as
19 treatment for gender dysphoria.

20 A. By the way, I don't know what gender
21 transition means. You're born with that gender. It
22 seems that -- and people are talking out of both sides
23 of their mouth. They say you're born with a gender,
24 but then you need gender transition. If you're born
25 with that gender, why do you need a transition? What

1 am I missing?

2 Because they keep talking about gender
3 transition being necessary. The other thing that's
4 interesting is that a gender transition seems to be
5 culturally defined. What it means to transition to be
6 more male or more female is a cultural definition. So
7 I really don't know what they're saying, all this need
8 for transition. They can be -- to me, they can weigh
9 280 pounds and be very masculine and claim they are a
10 woman. They need to have a long-term identification,
11 not any particular body configuration.

12 Q. Do you support the AMA's -- assuming what I
13 said was true that the AMA supports transition,
14 including -- or let's put it this way: Assuming that
15 what I said is true that the AMA supports hormone
16 therapy and surgeries as treatment for gender
17 dysphoria, would you agree that that is the correct
18 position?

19 A. I agree the AMA supports it. I can't
20 second-guess the APA. I don't know that much about
21 what their position is. I would have to read the whole
22 document, but if they are saying that's been
23 demonstrated that it's a significant factor in reducing
24 dysphoria, I would have a great deal of difficulty with
25 that statement.

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1 Q. Dr. Mayer, have you seen this letter from
2 Dr. Rothman, Dr. Klag supporting -- are you familiar
3 with these individuals at Johns Hopkins?

4 A. I don't know Patricia Davidson. I know the
5 others, yes, sir.

6 Q. And this document on the second page, the
7 last paragraph starts with "We have committed to and
8 will soon begin providing gender-affirming surgeries,
9 another important element of our overall care program."

10 Do you see where I'm reading?

11 A. Yes.

12 Q. And it indicates that they have done this
13 "Reflecting careful consideration over the past year of
14 best practices and appropriate provision of care for
15 transgender individuals."

16 Do you see that?

17 A. Um-hmm.

18 Q. And so I read this to say that they have made
19 a medical decision that this is a right thing to be
20 doing, to be providing surgical treatment for
21 transgender individuals who need it.

22 Is that your understanding?

23 A. The problem is when they say "provision of
24 care for transgender individuals," I get confused,
25 because transgender individuals don't need any care.

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1 It's no longer a diagnosis or an illness. If that said
2 for gender dysphoric individuals -- I don't know what
3 people keep talking about the provision of care. I
4 think they should have equal access to care. So people
5 should know how to treat a transgender woman.

6 Should they have special provisions of care
7 because they're transgender? Not unless it's a
8 disorder in itself. So if you said we should have the
9 best practice and appropriate provision care of gender
10 dysphoric individuals, I agree, and we should also
11 provide the best care for transgender individuals.
12 That doesn't mean that there's evidence that the best
13 care would be performing surgery. There's certainly a
14 lot of money to be made in them, we know that. But we
15 really don't know what the long-term consequences are.
16 Wish we did.

17 Q. Are these colleagues that you know and
18 respect?

19 A. That might be a little strong. I mean,
20 they're colleagues. They're not great scientists. I
21 know Paul Rothman. I know he's a dean-type person.
22 Michael Klag is an internist. They're not giants, but
23 they're good physicians. I don't disagree with the
24 document, by the way.

25 Q. Are you aware that the Endocrine Society

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1 supports hormone therapy as treatment for gender
2 dysphoria?

3 A. I'm aware that there are some long involved
4 publications about that. But it doesn't surprise me.
5 The Endocrine Society is in the business of giving
6 hormones to people, that they support giving hormones
7 to people. Is there a long-term study which shows that
8 they're successful in treating gender dysphoria? There
9 is not.

10 Q. Do you disagree with the Endocrine Society?

11 A. I don't have any reason to agree or disagree.

12 Q. Do you understand that every major medical
13 association recognizes the medical necessity of hormone
14 therapy and surgery for individuals with gender
15 dysphoria?

16 A. I've never seen that recommendation actually
17 just for individuals with gender dysphoria. But I do
18 know there are a lot of organizations that feel that
19 way and publish those guidelines. That is fine. I
20 have no argument about that other than they're not
21 based on science.

22 Q. What kind of medical treatment should be
23 provided for someone with a condition where the -- in
24 your view the studies are insufficient to show a
25 treatment that would be safe and effective?

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1 A. I think that's a very interesting question.
2 I don't have an answer. As a scientist, I can tell you
3 there is not enough information. Is there enough, I
4 guess, in the interim to make a decision one way or the
5 other? Well, I think you can do some good for people
6 or you can do some damage for people, and I don't know
7 how to develop the two. And the idea that everyone who
8 goes through these procedures is going to be happy ten
9 years down the road is not true. The question is what
10 percent will be unhappy or what percent, at least, will
11 still be dysphoric.

12 Q. I'm asking in general, aren't there other
13 conditions where we provide treatment where there is
14 not a great deal of research supporting the particular
15 kind of treatment?

16 A. Yes, sir. Probably half the treatments we do
17 are not supported by strong scientific research. That
18 doesn't mean we don't strive to do more, particularly
19 in areas so politically charged as this.

20 If I believed hormone therapy and affirmative
21 therapy were the answer to gender dysphoria, I would
22 say so. I would absolutely endorse them.

23 Q. What are other treatments that are provided
24 for which we don't have sufficient research in your
25 opinion?

21 (Pages 78 to 81)

1 A. There are thousands of them. There is
2 aspirin. There's cholesterol-lowering medication.
3 There are all sorts of drugs we use where there are
4 mixed results, and we have to resolve that the benefits
5 are -- are worth the risks.

6 Q. Well, let's talk about, for example, high
7 cholesterol. Do you agree that high cholesterol is a
8 medical issue that should be treated?

9 A. Well, it's really -- and high cholesterol is
10 a bad example, because high cholesterol is really a
11 marker of something going on. But, yes, it is an
12 indication of a condition that needs to be treated.

13 Q. And if the research -- and you're saying,
14 though, that the research about cholesterol medications
15 is insufficient in your mind?

16 A. Well, I'm saying it evolved over time. The
17 important point -- I thought you were saying were there
18 treatments we did where we didn't know for sure. We
19 could show that the treatments for cholesterol lowered
20 the body's level of cholesterol. What we couldn't show
21 for a long time is whether that meant the risk would be
22 reduced to the same risk as someone that had that level
23 naturally occurring, therefore, we didn't know whether
24 it would really lead to decreased heart attacks,
25 decreased strokes.

1 That took many years of teasing out the data,
2 very sophisticated data where we now have been able to
3 show recently a very positive effect to lowering the
4 cholesterol. So there are many, many medicines in the
5 early stages where we might know more complete now, but
6 we certainly didn't know then. The SSRIs are another
7 example.

8 Q. What --

9 A. Just one more thing. Have to include hormone
10 therapy for hormone replacement therapy for menopausal
11 woman.

12 Q. And what about hormone replacement for
13 menopausal women?

14 A. That the indications were that there were
15 high risks of breast cancer. It was good, it was bad,
16 it's gone back and forth, and back and forth. I'm not
17 an expert. When we carefully did clinical trials, we
18 found that the recommendations, like the VBAC
19 recommendations were absolutely false, what the
20 recommendations were.

21 Q. And do you believe that until you have
22 definitive research, you should not provide any care
23 for people with these issues, these medical issues?

24 A. Well, the issue I see is a psychiatric issue.
25 You keep switching it to a medical issue. I don't know

1 if you mean the two as separate from each other. The
2 issue is not their physical appearance. The issue is
3 their dysphoria. And so what should we do in the
4 meantime about this dysphoria? That's why we have task
5 forces to get together and decide what's the best thing
6 to do. And we should be doing ongoing studies.

7 Q. I am asking about the use of aspirin, for
8 example. Where there are some indications that aspirin
9 is a helpful treatment, for example -- well, let's talk
10 about -- I'm sorry.

11 Let's talk about the cholesterol medication
12 where there is some indications that cholesterol
13 medications are likely to help someone, but we don't
14 have definitive research studies. What should we do?
15 Should we provide them the medication or not?

16 A. I think we -- that's an excellent question.
17 I think we provide them with the medication and ensure
18 that there are ongoing studies to increase our
19 knowledge. I would be less concerned if there were
20 ongoing studies. But, yes, we have to make a judgment
21 in the meantime, and that is a judgment -- the people
22 in medical research and only the judgment of clinician
23 what to do with his or her patients.

24 Q. But I guess I'm a little unclear. Is that
25 your -- is that also true for surgical treatment for

1 gender dysphoria, that we should not provide it until
2 we have definitive research to show that it is safe and
3 effective? Is that what you are saying?

4 A. No, I never said we should not -- we should
5 not provide it. There might be situations in which it
6 should be provided. I'm suggesting to you it is a very
7 expensive procedure, and I see issues of equity. I see
8 issues of secondary versus primary characteristics. I
9 see issues of changing the body versus changing the
10 psyche in some sense. If these issues were being
11 worked on. Let's say Schechter, Dr. Schechter came to
12 me with a psychiatrist. He and Paul McHugh said, We
13 have a patient here. We believe for this patient that
14 reassignment surgery is absolutely critical to resolve
15 their dysphoria. I would have no reason to argue with
16 them. Why would I argue with them?

17 Q. So -- and I believe you said this before. So
18 surgery can be a medically necessary treatment for some
19 individuals?

20 A. Well, I don't know that for a fact, but I
21 would guess it could be. You could find patients which
22 are just like -- there are certainly transgenders that
23 don't suffer any dysphoria. That's why I don't
24 understand this. This says we have to support
25 transgender people in transition. Well, if they are

1 not ill, there is no disease, why do we have to support
2 them? But could there be people for which that
3 treatment is successful and indicated, yes, of course.

4 Q. So there can be people for whom surgery is a
5 beneficial and medically necessary treatment for gender
6 dysphoria?

7 A. Well, I don't know that for sure, but I
8 wouldn't slam the door on it if people came to me that
9 are knowledgeable and clinical and said, We believe for
10 this patient this is required. It wouldn't be someone
11 with a Ph.D. in counseling psychology, for example.
12 But I would understand their recommendation. I would
13 respect it.

14 I also don't understand what surgery they
15 would be entitled to. Because suppose mom moved to a
16 society where femininity is measured by small hands.
17 Now a male-to-female transgender, is she going to be
18 entitled to surgery to reduce the size of their hands?
19 When does it stop? How does it go? I guess that's
20 really the question. How do you split the baby?

21 Q. Are you aware of any patient with gender
22 dysphoria who has asked for surgery on their hands?

23 A. I don't know what gender dysphoric
24 patients -- I do know there are societies that could
25 value small hands. There are societies that value

1 great big butts. There are societies that value all
2 sorts of different definitions of femininity and
3 beauty. That's what I don't understand. How can
4 someone be born with this idea of femininity or beauty
5 or masculinity when you're not born with anything.
6 It's a clean slate.

7 Q. So I would like to look at your report again,
8 which is Exhibit 1.

9 A. Okay.

10 Q. On page 3, paragraph 6, you say that medical
11 and surgical treatments have not been demonstrated to
12 be safe.

13 Do you see where I'm reading?

14 MR. KILPATRICK: I'm sorry. What page?
15 BY MR. KNIGHT:

16 Q. Page 3. You say that medical and surgical
17 treatments have not been demonstrated to be safe and
18 effective for gender dysphoria?

19 A. Correct.

20 Q. What do you mean by safe?

21 A. Well, safe to mean that the risk associated
22 with the treatment for gender dysphoria is worth it.
23 So let's suppose you had surgery on positive outcomes
24 for most people, and some people you have negative
25 outcomes. Well, is the risk worth it? So safe always

1 means, is the risk of that procedure worth it.

2 Effective means both medically effective and
3 financially effective. Is it an effective way -- and
4 we never used to consider that, and now we have to
5 consider are there alternatives to treat the person
6 that would be less expensive. But there has been no
7 demonstration that they're safe and effective. There's
8 argument, but there is no demonstration.

9 And the studies would be so simple it is just
10 inexcusable. I have no idea why they aren't there. I
11 would donate my time to help people do the study.

12 Q. So on page 7 you say that these treatments
13 are not optimal. And then on page 8, paragraph 22, you
14 talk about optimality -- or 22 and 23.

15 So what do you mean by "optimal"?

16 A. Well, optimal means that the procedure
17 employed in the treatment of condition effectively
18 address the underlying feature of the condition. So
19 articles that say you feel better about your appearance
20 or you look better, you're more likely to pass aren't
21 optimal in the sense -- maybe optimal is not the best
22 word -- but they are not optimal in the sense they
23 don't go directly after the dysphoria, the underlying
24 features of the condition being depression, anxiety,
25 alienation, withdrawal.

1 In most of the studies that were primarily in
2 the surgery? Particularly the plastic and cosmetic
3 surgery, talk about how good they looked. That these
4 male-to-female transgenders can pass as females. And
5 that's not what the condition is about. This is either
6 a serious condition that needs to be treated or it is
7 an excuse that gives cosmetic surgery to people who
8 have a persistent identification with the opposite sex.
9 I don't know which it is.

10 Q. So you are not suggesting that for a
11 treatment to be optimal, it should be focused on trying
12 to talk someone out of their gender dysphoria?

13 A. Well, you should try to talk someone out of
14 their gender dysphoria, of course. To be less
15 dysphoric, if I could sit with you and talk to you, why
16 wouldn't I do that?

17 Q. So you should try to tell an individual --
18 you're saying I should try to talk to a woman who is
19 transgender and is clinically distressed, and I should
20 try to talk her out of her distress? Is that what
21 you're saying?

22 A. Of course. That is what psychiatry is about,
23 to try to help her with her distress. What is
24 bothering her. What is she depressed about. And this
25 is the heart of psychiatry. Medications I could give

her. Is she manic depressive? What is going on with her? Why is she here? And if she says she is here because she's transgender, I say that is not enough. It is not an illness. Embrace your transgenderism. You can't have it both ways. These people treat it as though it's a devastating illness, and then they say, but this is normal development.

Q. So what is -- what if the individual explains that their dysphoria is about the incongruence in their body?

A. Why --

Q. What is the optimal treatment for that?

A. Well, that's very interesting, because I'd have to go back to something Paul McHugh said, and that is for anorexic. We don't put them on a diet. We try to give them better body image. We try to give them better body image. We try to help people feel better about themselves. Dysphoria is full of a feeling of helplessness, a feeling of hopeless, a feeling of despair. Of course you try to help them with all those. That is what psychiatry is.

Q. So you're saying that gender dysphoria is just like body dysmorphia disorder?

A. No. I don't believe that. It has some characteristics, though. And that is it's a

psychiatric disorder. Where you wouldn't change their body to try to change that disorder. You try to change their attitude to themselves. You try to give them a healthy attitude about themselves. Isn't that what it's about? You try to stop the demoralization.

Q. And how would talk therapy address or stop someone whose dysphoria is about the incongruence in their body?

A. Well, when you go to these clinics, they have young people in there. They're not old enough for hormone therapy, they're not old enough for surgery. They talk to them about being accepting. They talk to them about a supportive environment, how important it is to be around people who accept them, people who understand them. It is not just talk therapy. First of all, talk therapy is very powerful therapy. But the fact is, you want to make them feel better. You want to make them better able to function in their daily life.

Q. And if we're talking about an adult patient who says that I am a woman, and I look -- my body looks male because, for example, I don't have breasts. I don't have a vagina. Then what do you do? You try to talk them into being comfortable with these incongruent body structures? Is that what you are saying?

A. If I could, of course I would. What do you mean incongruent? This is a female. You just said it. She is a female, she identifies being a female, and this is her body. There were no social stigma.

Q. I'm talking about a woman who is transsexual, whose natal sex is male.

A. The only sex. I don't know natal sex.

Q. And she is dysphoric about the fact that her body does not match her femaleness.

A. Is she in the wrong body?

Q. That is -- my question, if you can answer it, what do you do with a woman whose body does not line up with her understanding that she is a woman?

A. Her existence doesn't line up. Every cell of her body is a male cell. Every reproductive cell is a male cell. In fact, you said something in there and Schechter says something, that 85 percent of these women believe they're truly women. What does that mean to believe you're truly women? Do you believe there is some nature you have that comes before sex and gender, and that made you something else? Of course they should be accepting of their own body. They are female. They identify with being female, and they have a male body.

Q. So you're saying we should just help someone

who is facing distress about their body --

A. Right.

Q. -- because it doesn't match who they are?

A. Who they think they are, yes.

Q. That we should simply try to make them comfortable with their body?

A. Well, I think you're demeaning it. I think making them comfortable with their body versus \$50,000 worth of surgery makes a lot of sense. What in the world -- why are they uncomfortable? They identify with being a female, and this is the body they have. They are transgendered, why do they need to look like something else. I don't understand it.

Yes, I would try to make them feel comfortable. I might give them medication for anxiety, for depression. And maybe I would give them hormone therapy. I don't know enough about the clinical side to make any pronouncements.

Q. Let's take a woman, as an example, who has had cancer, breast cancer, and has, as a result of that, had her breast removed. Would you agree that breast reconstruction surgery after cancer is medically necessary treatment for that woman?

A. Well, again, medical necessity goes back, in our country, to billing. And I don't know enough about

1 billing, I'm not interested in billing to know that.
 2 But do you mean -- and I was involved in the Schechter
 3 case when this -- the police officer was hit in his
 4 Crown Vic and blew up and burned his face off. At what
 5 point are these procedures, if you will,
 6 reconstructive, and at what point are these cosmetic?
 7 And I think it's a false distinction. I think if
 8 surgery can help people feel better about themselves,
 9 they ought to be entitled to that surgery.

10 Q. So is it medically necessary?

11 A. I don't know what that term means. That term
 12 usually is referring to who pays for it. Medical
 13 necessity means your insurance will pay. Tell me what
 14 you mean --

15 Q. Do you think --

16 A. -- by medically necessary.

17 Q. I'm sorry.

18 Do you think insurance should pay for surgery
 19 to treat a woman who has cancer, breast reconstruction
 20 surgery?

21 A. Wait. The fact that she had cancer and
 22 breast reconstruction isn't her problem. The fact is
 23 she's probably depressed about it. So you treat that
 24 depression. If you believe that that surgery will
 25 significantly reduce that depression, and there's

1 evidence of that, which there is in this case, then,
 2 yes, I think it should be given to her. Now, who
 3 should pay? I really don't know about those issues.

4 But, yes, I'm for much broader use of
 5 cosmetic and plastic surgery. Why shouldn't people
 6 feel good about themselves?

7 Q. So treatment, breast reconstruction surgery
 8 for a woman post-cancer that will address her
 9 depression related to that, that is something that
 10 should be provided and covered; is that what you're
 11 saying?

12 A. I don't know about coverage, but I think
 13 society should seriously consider. Burn victims. Why
 14 don't we leave burn victims looking like they are? And
 15 the answer is because we know they are going to have a
 16 very difficult time, and we can show that if we give
 17 them reconstruction surgery, they do better. So why
 18 wouldn't they do better? It might be easy to show, by
 19 the way, that transgenders with gender dysphoria who
 20 are given surgery have a lower risk of dysphoria, and
 21 they have a higher rate of cure. No one has done that
 22 study. Reminds me a lot of the silicone breast implant
 23 studies where people argued about silicone breast
 24 implants and whether they are safe, and no one had done
 25 the study. All I want is to do a study.

1 Q. How do you do a study for -- a double-blind
 2 study for surgery?

3 A. It is very difficult to do double-blind
 4 studies. You can approximate by doing single-blinding.
 5 For example, you can bring transgenders in that are
 6 dysphoric, and you could say -- you have to have an
 7 active control, not a passive control. We're going to
 8 give you \$50,000 worth of surgery, or we're going to
 9 give you \$50,000, and we're going to flip between them.
 10 I think a lot of people would be willing to be in that
 11 trial. You either get \$50,000 worth of cosmetic
 12 surgery, or we give you \$50,000. The coin is flipped,
 13 and now we compare the two groups in terms of gender
 14 dysphoria. One group gets surgery, the other group
 15 doesn't. They're both gender dysphoric, and we would
 16 have the answer.

17 Q. But that's not a double-blind study, is it?

18 A. That is correct. No, there are ethical
 19 considerations in doing a double-blind study.

20 Q. And aren't there ethical considerations about
 21 giving people who need surgery money to go on a trip?

22 A. Not at all. If they chose that, that is the
 23 point. If we knew the surgery worked, then there would
 24 be ethical considerations. If we don't know it works,
 25 that is why we are doing the study. So it's very

1 important, we have to have prior equipoise. We have to
 2 prior -- indifferent between whether it works or it
 3 doesn't. And I have no evidence to be not indifferent,
 4 so I'd be glad to do the study. It would be wonderful
 5 to show that plastic surgery --

6 Q. Do you have any reason to disagree with the
 7 experts in this field who believe it would be unethical
 8 to do the study that you're talking about?

9 A. Nobody believes that study would be -- nobody
 10 could -- and I ran research for the largest corporation
 11 west of the Mississippi, the largest hospital system in
 12 the world. Over seven RNBs. Nobody would think it is
 13 unethical to do a study a patient gets their choice
 14 between treatment or not, unless we knew for sure the
 15 treatment worked. We do these studies all the time in
 16 surgery, all the time.

17 So the idea we'll declare a procedure works,
 18 but it's too complicated to do a study, and then we'll
 19 just put a bunch of myth in the journals about how good
 20 people look and never even address their dysphoria is
 21 really just tragic. And the AMA has been wrong so many
 22 times. Remember, the AMA believed that being gay was a
 23 disorder. The AMA believed that the answer to domestic
 24 violence was never to leave your husband. The AMA
 25 supported smoking. The AMA is a trade union. They've

1 made all sorts of mistakes. I can't tell you if
2 they're wrong. I can tell you what science supports
3 and doesn't support.

4 Q. Do you know the studies that show that
5 pharmacotherapy is ineffective in treating gender
6 dysphoria?

7 A. I have not seen any specific studies that are
8 well-controlled or well-designed. There are some
9 studies that show antidepressants don't improve
10 people's outlook and all of that. So, yes, there are
11 some studies that crudely get at this issue. I've not
12 seen one that actually uses gender dysphoria, but maybe
13 there is.

14 Q. And those studies indicate that
15 pharmacotherapy is ineffective at treating gender
16 dysphoria?

17 A. Is ineffective?

18 Q. Is ineffective in treating gender dysphoria.

19 A. In general, for the most part, it shows
20 that -- well, again, we have to go back to the gender
21 dysphoria. We show that for people who are depressed
22 who are gender dysphoric, that treatment does not
23 change that depression, even by the minimal standards
24 it changes depression for other people, yes. And that
25 is not surprising.

1 Q. So as I understand it in your report, what I
2 see here is that you are citing three different
3 documents to support your opinions. The first is this
4 sexuality and gender publication. The second is this
5 amicus brief in the Gavin Grimm case. And then I
6 believe you also cite on page 8, the Centers for
7 Medicare and Medicaid Services decision memo.

8 A. Right.

9 Q. Is there anything else that would -- that you
10 believe supports your opinions here?

11 A. Everything in my citations does. I have
12 lists and pages and pages of citations I reviewed. All
13 the papers, I mean it depends on what conclusion you
14 mean. That sex is biological? Any book in biology
15 will tell you that. So I'm not sure. I'm not sure
16 what opinion I'm presenting.

17 Q. Opinions that you've stated in your report,
18 that's the opinions we are talking about.

19 A. Most of the opinions come from first
20 principle. They don't come from research, because
21 there isn't any good research on the treatment of
22 gender dysphoria. I'm not sure -- I mean statements
23 like gender dysphoria is a serious medical condition is
24 overwhelmingly supported in the literature. You want
25 me to go through and give you citations? That's

1 interesting because your expert can't give me complete
2 citations. I didn't even want to write anything down
3 that was controversial.

4 Q. So you said, other than those three things,
5 that there are -- and let me be clear. What I'm
6 talking about is your opinion that -- with respect to
7 the efficacy and safety and optimality of hormone
8 therapy and surgery in treating gender dysphoria. That
9 is what I'm asking you.

10 A. There were no references on that. There was
11 an extensive search I did of the literature, probably a
12 thousand papers. I probably reviewed the biography of
13 500 of them in the abstract, and probably read 200 of
14 them over the course of four years now trying to find
15 studies on gender dysphoria.

16 Q. So you are saying there are no studies about
17 efficacy and safety of treatment for gender dysphoria?

18 A. I wouldn't say there are no studies. I'd say
19 there are no decent studies. There's not a simple
20 controlled study in which gender dysphoria is actually
21 measured.

22 And by the way, I must just say, the studies
23 that show that people are happy with their surgery are
24 funny, because I send you to the book Charlatan by
25 Pope, I believe. Charlatan was a man named John

1 Brinkley. And John Brinkley is famous in the Southwest
2 because he invented border radio. But he, in fact,
3 because famous as a surgeon because he transplanted
4 goat gonads into the testicle sacks of men in order
5 that they would have rejuvenated sexual prowess. And
6 the interesting thing is, of course, it doesn't work.
7 You can't have a third gonad help you. But the men
8 were overwhelmingly positive toward the surgery. They
9 all claimed they had a better sex life.

10 So we know the theory of some costs that
11 economists give us is that people are happy after
12 they've had \$50,000 worth of procedure. Does it help
13 them function more effectively in society, let's say in
14 five years? There are no studies. There are no
15 studies. At least I could not find them.

16 Q. Would you agree with me that transgender
17 people exist in a number of countries and probably
18 throughout the world?

19 A. Go ahead. Say that again?

20 Q. Would you agree that transgender people exist
21 throughout the world?

22 A. Well, I don't have a lot of experience, but I
23 assume they would. Why wouldn't they?

24 Q. Well, you understand that WPATH is an
25 organization made up of researchers and clinicians

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1 throughout the world?

2 A. I find WPATH to be made up of advocates for
3 transgender communities. I don't find many of them --
4 there are a few exceptions -- to be very serious
5 scientists. If they were serious scientists, they
6 would have done this study a long time ago.

7 It would also be interesting to do a
8 follow-up of people who decline to have sex
9 reassignment surgery or facial feminization versus ones
10 that accept it. It is not a randomized study. It
11 would still be interesting to see where they are in
12 five years with respect to dysphoria.

13 MR. KILPATRICK: Jim, it is after noon, and
14 I'm wondering if we can break for lunch soon.

15 MR. KNIGHT: Okay. We can take -- can we go
16 a little bit longer?

17 MR. KILPATRICK: Sure. How much longer?
18 Minutes?

19 MR. KNIGHT: I mean, maybe if we go another
20 half hour?

21 MR. KILPATRICK: Can you get through that?

22 THE WITNESS: Sure.

23 (Exhibit 4 was marked for identification.)

24 BY MR. KNIGHT:

25 Q. Dr. Mayer, I'm showing you what is marked as

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1 Exhibit 4. This is the amicus brief in the Gavin Grimm
2 case.

3 You have seen this before?

4 A. Yes, sir.

5 Q. So directing you to page 5.

6 In the second paragraph you say, "In this
7 brief, amici leave aside all questions about how best
8 to treat gender dysphoria in adults."

9 Do you see where I'm reading?

10 A. Yes, sir.

11 Q. So this doesn't -- this brief does not
12 address the efficacy of surgery or hormone therapy in
13 an adult, right?

14 A. That is correct.

15 Q. And yet you're relying on it and claiming
16 that pages 15 through 21 of it support your opinions
17 regarding the lack of evidence that hormone therapy and
18 surgery are effective at treating gender dysphoria.

19 A. Correct.

20 Q. Why is that?

21 A. Because this is a conclusive. This
22 particular thing is about children, because I was asked
23 to write about children, but the fact is the same
24 analysis applies. Obviously, there are more important
25 issues with children because of putting them in gender

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1 affirming environments when they're young, talking
2 about two year olds, and know they're of the opposite
3 sex and things like that. So they're complicated
4 issues, but the conclusions we'd make are the same --
5 they're the same for adults as for children. This was
6 about children. It wasn't about this young high school
7 kid, I believe.

8 Q. Again, this section, section 15, talks about
9 gender affirming policies harm rather than help gender
10 dysphoric children.

11 So again, the section itself is titled
12 something dealing with children.

13 A. Okay.

14 Q. Is that right?

15 A. I'm sorry? Say it again.

16 Q. Is it right that this section is talking
17 about policies with respect to gender dysphoric
18 children?

19 A. Yes. Yes. Policies that could harm gender
20 dysphoric children might not harm gender dysphoric
21 adults. Is that what you mean?

22 Q. On page 18, you cite to a paper by Michelle
23 Cretella.

24 A. Um-hmm.

25 Q. Do you know Michelle Cretella?

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1 A. No, I don't.

2 Q. You've never met her?

3 A. No, sir.

4 Q. But you understand she's the president of a
5 group called American College of Physicians?

6 A. Pediatricians?

7 Q. Or Pediatricians. I'm sorry.

8 A. Yes, sir.

9 Q. Are you a member of the American College of
10 Pediatricians?

11 A. No, sir.

12 Q. Are you a supporter?

13 A. No, sir.

14 Q. You understand this group was recently
15 founded?

16 A. I don't know much about the group.

17 Q. Did you understand or do you know that it was
18 founded as a protest against the American Academy of
19 Pediatrics' decision to support adoption for gay
20 couples?

21 MR. KILPATRICK: Objection; lacks foundation.
22 You can answer.

23 THE WITNESS: No, sir.

24 BY MR. KNIGHT:

25 Q. You didn't know that?

27 (Pages 102 to 105)

1 A. No.
2 Q. Do you have any reason to dispute what I'm
3 telling you about it?
4 A. No, sir.
5 Q. And did you know that it has approximately
6 500 members?
7 A. No, sir.
8 Q. You know, though, I assume, that this group
9 is different from the American Academy of Pediatricians
10 that has -- I'm sorry, I think it's the American
11 Academy of Pediatrics?
12 A. Yes.
13 Q. That has about 65,000 members?
14 A. Yes, sir. Well, I'm sorry. I don't know how
15 many members it has. I know it is much larger, yes,
16 sir.
17 Q. So you support -- I'm sorry. You cite her to
18 support a claim that allowing a person who is
19 transgender to live consistent with their gender
20 identity will change their brain through
21 neuroplasticity.
22 Do you remember that?
23 A. Yes, sir.
24 Q. How is that supposed to happen?
25 A. Well, we know the brain is very plastic. The

1 idea there is how people live their lives has an effect
2 on their brain. I don't think there is any -- I'm not
3 sure what's debatable about that.
4 Q. Well, do you have any research that would
5 support your position that a transgender person's brain
6 is going to change through neuroplasticity?
7 A. I guess you're going to have to give me the
8 exact citation, because I don't know exactly --
9 remember, three of us wrote this. We didn't all agree
10 with everything on this, but if you are saying our
11 brain is plastic, yes. It's part of the transgender
12 support or argument that brains are plastic. So I
13 don't know exactly what we're talking about or
14 objecting to.
15 Q. Do you agree with everything that is in this
16 amicus brief?
17 A. No, sir. I didn't disagree with anything
18 severely, but these were a combination of three of our
19 ideas. And my focus, again, is very much on science
20 and whether everything said in science is accurate. I
21 did not know about the origin of the American --
22 whatever you said. American College.
23 Q. The American College of Pediatricians, it
24 says on the top of that page.
25 Does that concern you?

1 A. Yes, sir. Very much so.
2 Q. Would you have cited her to support this
3 position had you known that she was the president of
4 that group?
5 A. Well, that is an interesting question,
6 because the degree I agree with it, I would support it
7 anywhere. She is a good scientist. But my respect for
8 the group wouldn't be as high. I didn't cite a group;
9 I cited her. And she's written quite a bit. She's
10 obviously a very bright woman, but she seems to be
11 quite opinionated. I had not heard that opinion, but I
12 more or less avoided her. The group is a bit
13 conservative for my taste.
14 Q. Sorry. Why don't you give me a minute.
15 What parts of this brief did you not agree
16 with?
17 A. Well, as I said, I didn't disagree, but a lot
18 of the brief is not my area of expertise. So you are
19 talking about a guy -- I think Hruz did this with us.
20 He is the chair of pediatric endocrinology at
21 University of Washington St. Louis. So I respect him,
22 and particularly as to how fetal testosterone affects
23 the brain and all that. I can't cover everything. And
24 Paul McHugh is one of the outstanding psychiatrists of
25 the century, actually. And so I accepted him. I'd

1 have to go through every line and try to figure out --
2 most of it is just ones I don't have any opinion on,
3 because if I really objected to it, I would not have
4 put them in.
5 But did I know who Cretella -- was that her
6 name? I did not know who she was with this reference.
7 Q. So directing to page 16.
8 A. Of what? Sorry, sir.
9 Q. Of the document you were looking at before.
10 A. Page 16?
11 Q. Footnote 10. So you talk about the
12 Giuseppina Rametti article, which looks at brain
13 imaging or does brain imaging. And the last sentence
14 says, "The results of that study may be explained by
15 neuroplasticity."
16 A. Female-to-male transsexual was more similar
17 to that of heterosexual males than females to male.
18 One study showed the white matter microstructure of
19 specific brain areas of the female to male transsexual
20 was more similar to that of heterosexual males than
21 that of heterosexual females.
22 Okay. I find all of this brain research,
23 other than suggestive of our hypotheses, to be
24 spurious, because we know the brain changes the
25 function of life experience. We can now measure that

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1 with scanners. But this idea of whether the cisgender
2 brain, the transgender brain are similar or different,
3 I find all that research highly suspect, and I did
4 review that research specifically for this project.

5 Q. These researchers were looking at the white
6 matter in transgender patients before they took hormone
7 therapy, right?

8 A. That's correct.

9 Q. So how does neuroplasticity explain the
10 results they found?

11 A. Well, I don't think it did find. I found
12 that the fusion tensor imaging study, much on
13 methodology, and not much on result. My mentor at
14 Princeton used to say \$100 worth of analysis of a
15 dime's worth of data doesn't produce a penny's worth of
16 output.

17 I found the analysis not very convincing, but
18 at least sexual -- at least suggestive of this idea
19 that the brain -- that the brain can change.

20 Other than that, I would let Hruz comment on
21 that, because it is not something that I added.
22 Professor Hruz did. Dr. Hruz did.

23 Q. So you don't have a position over whether
24 neuroplasticity could explain the results that this
25 researcher found?

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1 A. I would say I support the idea that most of
2 these studies could be affected by neuroplasticity.
3 The idea that brains are elastic and plastic, and that
4 is a fundamental concept in the new brain research we
5 do. But do I believe they do explain these results?
6 No. They are just suggestive. And this whole area of
7 who the transgender looks like is very, very suspicious
8 for me. Remember, these are -- never mind. I
9 shouldn't say that.

10 Q. Well, you understand that these researchers
11 concluded that their results provided evidence for an
12 inherent difference in the brain structure of
13 female-to-male transsexuals?

14 A. Yes, sir.

15 Q. And do you disagree with that conclusion?

16 A. Yes, sir.

17 Q. Why?

18 A. Well, I disagree, because if you go to the
19 basic methodology, what these people do is poke around
20 the brains until they find areas where whatever side
21 they're on -- whether they want transgender brains to
22 look like, cisgender brains or the opposite sex brains.
23 And they go around until they find patterns, and they
24 explain those patterns.

25 Well, the first rule of statistics deals with

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1 multiple comparison, multiple statistical tests, and
2 I'm never convinced that the results they find on an
3 artifact in the methodology, that they're really there.
4 So all of the brain research, arguing about this brain
5 looking like that brain, first of all, we don't know
6 how to get from brain to behavior, so it's almost a
7 waste of time.

8 Second of all, the difference at the mean
9 does not predict the interest at the extreme. And
10 we're only interested in extreme. So I don't believe
11 they have any reliability to any -- or significant
12 reliability to any of them.

13 Let me go to the statement, though, above it.
14 "Neuroplasticity means that a child who is encouraged
15 to impersonate the opposite sex may be less likely to
16 reverse course later in life. For instance, if a boy
17 repeatedly behaves as a girl, his brain is likely to
18 develop in such a way that eventual alignment with his
19 biological sex is less likely to occur." I think it's
20 a hypotheses.

21 Q. On pages 11 and 12, you cite Dr. Kenneth
22 Zucker.

23 Would you agree with me that the articles
24 that you cite here are about the treatment of children
25 only?

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1 A. Yes, sir.

2 Q. And do you know that Dr. Zucker has made it
3 clear that he agrees that surgery and homotherapy are
4 effective treatment for adults?

5 A. Yes, sir.

6 Q. In fact, in 2016, he published an article
7 called "Gender Dysphoria in Adults," in which he says
8 that "Recent investigations have largely confirmed the
9 opinion that hormone therapy is an effective and
10 reasonably safe treatment in adults with gender
11 dysphoria."

12 A. Yes, sir.

13 Q. What do you think of Dr. Zucker?

14 A. Well, he's been in a lot of controversy, some
15 of which I don't understand, I think revolved around
16 conversion therapy or something. Some of his work
17 seems very reasonable. Other work gets highly
18 criticized. So he's not really in my area to make an
19 opinion, but I hope he's right. Now, if he said there
20 are studies that demonstrate that definitively, I would
21 take issue with it. But he's certainly a leader in the
22 field, and if he says it works, that's a great deal of
23 evidence in my opinion.

24 Q. So you recognize him as an expert in the
25 field of treatment of gender dysphoria?

29 (Pages 110 to 113)

1 A. Yes, sir.

2 Q. Well, he also says that "Empirical evidence
3 from adulthood suggests that gender dysphoria is best
4 treated through hormonal and surgical interventions,
5 particularly in carefully evaluated patients."

6 Do you understand that?

7 A. That's his opinion. That's his functional
8 experience. He has much greater experience, but there
9 is no clinical trial which shows that's true.

10 Q. But you disagree with Dr. Zucker?

11 A. No, I disagree that what he says has been
12 demonstrated by any sound scientific research. He says
13 it is safe and effective. You can only be safe and
14 effective relative to your effect. If it doesn't have
15 any effect, what does it mean to be safe? Are these
16 treatments really safe for people? I don't know that.
17 Are they effective? I don't know that.

18 Q. If he says -- but you understand he says it
19 is best treated through hormonal and surgical
20 interventions. That's his statement.

21 A. Fine. And Zucker's a clinician. He's very
22 experienced in this thing, and I respect his opinion.
23 He's got a lot more experience than I do. Do I respect
24 him in understanding scientific evidence and what is
25 demonstrated or not by clinical studies? No, I

1 don't -- I don't know. I don't have any reason to
2 suspect him, but if he believes that evidence is
3 accumulated to make that decision, then that's his
4 belief. It would just take one study to show that, in
5 fact, it works.

6 Q. Do you believe that you have greater
7 expertise in the field of gender dysphoria than
8 Dr. Zucker?

9 A. We have different types of expertise. I
10 think I'm a better scientist than Dr. Zucker. I spend
11 all my day doing science. I don't see patients. I
12 don't go on talk shows. I don't do all these other
13 things.

14 Q. Do you know whether --

15 A. When it comes to the epidemiology of gender
16 identity, I think I've worked as hard as anybody.

17 Q. Do you know whether Dr. Zucker has done any
18 scientific research?

19 A. Oh, yeah. He's done quite a few studies,
20 scientific studies.

21 Q. But you don't think he's a scientist?

22 A. I think he's a scientist. He's a lot of
23 different things. So I think he's a committed
24 scientist. Do I think he'd be held out as a great
25 academic physician? No. I mean, is he a Paul McHugh?

1 No.

2 Q. Were you paid for your work on this amicus
3 brief?

4 A. No, sir.

5 Q. Did you receive any funding for work related
6 to the brief?

7 A. Not to best of my knowledge. I'd have to go
8 back and see if there was some minimal amount of
9 payment. As I sit here, I don't believe I was. I
10 don't know who would have paid me.

11 Q. Were you encouraged to work on the brief by
12 anyone?

13 A. Yes, sir.

14 Q. Who?

15 A. Mr. Bradley. Gerald Bradley is his name.
16 Gerard Bradley of Notre Dame Law School.

17 Q. Who did you talk to about the brief other
18 than Mr. Bradley?

19 A. Paul Hruz and Paul McHugh. Dr. McHugh and
20 Dr. Hruz.

21 Q. Anyone else?

22 A. No, sir.

23 Q. Anyone review drafts other than the people
24 you just mentioned?

25 A. Not to the best of my memory.

1 Q. Were there any nonfinancial contributions
2 from anyone for the work on the brief?

3 A. What would that be? I don't know what you're
4 talking about.

5 Q. Somebody assist by providing some research or
6 something for you?

7 A. No.

8 Q. Any other ways, nonfinancial ways that you
9 can think of that someone assisted?

10 A. I want to be a good scientist and a good
11 citizen and help out, understand the issues. I felt it
12 was a very complicated case.

13 MR. KNIGHT: I think we should take a break
14 now, if you're wanting to take a break now.

15 MR. KILPATRICK: Okay. 45 minutes, is that
16 enough time?

17 MR. KNIGHT: Let's go off the record.

18 (Recess taken.)

19 MR. KNIGHT: Back on the record.

20 Doctor, do you understand you are still under
21 oath?

22 THE WITNESS: Yes, I do.

23 BY MR. KNIGHT:

24 Q. I wanted to ask about your testimony earlier
25 about counseling a woman who is transgender to accept

Page 118 1 her femaleness, but to also accept her body, even 2 though it -- her body doesn't conform with her female 3 gender identity. Did I -- is that what you said 4 before, if I understand correctly? 5 A. I'm not sure what you mean by "conform," 6 because she has a female gender identity, so she is a 7 female. Why does her body need to look any particular 8 way. She is what she is. She's a transgendered 9 female. So I don't understand, other than social 10 acceptance or self-image, why shouldn't society accept 11 these people as who they are? Maybe I'm missing 12 something. 13 Q. Well, I'm just trying to make sure -- I have 14 some other questions to ask, but I want to make sure 15 I'm representing what you said before, that you believe 16 that one kind of treatment that should be provided is 17 counseling this transgender woman to be accepting of 18 her body, even though she has the body that would be 19 typically associated with a man? 20 A. Right. So she has a body of a man. We can 21 either make her and society accept that, or we can try 22 to have them more comfortable so they can pass, 23 basically, as being biologically a woman. And that -- 24 that's fine too. 25 To me, the treatment has to go after the	Page 120 1 perceives as male? 2 A. It is male. 3 Q. Is there any reason? 4 A. But it's her body, she is a female. Go 5 ahead. 6 Q. Is there any research that supports your 7 notion of having someone be counseled or counseling 8 someone to accept their female gender identity and also 9 accept their male body? 10 A. That is a good question. I don't know the 11 answer. There is a lot of research on children -- 12 children's relevant here -- where they put them in an 13 affirming supportive environment and they do get 14 positive results with regard to their self-image and 15 all that. So, yes, we have some indication of being in 16 a positive affirmative environment that affirms who 17 they are has positive results. Do I think it would 18 work on a 45-year-old woman? I doubt it, but I don't 19 know. 20 Q. Is there any research that would support that 21 kind of therapy for a 45-year-old woman? 22 A. Well, a 45-year-old with dysphoria has 23 distress, she has depression, she had that. Yes, 24 there's treatment to show that those treatments work 25 with regard to depression, for example, but are they
Page 119 1 dysphoria. What is the dysphoria? Do I think that 2 would work with most women? No. I mean most people, 3 no. I think it is very resilient overall, this 4 dysphoria. 5 Q. And you're talking about two different 6 things. So which is the thing do you think that would 7 not work for most people, which kind of treatment? 8 Counseling? 9 A. I don't think there is any evidence that any 10 treatment really works. I'm sorry. I don't know of 11 any controlled study that shows that transgenders who 12 are dysphoric have a lower rate of dysphoria given any 13 treatment. Any treatment. But since you are at a 14 psychiatrist, talk is there. It's certainly less than 15 \$50,000, of course you try to reduce there. Of course 16 you try to do anything to make them more comfortable, 17 reduce their anxiety, reduce their depression. In an 18 ideal world, they should be comfortable with their 19 body. Why not? 20 Q. Is there any research that supports the 21 efficacy of counseling someone to accept -- counseling 22 a transgender women to accept her male body? 23 A. No, it's not her male body, it's her female 24 body. She's a female, it's her body. 25 Q. Her body that she perceives and society	Page 121 1 carefully designed clinical trials, no. I don't know 2 of any that were done. I tried to find them. I was 3 surprised how little was done in psychiatric research. 4 Q. You are saying that there are no studies 5 supporting the efficacy of talk therapy to treat gender 6 dysphoria in a 45-year-old woman? 7 A. Transgender woman, though, right? 8 Q. Yes. 9 A. I don't know of any. There are studies that 10 suggest it. Did I find any rigorous scientific 11 studies? No. There may be some, but I didn't find 12 them. 13 Q. There are studies that suggest that talk 14 therapy is going to work for a 45-year-old transgender 15 woman to have her accept her body when she is gender 16 dysphoric with respect to her body? 17 A. Well, it depends on how severe her gender 18 dysphoria is. It's not about her perception of her 19 body. It's about her inability to function day-to-day. 20 Do we know that going to psychiatrics makes it more 21 able for people to function day-to-day? Yes, we know 22 that. Do we know it specifically for transgender? No, 23 but why in the world would their depression be 24 different -- treatment be different than any other 25 depression? There's something going on they're

31 (Pages 118 to 121)

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1 depressed about. The key is try to help them be less
2 depressed.

3 So do we know that psychiatrists have an
4 effect? Yes. It's very marginal, but we know they
5 have an effect with people with depression in general.
6 Is there a study in particular with transgenders? No,
7 because it would have to be advocates of transgenders,
8 these clinics that have enough patients to do these
9 studies, and they don't do the studies. I don't know
10 why they don't do the studies.

11 Q. I'm still not sure -- are you saying there is
12 a study or there isn't a study?

13 A. There are studies about treating depression.
14 I've seen references in transgender. Are there any
15 that would stand up to scientific scrutiny? I didn't
16 find any. It's a good question. I looked, but I
17 didn't find any.

18 Q. You mentioned earlier the study that you
19 thought should be done, and I want to see if I
20 understand that study. I believe that you said this
21 would be a study that would offer people with gender
22 dysphoria two options: They would have surgery or they
23 would go on a trip to Europe?

24 A. Well, an active control -- an active control
25 means you give them time and attention. I might have

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1 been facetious about a trip, but if you brought them in
2 for the equivalent time -- we want to know it is not
3 the time and the amount of money spent on them making
4 the difference. We want to know there is something
5 really in this treatment.

6 So you could have an active control of many
7 kinds, but an active control means you do something to
8 them. You give them maybe supportive psychiatric
9 therapy and measure the outcome. But the outcome can't
10 be how pleasant it is, how much they like their body.
11 It's got to be, are they functional? Are they
12 functional?

13 Q. So what would that study look like? I still
14 don't understand.

15 A. Well, I haven't tried to design the study.
16 There could be many different designs. But you could
17 certainly bring in transgender people and give them an
18 option of transgender surgery or talk therapy or
19 antidepressants and measure the percent that are
20 dysphoric in six months' time.

21 Q. And you think some people would choose talk
22 therapy who are severely gender dysphoric?

23 A. I think there are people who do choose
24 talk -- I didn't say severely. You keep tossing these
25 little adjectives and adverbs in, and you said

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1 "severely," and that is a matter for the clinician to
2 decide. But there are, there are people who don't want
3 to do genital surgery? Of course. It's a huge
4 undertaking, a huge process. And some of them will
5 go-- let them pick what they want, and have them go
6 through talk therapy. It's not a randomized trial, but
7 it would be a trial.

8 I'm going to have to step out a second. I'm
9 just not feeling well. I'm going to use the restroom.
10 Sorry.

11 (Recess taken.)

12 BY MR. KNIGHT:

13 Q. Can we try again?

14 A. Yes, sir.

15 Q. I'm trying to understand about the study, and
16 at one point you said we need a control group, and you
17 offered the control group might be a trip?

18 A. An active control, yes, sir.

19 Q. I'm sorry?

20 A. I didn't mean to interrupt you. An active
21 control versus a passive control.

22 Q. And what do you mean by "active control"?

23 A. An active control means we do something of
24 equivalent time and attention. So let's suppose we
25 bring in young people. I can use about the age that

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1 start hormone therapy, because they usually start in
2 their teens. And we start some on hormone therapy, and
3 we give the others just a very supportive environment
4 but no hormone therapy. And then we measure the
5 percent that have gender dysphoria.

6 Q. And you think that -- I want to talk about
7 adults, but you think that there are some adults with
8 what the clinicians would characterize as serious
9 dysphoria.

10 Do you understand what I mean by serious
11 dysphoria?

12 A. Yes, sir, I have a definition. You may have
13 a different one, but I have a definition.

14 Q. What is your definition for serious
15 dysphoria?

16 A. People who are seriously mentally ill. They
17 can be suicidal. They can be self-harming. I mean,
18 it's a very serious -- I put on the -- I mean, without
19 any parallel to the clinical, on a parallel with
20 anorexia, which we joke about, but it's probably one of
21 the most significant mental illnesses you can have.

22 So these people are dysphoric, and that's
23 their problem. And we're addressing their dysphoria by
24 changing their physical appearance. That might work,
25 but I'm surprised. I couldn't even get data on the

32 (Pages 122 to 125)

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1 percentage of transgenders that decline hormone
2 therapy, that decline surgery.

3 I also couldn't get any data on how many
4 transgenders are not dysphoric. Because I tell you my
5 experience with these clinics, and I read their
6 literature and stuff. If you come in and you are
7 transgender, they very much support that you're
8 dysphoric and try to get in treatment. They call it
9 "treatment to transition." And I don't want to see
10 treatment to transition. There is nothing people have
11 to transition. I want to see society be accepting of
12 these people as they are.

13 But if it causes them serious dysphoria, if
14 they're suicidal, of course that has to be treated one
15 way or the other. But I don't know what the best way
16 to treat them is. We have too little data.

17 Q. So you believe that if we change society,
18 there would not be any gender dysphoric people?

19 A. Well, the advocates believe that. They say
20 the problem is transgenders are fine except for the --
21 what do they call it? Social stigma. The social
22 stigma hypothesis and could reduce it greatly. Do I
23 think -- there are societies, primitive societies in
24 particular, where people are full spectrum, male to
25 female and all sort of things in between, they seem to

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1 function perfectly fine. Why not accept these people?
2 They're our brothers and sisters.

3 Q. I am not asking you about the advocates. I'm
4 asking you, do you believe that if we change society,
5 there would be no need for treatment of gender
6 dysphoric people?

7 A. No. I believe it would seriously reduce the
8 amount of gender dysphoria, but I don't think it -- I
9 mean, it would be nice if it were true, that there
10 would be no need for treatment, but I would be a little
11 surprised at that. I'd be very surprised.

12 Q. So the study involving active therapy would
13 involve a -- I just want to ask it. So the study you
14 are designing, you believe that a seriously gender
15 dysphoric adult would, given a choice between talk
16 therapy and hormone therapy or surgery, would choose
17 talk therapy?

18 A. Well, look at your own statistics of the
19 people like Schechter. They say 50 percent of the
20 people would eventually choose -- I don't remember the
21 exact statistic -- choose surgery, and some percent
22 would choose hormone therapy. That means there's a
23 huge percent that don't choose either. Yes, I think
24 they should be accepted. Why not?

25 Q. I didn't ask about Dr. Schechter. I asked

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1 you about your opinion.

2 A. Of what now?

3 Q. Do you believe that for a seriously gender
4 dysphoria adult, that some of those individuals would
5 choose talk therapy rather than hormone therapy or
6 surgery?

7 A. There is no choice, because when you have
8 hormone therapy and surgery you get talk therapy.
9 People talk to you consistently in an affirmative
10 environment. That is what these gender clinics are
11 about. You get surgery but no therapy?

12 Q. I'm asking you about your controlled study.
13 And I believe you said the controlled study would
14 involve seriously dysphoric adults given --

15 A. I never said that. I never said seriously
16 dysphoric. I never used the word seriously.

17 Q. All right. I'm asking you about a controlled
18 study.

19 A. Okay.

20 Q. Let's say we have a controlled study in which
21 we offer these seriously dysphoric adults a choice
22 between talk therapy, hormone therapy only, and hormone
23 therapy and surgery.

24 Is that the kind of study you're talking
25 about?

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1 A. Well, I'm not an expert in the field to
2 design the study, but that's the general idea. Some
3 study -- statistics isn't about whether something works
4 or not. It's about how it works compared to something
5 else. I need a comparison group. What is my
6 comparison group?

7 But there is self-selection. I've seen the
8 Hopkins statistics. A large percent don't select any
9 hormone therapy or surgery. Let's look at them versus
10 the other and see how they deal with it. The important
11 point is to reduce the distress.

12 Q. Are you saying you are not an expert in
13 designing a study to treat with respect to gender
14 dysphoria?

15 A. I'd say there are two kinds of expert.
16 There's an expert on study design, I am. And then
17 there's an expert on the clinical side of gender
18 dysphoria, which I'm not. But it has to be together.

19 Q. I'm asking you about the study. The study,
20 what is the study that you believe would be sufficient
21 to show that hormone therapy and surgery are effective
22 treatment in contrast with talk therapy?

23 A. That's a great question. There are books
24 written about clinical trials in psychiatry. If you
25 read any of those books, it will tell you exactly how

33 (Pages 126 to 129)

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1 to set those studies up. What the control group -- I'd 2 have to estimate the means, the difference in the 3 means, the standard deviations to figure out what the 4 sample size is, what the idea control is. That's part 5 of the art of studying design. But you'd need an 6 expert in the clinical part, and I'm not an expert in 7 the clinical part. 8 Q. So you are saying without an expert in the 9 clinical treatment of gender dysphoria, you would not 10 be able to design the study to decide whether or not 11 hormone therapy or surgery is more effective than talk 12 therapy? 13 A. It's beautifully said. I envision a table. 14 Schechter is there. Bailey who is an advocate is 15 there. You are there. Someone on design is there. A 16 clinical psychiatrist. And we decide to resolve this 17 by having a definitive multi-site clinical study. I 18 would be -- I would just -- I would donate my time. 19 Q. Can you answer my question? 20 A. Sure. 21 Q. Are you telling me that without a clinician 22 in the treatment, who is an expert in treating gender 23 dysphoria, you yourself are not qualified to create a 24 study of the sort that you think should happen? 25 A. I can design a study. I can't run a study.	1 answer to whether or not this is safe and effective. 2 Yes, would that be wonderful. 3 Q. But you could not do this by yourself, 4 because you would need to work with clinicians; is that 5 what you are saying? You could not design this 6 control -- this perfect study that you think does not 7 exist? 8 A. You generate a hypothesis. You have some 9 conjuncture. You generate hypotheses, you design the 10 study, you run the study and analyze the study and make 11 inferences. I can do every step of that but run the 12 study. I don't run the study. And do I think you have 13 to be an expert? Yes. You'd have to be a 14 psychiatrist, an endocrinologist, and probably a 15 surgeon to be in there to understand it. 16 Q. And would you have to be any psychiatrist, or 17 a psychiatric who is an expert in treating people with 18 gender dysphoria? 19 A. That's a good question. I don't know -- I 20 mean, I'd want it to be someone that's a sceptic. If 21 they're in the bandwagon where every transgender needs 22 \$50,000 worth of surgery, I probably wouldn't want 23 them. I'd want some independent thinkers. 24 The reason I say that is clinicians are 25 usually advocates. I've never met a plastic surgeon
Page 131	Page 133
1 I'm not a clinician. I don't know what you are saying. 2 Clinicians run studies. How could I run a study? 3 Q. I'm asking you, how could you design -- can 4 you, are you qualified to design a study of the sort we 5 have been talking about -- 6 A. I have designed hundreds of studies. 7 Q. -- which would compare the efficacy of 8 hormone therapy and surgery to talk therapy? 9 A. You're almost like you're asking Schechter if 10 he can do surgery. You're talking about my whole life. 11 This is what I've done for 45 years. Yes, I could 12 design that study. Do I need clinical people to run 13 that study? Yes. 14 Q. And what would that study look like? 15 A. I don't know, because I have to see more of 16 the data. The first thing I'd want to do is get 17 preliminary data from these sites, which won't share 18 their data on that. I would like to see preliminary 19 data on the percent of dysphoric, the different 20 modalities that are used, and then we could come up with 21 a design that everybody would embrace. 22 And just like with women's hormone therapy; 23 just like whether or not -- I worked on giving SSRIs to 24 pregnant women, Paxil in particular; just like I worked 25 on the various nasal sprays, you would get a definitive	1 that was not an advocate for plastic surgery. But if 2 they're a good academic, sure, why not? Why don't we 3 resolve this question once and for all, and get people 4 to care. 5 Q. So what is it about the study? It's a -- 6 what is the study that we -- I'm still not 7 understanding. What is the study we need? You're 8 saying it's -- at one point you said I can't design a 9 study because I don't have the data from studies that 10 are already done? 11 Did I understand that correctly? 12 A. I need preliminary data. I don't know the 13 level of dysphoria of people going into a gender 14 identity clinic. I have no data that is published 15 other than on people who are advocates that claim, you 16 know, everything is the great panacea or people like 17 Paul McHugh's clinic who wouldn't look at evidence no 18 matter what. I want to be in the middle. I want to 19 look at what the study would be. 20 Q. I'm sorry. I'm sorry. I didn't understand 21 what you said about Paul McHugh? 22 A. Well, Paul McHugh would have extreme 23 opinions, some -- I like Paul. I don't mean to pick on 24 Paul -- have extreme views. Some people have the view 25 that transgender is against the will of God, you know.

34 (Pages 130 to 133)

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1 I don't know where they're coming from.

2 Q. Which is Paul McHugh's view?

3 A. Well, I don't know. He's made some extreme
4 statements about tran- -- I mean, I read a statement
5 about gender pretenders or something like that, an
6 analogy to -- to body dysmorphic disorder. And kind
7 of -- I believe he might even have said that
8 transgenders are mentally ill. Don't quote me on that,
9 but I believe he has. I find that very bothersome.
10 Very bothersome.

11 Q. The --

12 A. I'm kind of betwixt and between on some of
13 these issues I don't understand more deeply.

14 (Exhibit 5 was marked for identification.)

15 BY MR. KNIGHT:

16 Q. I'm showing you what has been marked as
17 Exhibit 5. Can you identify this document?

18 A. It appears to be the report that I published
19 with Dr. McHugh in the New Atlantis on sexuality and
20 gender findings for the biological, psychological, and
21 social sciences.

22 Q. And you would agree this is not a
23 peer-reviewed journal this is published in?

24 A. It is not a peer-reviewed journal, correct,
25 sir.

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1 Q. And aren't peer review journals the gold
2 standard in that terms of deciding what kind of -- in
3 science in general?

4 A. Yes, sir.

5 Q. And this is copublished by the Ethics and
6 Public Policy Center.

7 Do you understand that?

8 A. No, sir, but I'll take your word for it.

9 Q. Do you have any affiliations with that group?

10 A. Who is it?

11 Q. The Ethics and Public Policy Center.

12 A. Never heard of it.

13 Q. Do you understand that the EPPC is dedicated
14 to applying the Judeo-Christian moral tradition to
15 critical issues of public policy?

16 A. I've never heard of it, so I can't tell what
17 their policy is.

18 Q. You weren't aware of that when you wrote this
19 article?

20 A. I've never heard of the group. You just said
21 it's their motto or something? I don't know the group.
22 You asked me if I was aware of the motto of a group I
23 never heard of. I don't mind been tarred by a broad
24 brush because of the people that support this kind of
25 activity, but I did my best at honest scholarship.

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1 Q. I believe you said elsewhere that this paper
2 did not draw any policy or practice conclusions; is
3 that right? Do you recall that?

4 A. That this monograph -- we're talking about
5 the big monograph --

6 Q. Right.

7 A. Well, it depends on how you would interpret
8 policy inclusions. I tried not to make it
9 prescriptive -- or proscriptive. Very proud of this
10 report, I might add, just because I worked so hard on
11 it.

12 Q. And as I understand it, this article
13 addresses three different topics. First, it talks
14 about sexual orientation, and challenges the position
15 that sexual orientation is fixed; is that right?

16 A. That you're born with it. Yes, that you're
17 born with and it's fixed, yes, sir.

18 Q. In fact, it argues that sexual orientation
19 can be quite fluid; is that right?

20 A. Yes, sir.

21 Q. And it also takes the position that
22 nonheterosexual and transgender persons are at higher
23 risk of mental health problems.

24 A. That's from the advocates own literature.
25 Even Schechter has written about that. At some place

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1 he said they have a lifetime suicide rate of
2 80 percent.

3 Q. I wasn't asking about the advocates, I was
4 asking about you. Is that the position that this took?

5 A. I'm not an advocate. I'm not an advocate.

6 Q. So you didn't take the position that
7 nonheterosexual and transgender persons are at higher
8 risk of mental health problems?

9 A. No, they are. We know that to be a fact.
10 I'm saying both sides, everyone has written about that
11 fact. That is why we are here, because it's urgent.
12 It's urgent that we do something for these poor people.

13 Q. And then it finally talks about transgender
14 persons and it challenges the position that gender
15 identity is fixed; is that right?

16 A. That you're born with a gender identity. I'm
17 not sure what you mean by "fixed." Gender identity is
18 fixed. Children grow up and they're curious about
19 their gender identity, so they often identify with
20 being a little girl, and later with a little boy. They
21 play with different genders. So I don't know what you
22 mean by fixed. Gender identity, the struggle for
23 gender identity is a fluid struggle when children are
24 growing up.

25 Q. And, again, I'm talking about adults --

35 (Pages 134 to 137)

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1 A. Because a developmental course run starts -- 2 I don't mean to interrupt you, but it starts when 3 they're children. You have to talk about the 4 development. Forget about adults. Adults got there by 5 being children. 6 Q. And so you're saying that -- are you 7 suggesting that a transgender woman is a woman because 8 of her child raising? 9 A. A transgender woman is a woman in gender 10 because she has a long-term consistent, insistent, 11 persistent deeply held view that she identifies with 12 the opposite sex. That is the definition. 13 Q. And do you believe that her identity is fixed 14 or changeable and flexible? 15 A. Well, I think as you grow older, it's less 16 and less flexible. Do I see a large number of 17 transgenders converting back to their -- the gender 18 identity consistent with their sex? No, I would be 19 surprised at that. I'm sure there are some. And 20 actually, there's some cases been written about, but I 21 wouldn't assume. We're doing too much by the exception 22 and not enough by the bulk of the rule. I would say it 23 is very rare. 24 Q. The other thing this article talks about is 25 challenging the position that surgery and hormones are	1 Q. You agree that that's right? 2 A. Yes sir. 3 Q. So looking at page 106, the first section 4 here talks about interventions in children. 5 A. Yes, sir. 6 Q. Are you relying on that to support your 7 positions about treatment of adults? 8 A. Well, let me see. Before I did dementia 9 work, I worked on child development. That was my first 10 thing at Johns Hopkins, whether early interventions 11 could make a difference. So I see human beings, not in 12 a clinical setting of child, adolescent, adult, but 13 it's a continual process of development. And I'm 14 interested in that process of development. So it's 15 hard for me to make a distinction between children and 16 adults, because all adults were children at one time. 17 But if you're saying is this research focused 18 more on children, absolutely. I'm much more concerned 19 about children. The whole reason I did this paper was 20 to write about children, quite frankly. 21 Q. On page 108 you start -- the section then 22 starts talking about therapeutic interventions in 23 adults. 24 A. Um-hmm. 25 Q. And there, at least as far as I can see, you
Page 139	Page 141
1 effective at treating gender dysphoria; is that right? 2 A. Yes, sir. 3 Q. And I believe that the article, the part of 4 this which you cited in your report here, is at pages 5 106 to 113 of this paper; is that right? 6 A. I don't know what you are asking me. 7 Q. I'm asking whether that's the portion that 8 talks about -- well, is that the portion that you 9 relied on for -- to support your positions in this 10 case? 11 A. This is my own work. I relied on everything 12 in my own work. You only ask me whether I relied on 13 someone else's work. I relied on all of this. This is 14 all in my brain. 15 Q. Well, let's look at Exhibit 1 again. 16 A. Okay. 17 Q. And on page 7 of Exhibit 1. 18 A. Okay. 19 Q. You reference specifically pages 106 to 113 20 of your sexually and gender publication? 21 A. Um-hmm. 22 Q. So that's why I'm asking you whether that is 23 the portion that you are citing as supportive of your 24 opinions in this case. 25 A. Yes.	1 are pointing to three studies, a -- sorry -- a 1979 2 study by Meyer and Reter? 3 A. Um-hmm. 4 Q. A second study by Cecilia Dhejne, I guess. 5 A. Um-hmm. 6 Q. And then a Kuhn study on -- from 2009, which 7 was cited on page 111. 8 So those are the three studies I see cited in 9 this section. Am I missing something in terms of 10 studies that you are relying on? 11 A. Well, there was the Murad and colleagues, 12 their systematic review. 13 Q. Okay, literature review. 14 A. Yes. I reviewed 1000 papers, which you can 15 have. I mean, the bibliography is out, you can see. 16 But these were not intended to be exhaustive, they were 17 intended to be suggestive. 18 Q. And then you also relied on a journal article 19 in The Guardian? 20 A. Yes, sir. 21 Q. Now, why would you rely on an article in a 22 newspaper to support your views? 23 A. Let me say something. I'm an academic, so 24 when I cite things, I'm not regurgitating what other 25 people said. These are my opinions, and to support my

36 (Pages 138 to 141)

1 opinions or elaborate my opinions, I often cite
2 something that I find of interest. I'm not citing any
3 of these as being the end-all and be-all of my opinion.

4 It's to give an example of what other people
5 are out there doing. So I think it's perfectly fine --
6 I notice in the early part of this I cited the work of
7 feminists and things like that. We're all over the
8 map. Also, it's a popular text and all that. That's
9 what you do. If you mean did my conclusions fall from
10 a Guardian newspaper, of course they didn't.

11 Q. So the Meyer/Reter article you admit is a
12 study of only 35 people and has important limitations?

13 A. Absolutely.

14 Q. And the Dhejne article also, you agree, does
15 not address the effectiveness of sex reassignment as
16 treatment for transsexualism?

17 A. That is correct.

18 Q. And you believe that -- and, in fact, that
19 study says -- I believe that maybe you said, and
20 certainly the study says that things might have been
21 even worse without sex reassignment.

22 A. Yes, sir.

23 Q. Similar to the Kuhn study compares patients
24 who completed gender surgery with cisgender women, and
25 says nothing about the effectiveness of gender

1 confirmation surgery, right?

2 A. Right.

3 Q. Because it doesn't compare patients with
4 gender dysphoria to -- patients who got treatment to
5 those who didn't get treatment; is that right?

6 A. Yes, sir.

7 Q. And you understand that the Murad article
8 concludes that gender reassignment with the use of
9 hormone therapies was associated or were associated
10 with improvements in gender dysphoria, psychological
11 functioning, and co-morbidities, lower suicide rates,
12 higher sexual satisfaction, and overall improvement in
13 quality of life.

14 You understand that is true?

15 A. Um-hmm. In fact, I say on the top of 110,
16 "Compared to their condition before surgery,
17 individuals who have undergone surgery appear to show
18 improvement in the well-being, though the results have
19 a fairly low level of statistical significance. But
20 individuals who had no surgery went on to display a
21 significant improvement follow-up."

22 But there were statistical difference between
23 the groups. Even if there were, we're splitting hairs
24 at the 05 level. If this stuff is great and really
25 cures dysphoria, then the signal to noise ratio should

1 be terrific and we'd be able to demonstrate that.

2 Where is the definitive demonstration for all
3 the money we spend on hormone therapy, and particularly
4 on surgery, where's the definitive study that shows it
5 works.

6 Q. And how much money do you think we are
7 spending on hormone therapy and surgery?

8 A. Well, I've seen estimates that complete
9 surgeries can be in the 50- to \$100,000 range.

10 When you say "we", you personally, or who do
11 you mean?

12 Q. Well, I'm talking about costs on a general
13 level?

14 A. Well, I'm not an expert in cost, but we know
15 that plastic surgery is extremely expensive. I've seen
16 estimates that, going all the way with whatever that
17 means, can be 50- to \$100,000. Well, suppose there are
18 10,000 transgender people wanting that surgery.
19 Obviously, could be huge expense. And we do have
20 estimates of how much you spent on plastic surgery,
21 Joe.

22 Q. And we also have estimates about what a small
23 population this is, don't we?

24 A. Absolutely.

25 Q. So the overall cost, ultimately, is quite

1 small.

2 A. Well, but the problem with the overall cost
3 is you still have to argument on equity, and I would
4 assume the ACLU would be a real bear on equity. The
5 why are we giving this treatment to a transgender
6 person. But to her sister, we're not giving any
7 treatment when they virtually look identical. What
8 does being transgender have to do with being
9 unsatisfied with your appearance?

10 Brother and sister almost identical and he
11 becomes a transgender girl. She is a girl and she's
12 not entitled to surgery, but he's entitled to surgery
13 because he's a girl. Doesn't make any sense to me. I
14 would argue they're both entitled to surgery, I guess.

15 Q. And you are saying that -- that -- so you are
16 saying that even though an individual has clinically
17 significant distress because of the dysphoria about
18 their incongruence, that that is exactly the same as a
19 nontransgender person who expresses some feelings of
20 distress with respect to their body; is that what you
21 are saying?

22 A. No, I'm not saying that, but that is
23 interesting you said that. Could you interview these
24 people -- take a cisgender woman and a transgender
25 woman, interview them, and get the exact same responses

1 about how they feel about their looks. Of course, you
2 could. Is one more deserving than the other? Well,
3 let's go to the idea of -- are we agreed -- what's it
4 called? Confirming? Are we confirming, were they
5 something at birth other than what their biology was?
6 Well, what is it that they are at birth that we are
7 reconstructing or reconfirming? I don't understand it.
8 I'm not criticizing. I just can't get my head around
9 it.

10 Q. So, again, are you saying that an individual
11 with gender dysphoria who has serious dysphoria about
12 the -- their body, focused on their body, is the same
13 as a nontransgender person who says that they have
14 distress with respect to their body?

15 A. I don't know if they're the same. But if
16 what -- distressed is a general word. If you mean
17 depressed, can I find 45-year-old women who are
18 depressed about their looks just as much as 45-year-old
19 transgender women? Absolutely. What does being
20 transgender have to do with this distress? I'm just
21 missing it.

22 Q. So you're saying that, in an adult, that you
23 believe that there is a -- that it's the same to -- if
24 we have two women, one who is gender dysphoric about
25 her body, and a cisgender woman who has, let's say,

1 diagnosable depression with respect to her body.
2 You're saying they're both the same?

3 A. No. I don't know what you mean by "the
4 same." No two patients are the same. When you say
5 "distress," distress is not a diagnosis. Dysphoria is
6 a whole spectrum. What does she have? Is she
7 depressed, for example? Is the depression similar to
8 depression of cisgender women? I don't know. We
9 haven't even studied that. I would love to know --
10 it's a real good question.

11 Is the depression of a transgender woman more
12 resistant to treatment like antidepressant than the
13 depression associated with a cisgender woman who is
14 unhappy with her looks. I think it's a beautiful
15 research question. I don't know of anyone that has
16 done the research. It's a beautiful question.

17 Q. So again, are you suggesting that an
18 individual with gender dysphoria who has distress about
19 their body is the same as an individual without gender
20 dysphoria but clinical depression in terms of their
21 need for surgical treatment?

22 MR. KILPATRICK: Objection; asked and
23 answered.

24 THE WITNESS: You keep asking the same
25 question.

1 MR. KNIGHT: You haven't answered my
2 question. I'm just trying to get an answer to my
3 question.

4 BY MR. KNIGHT:

5 Q. You didn't answer my question.

6 A. I did answer your question.

7 Q. You didn't answer my question?

8 A. I said they're not the same. No two patients
9 are the same. I don't know what you mean, by are they
10 the same. It seems like we get this surgery we're very
11 precise about surgery, but when we get to the mind and
12 psychiatry, we are often vague about distress and this
13 sort of thing. If she's transgender and bipolar, does
14 she act like a bipolar? Yes. Why wouldn't you expect
15 her to. I don't get it. But I do get tired of
16 answering the same question over and over again. I
17 have to admit, it's very rare. I'm usually both
18 precise and concise, and I'll try to be better.

19 Q. So the other document you cite as support for
20 your opinions in Exhibit 1, is this 2016 decision memo,
21 the Centers for Medicare and Medicaid Services.

22 A. Yes, sir.

23 Q. But you understand that that memo stated that
24 gender reassignment surgery may be reasonable and
25 necessary service for certain beneficiaries with gender

1 dysphoria?

2 A. Yes, sir.

3 Q. And it indicated that it was not --

4 A. Can I clarify that one thing? I think it was
5 Dr. -- I'm sorry. I'm bad with names. Schechter --
6 not Schechter. Schechter comments that this memo that
7 I read was part of a longer discussion, you know what I
8 mean? And I just saw this memo, and I saw that
9 basically what I thought it was saying is that there
10 shouldn't be a blanket rule, but that, for some people,
11 this was a good choice. Isn't that what it says? I
12 think that's what it says.

13 Q. Well, it says it's reasonable and necessary.

14 A. Yes.

15 Q. And you agree that that's what it says?

16 A. Yes, sir, for some people I imagine it would
17 be, yes, sir.

18 Q. And you are aware that in 2014, a
19 adjudicative board from the Department of Health and
20 Human Services concluded that surgical care to treat
21 gender dysphoria is safe, effective, and not
22 experimental, and, thus, at such time, struck down the
23 exclusion for such care?

24 A. I don't know about that. What I do know is
25 when I saw this document, I saw Schechter refer to

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1 other documents. So I went to the documents, and there
2 was a lot of stuff I don't understand, but what I was
3 trying to use this for is to say it's an open issue,
4 but certainly there are some cases in which it is
5 called for. If I knew it was part of a longer process,
6 I wouldn't have cited it unless I had access to the
7 longer process. And then I wouldn't have cited it
8 because it's too complicated and too political.

9 THE WITNESS: I have to step out again. I'm
10 sorry. Be right back.

11 (Recess taken.)

12 (Exhibit 6 was marked for identification.)

13 BY MR. KNIGHT:

14 Q. Have you seen -- Dr. Mayer, have you seen
15 this document before?

16 A. It does not look familiar to me, no, sir.

17 Q. Well, this is the Department of Health and
18 Human Services, Departmental Appeals Board, Decision
19 With Respect to Transsexual Surgery. And I would
20 direct you to page 20.

21 A. Okay. Page 20, yes, sir.

22 Q. So at the end of that first paragraph --

23 A. First new paragraph or original -- oh, that
24 is the original paragraph. Go ahead.

25 Q. The decision says that there -- "that

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1 indicates a consensus among researchers and mainstream
2 medical organizations that transsexual surgery is an
3 effective, safe, and medically necessary treatment for
4 transsexualism."

5 Do you see where I'm reading?

6 A. No, sir. I'm trying. It says it explains
7 general acceptance -- page 20, right?

8 Q. Page 20. And it starts "regardless of
9 whether the new evidence here meets."

10 A. Okay. "Set forth in the guidance says
11 clearly, does not assert -- means the second option --
12 well, the problem with this, of course, and this
13 bothers me a great deal. Why there is any treatment
14 for transsexualism. How can you remove transsexualism
15 as a disorder and then talk about treatment for it? I
16 just don't understand. I never will. Maybe you can
17 explain it, why a transgender person needs treatment.
18 Why aren't they healthy as a transgender person? Why
19 isn't society doing everything to support them in their
20 choice?

21 Q. So you believe transgender people don't need
22 treatment?

23 A. I believe it's not -- you can't treat a
24 nondisorder. What's the disorder that they have?

25 Q. Gender dysphoria.

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1 A. Then they get treated for gender dysphoria.
2 Does every transgender have gender dysphoria? Because
3 that's bothering me if you say yes. Because I can tell
4 you I've met some very well-adjusted transgenders. The
5 two women that my student has as patients are both
6 physicians, and they're both well-adjusted. What do
7 they need treatment for? It's a little insincere to
8 work so hard to get it off -- just like being gay --
9 get it off the list of diagnoses, and then to spend our
10 time treating it. Why are we treating someone if it's
11 not an illness?

12 Q. The two woman you are talking about in terms
13 of -- this is the student you were talking about
14 earlier?

15 A. Yes, sir.

16 Q. And are the people she's treating being
17 treated through surgery or hormone therapy?

18 A. I said, I've not kept up with it so I don't
19 know. I should have gone back and checked, but I don't
20 know. By the way, there are two students, just so you
21 know. I didn't want to mention the other, because the
22 other's married to a transsexual. I don't want to go
23 into that -- and I'm sorry. Transgender. Her husband
24 has become transgender, and she's living with her
25 husband. She's living with her former husband in a

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1 relationship, but --

2 Oh, I'm sorry. I'm sorry. You asked me
3 about the two patients. He's undergone complete
4 surgery, I know for sure. I don't know about the two
5 patients.

6 Q. But I believe you said earlier that you did
7 not provide supervision or advice about the treatment
8 for those, for your students' patients; is that right?

9 A. I would never -- you've got to be careful.
10 When you say "treatment," I can talk about the general
11 efficacy, but you're talking about specifics. I didn't
12 give any recommendation. I would never. I never open
13 my mouth at these clinical rounds.

14 Q. In terms of which treatment should be -- or
15 whether treatment should be provided. You don't enter
16 into those discussions?

17 A. I don't believe I'm qualified. I think part
18 of being a good expert -- maybe you talk to Professor
19 Budge -- is knowing what you're qualified to do.

20 Q. I don't understand. What is it you're saying
21 about Dr. Budge?

22 A. Well, Dr. Budge talks about things being
23 medically necessary and not. In most states, to opine
24 on what's medically necessary or not, you have to be a
25 physician. She's a counseling psychologist.

39 (Pages 150 to 153)

1 Q. Based on what?

2 A. In California, it's based on the law. To
3 give a medical opinion in California, you must be a
4 licensed physician or an allied medical professional.
5 She's a counseling psychologist, so she can give
6 psychological opinions. Can she tell me a patient can
7 benefit physically from surgery? I wouldn't be
8 arrogant enough to, and I'm a physician.

9 Q. So you're saying she's arrogant because she
10 is making -- or has opinions about the kind of
11 treatment that would be appropriate to treat the
12 condition of gender dysphoria for these individuals?

13 A. Well, first of all, I said things she's said
14 would be arrogant or if I said it, it would be
15 arrogant. I don't know anything about her. I don't
16 want to say that. But does she go far afield from her
17 expertise as a counseling psychologist, I would say so.
18 You can go right through it. Her theory of sex and
19 gender, these things.

20 I mean, I give her a break because she's a
21 social scientist, but these are off the wall. The idea
22 that you're born with a gender. That somehow your sex
23 is based on your gender. These statements are so
24 ridiculous, I don't even know what the statements mean.
25 How is your sex based on your gender?

1 Q. So you're saying the only people who can
2 decide -- who can work with a gender dysphoric
3 individual to decide what is necessary treatment for
4 them would be a physician? Is that what you're saying?

5 A. I would say the only person to decide for a
6 specific patient ought to at least be a physician if
7 not several physicians, yes.

8 A clinical physician, now, I'm talking about.
9 Who in the world now should decide -- I mean, where do
10 we have -- if you have tonsillitis, does a psychologist
11 tell you to get your tonsils out? I hope not.

12 By the way, tonsillitis is another example.
13 AMA took out millions of tonsils in this country when
14 no tonsils virtually were taken out in Europe. And we
15 did it so we wouldn't have recurrent sore throats. And
16 we quit taking tonsils out, there was no increase in
17 sore throats. Nobody has their tonsils out. When I
18 was a boy, 100 percent had their tonsils out. Isn't
19 that amazing?

20 You have your tonsils. I know you do.
21 You're too young to have them out. He doesn't have his
22 tonsils.

23 The best definition of sex is based on
24 gender. Gender somehow predates sex. I don't want to
25 be too critical, because I don't even know what the

1 statements mean to be critical of. Maybe it's from
2 dianetics or something.

3 Q. So I want to be clear, you are not making or
4 offering opinions with respect to Dr. Budge's diagnosis
5 of Ms. Boyden and Ms. Andrews with gender dysphoria; is
6 that right?

7 A. I would have criticism because she came in
8 this already loaded and it was clear she's not an
9 unbiased observer. I would if someone did that kind of
10 an independent medical exam. Is she a treating -- I
11 got mixed up, because if she's a treating person
12 advocate, then she's not an independent expert. I
13 couldn't figure it out. If she's an independent
14 expert, first of all, I think she interviewed him for
15 90 minutes. That's certainly inadequate to determine
16 whether anybody has major depressive disorder or any of
17 these other disorders.

18 And so did she already feel that her
19 conclusions were justified? I don't know. It was
20 clear to me that she was not an independent medical
21 examiner, that's for sure.

22 Q. You weren't asked to look at her opinions
23 with respect to Ms. Boyden and Ms. Andrews, were you?

24 A. Yes, sir.

25 Q. You were asked to look at that?

1 A. I don't know what you mean by "asked." They
2 were in the report I read, yes, sir.

3 Q. And so you believe that she is wrong in
4 diagnosing these two individuals with gender dysphoria?

5 A. I can't tell you that, because I can't
6 diagnose and know what the correct diagnosis is. But
7 the kid selling pencils in the corner could be right.
8 I'm suggesting she has minimal credentials to be saying
9 any of these things. Her understanding of biology is
10 so poor it reflects badly on all of her statements.
11 She's as weak an expert as I have seen in 40 years.
12 I'm sorry to say that, but I'm surprised you used her.

13 Q. Do you have any basis for disputing her with
14 respect to the gender dysphoria of Ms. Boyden and
15 Ms. Andrews?

16 A. I don't dispute. I said she doesn't have the
17 qualifications to be rendering a medical opinion. I
18 don't have any statement about what opinions she gave.
19 Whether she was right or wrong, I'm not a clinician.
20 You keep going back to this. I'm know a clinician.

21 Q. And because you're not a clinician, you don't
22 have any opinions about whether or not hormone therapy
23 or surgical treatment is the appropriate treatment for
24 them; is that right?

25 A. Well, let's go again. If we go to general

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1 causation of what the data says, I can tell you, the
2 individual causation about this specific patient. I
3 have nothing to say about that patient. Now, they can
4 be the two most deserving -- I think they're both
5 women. They can be the two most deserving women in the
6 world.

7 By the way, I'm not even saying -- I'm going
8 to make this clear, go on the record. I'm not even
9 saying it is inappropriate for these women. I'm not
10 saying it is inappropriate for these women.

11 Q. You are saying it shouldn't be -- there
12 should not be insurance coverage for it, is that what
13 you are saying?

14 A. No. I would never say that. I don't know
15 enough about insurance coverage. In the best of all
16 worlds, I believe these woman would be given treatment,
17 and I believe that a woman who feels she's losing her
18 husband because her face looks like a man should be
19 given treatment too.

20 I believe in improving the quality of life
21 through treatment, including surgery. But I want
22 evidence that it actually increases the quality of
23 life. In a way it does remind me of body dysmorphic.
24 In any suggestion of change in eating patterns among
25 anorexics is just so -- I mean, body confirmation is so

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1 crazy, because what you have to do is get to the
2 distress. Can you imagine how distressed these people
3 are?

4 Q. Do you have any other version of your vitae
5 other than the one you provided us?

6 A. I've updated over the years, and I've changed
7 my -- I've stayed for another year, and I formally
8 removed myself from teaching in 2017, I tried to redo
9 it. So I have earlier versions. Do you mean do I keep
10 a second version for something? Is that -- I'm sorry I
11 don't know the question. I have old versions. Is that
12 what you mean?

13 Q. I'm asking if you have a separate version
14 that you use for other purposes?

15 A. No, sir. Should I? I don't know.

16 Q. Do you have any religious beliefs about being
17 transgender or transition?

18 A. I'm sorry. I don't know what you are saying.
19 Religious beliefs.

20 Q. Do you have any religious beliefs about --
21 that relate to the medical treatment for transgender
22 people?

23 A. Would that be like a moral -- I'm not sure
24 what religious belief -- is that a moral or ethical
25 belief? You mean like a moral belief?

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1 Q. Correct.

2 A. It's immoral?

3 Q. That it's immoral to provide this kind of
4 treatment, or that it violates your religious beliefs.

5 A. Not at all. To the contrary. I admire what
6 these people are doing. They are alleviating
7 suffering.

8 Q. I'm sorry. You admire what people who treat
9 gender discrimination are doing?

10 A. Yes. Yes. They are trying their best. I
11 believe they are honest at what they are doing, and are
12 trying their best with a very difficult problem. And I
13 do think when you are too close to the problem, you
14 often lose sight of the broader thing. We still hold
15 babies up by the feet and spank their little butts.
16 Terrible for the baby. Terrible for the baby.

17 And, by the way, in case you're not old
18 enough, women were told to stay in bed the last three
19 months of their pregnancy and two months after they
20 delivered. Horrible advice. Oh, and you were told to
21 gain weight during pregnancy. You had to gain at least
22 20 pounds for a healthy pregnancy, none of that is
23 true. So I don't follow the AMA. Hopefully I lead the
24 people making those decisions.

25 Q. I'm sorry, hopefully you lead the people

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1 making those decisions?

2 A. Yeah. People making clinical decisions. I
3 said, half of my consulting is not in cases. Half of
4 my consulting is with other physicians and others in
5 terms of interpreting research results. So people that
6 do research, as you know, are on the cutting edge of
7 medical treatment. But we're not treaters.

8 Q. So you talked earlier about -- and I believe
9 you said in your report -- as I understood it, you were
10 comparing surgery to treat gender dysphoria with
11 surgery to treat anorexia.

12 Did I understand that correctly?

13 A. I'm sorry, you said compare them?

14 Q. Yes.

15 A. Well, no, there are some similarities in the
16 way that we -- in the suggestions for treating them,
17 but they're completely different. No, they are not
18 related at all, the disorders. I think it is people
19 like Paul McHugh have made that claim. I don't
20 think -- I don't know what it is based on. I don't
21 think it's very helpful.

22 Q. And what about body dysmorphia disorder do
23 you understand that body dysmorphia disorder is very
24 different from gender dysphoria?

25 A. You know it's -- I don't know what the metric

41 (Pages 158 to 161)

1 is. They're very different and very similar, and they
2 present different, they have different risks. I guess
3 you would have to tell me what you see is the
4 commonality. I don't see any commonality between them.
5 I think there is a use of that to be dismissive. Do
6 you want to hear what that is? I don't subscribe to
7 it, but I think you can be dismissive.

8 Q. I'm sorry. Use of what? Of the comparison?

9 A. Of the analogy, yes, sir.

10 Q. And what use is that?

11 A. Well, the use is that in body dysmorphic
12 disorder, people have a misperception of their body. I
13 might add, parenthetically, you think it's only for
14 women. I had a guy come in, he had body dysmorphic
15 disorder because he was a 90-pound weakling, and
16 weighed 250 pounds. And he thought it was exactly the
17 reverse of that.

18 But the idea -- the commonality is we don't
19 alter their body to change their misperceptions. We
20 try to change their misperceptions. So you could be
21 dismissive of gender dysphoria by saying it's just a
22 misperception of their body, and we have to correct
23 that misperception. I think that's --

24 Q. You think that's wrong? You disagree with
25 that?

1 A. I disagree with it absolutely. They're both
2 very serious conditions, very serious conditions. But
3 the idea of an anorexic, trying to get her to gain
4 weight or lose it or whatever. These people are
5 suffering, suffering.

6 Q. Well, but I guess I'm having some difficulty
7 understanding where -- why you find those different.
8 Because at times you seem to suggest that surgical
9 treatment should not be provided for gender dysphoria
10 patients.

11 A. I've never said that.

12 Q. You're not saying that?

13 A. Absolutely not. I have no basis to say that.
14 I have no -- I think it's wrong, and there is no more
15 evidence for that than there is evidence that it is a
16 good thing to use.

17 There are too many people involved in it for
18 it to be, what, quackery? I don't buy that for a
19 second. What are these people just predators on these
20 poor transgender people? It's ridiculous.

21 Q. You cite, I believe, in the Gavin Grimm
22 Amicus brief, a report from the Hayes Directory.

23 A. Yes, sir.

24 Q. What is the Hayes Directory?

25 A. That was a document with some sort of summary

1 on when certain treatments should be used with the
2 transgender population. I've read it. I've never seen
3 it before. There must have been a vague reference put
4 in there by Paul Hruz. He's the one that had it. I've
5 read it, but I actually don't know what the role is of
6 it. It was his citation, I can tell you that.

7 Q. So you're not supportive of this -- the use
8 of this particular document?

9 A. I don't remember exactly how -- I don't
10 remember exactly how it is used. I just like a plastic
11 surgeon that couldn't afford to buy a copy. I had to
12 buy one and send it to him.

13 Q. I don't understand. You're talking about
14 Dr. Schechter? You're saying that Dr. Schechter should
15 have bought it himself because he's a plastic surgeon?

16 A. Well, it's about plastic surgery. I had to
17 go out and buy it because he didn't have access. I did
18 not ask him to give me any of his references. And he
19 didn't even give me complete references. That is the
20 only thing I'm irritated by, is that some of his
21 references were incomplete and some were wrong.

22 It is common courtesy in the academic world
23 to give people complete references. Actually, usually,
24 when you have footnotes, there's a separate attached
25 reference list, which I thought there would be. Since

1 he sent me 222 pages of material, I thought it would
2 include a reference list properly done.

3 Q. Are you aware that there are a number of
4 private insurance companies that have found that
5 surgical treatment should be covered for transgender
6 individuals?

7 MR. KILPATRICK: Objection; lacks foundation.
8 You can answer.

9 THE WITNESS: I'm sorry. Am I aware that --
10 could you repeat the question?

11 BY MR. KNIGHT:

12 Q. That a number of private insurance companies
13 have found that policies supporting coverage for
14 transgender people to have surgery, are -- should be --
15 I'm sorry.

16 A. No, I'm sorry. I can't follow. Are you
17 basically saying they pay for it?

18 Q. Yes.

19 A. Okay. No, I'm not surprised, but I wasn't --
20 don't know much about insurance.

21 It, again, goes back to your question. We
22 were talking about people who have severe dysphoria.
23 Do they just try other treatment? I don't know. Or do
24 they just blanketly offer it to anybody. I don't know
25 the answer. I don't know anything about it.

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1 Q. So you are aware of the letter that was --
2 that 600 academics and clinicians signed on to
3 challenging the New Atlantis paper?

4 A. I don't know the number, but there was a
5 petition signed, published, yes, sir.

6 Q. And that -- that particular letter states
7 that the report's conclusions should not be viewed as a
8 source of scientific or medical justification to
9 support any legislation, judicial action, policymaking,
10 or clinical decision-making affecting the lives of LGBT
11 people or their families. Were you aware of that?

12 A. Aware of the sentence? I'm sorry. Was I
13 aware of that sentence?

14 Q. Yes.

15 A. I don't remember specifically, but I remember
16 the document, yes, sir.

17 Q. Do you recall that it said that: "We affirm
18 that the sexuality and gender report does not represent
19 prevailing expert consensus opinion about sexual
20 orientation or gender identity-related research or
21 clinical care"?

22 A. Yes, sir.

23 Q. Do you disagree with that?

24 A. Well, I wouldn't have written the article if
25 I agreed with it. Of course I disagree. If you look

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1 at their credentials, they're mostly young assistant
2 professors in the social sciences or literature or
3 women's studies. There are one or two names that I do
4 respect, but the ones I do, I respect their opinion.
5 The majority of them are angry about the place we
6 published it.

7 There were very few attacks on the substance
8 of the document, mostly attacks on: A, the strange
9 bedfellows; and, B, was on ignoring certain papers. I
10 had to cut somewhere.

11 Q. So who are the clinicians and/or the
12 researchers who signed on to this letter whose opinions
13 you approve of.

14 A. Well, I approve all their opinions. I didn't
15 think most of them are scientists, but most important,
16 science isn't about opinions. Science is about facts.
17 And I know we live in an opinion-driven world, but the
18 fact is there is no study. And rather than beating me
19 up about the head for the fact there is no study, and
20 other experts disagree, I can go through the H Pylori
21 where the consensus were wrong.

22 I hope their consensus is right. I hope all
23 transgender people are happy transgender, they're
24 well-adjusted, whatever treatment they get, and we
25 reduce the mental illness and the suicide. So I have

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1 no desire to prove them wrong, but I was surprised at
2 the personal nature of the attacks versus citing what I
3 said that was wrong.

4 No one has pointed out the mistakes that I
5 made, and if you read -- it's extensive literature
6 review and the basic propositions are so simple. There
7 are no little boys born as little girls and little
8 girls born as -- I don't even know what it means. But
9 people were certainly mad.

10 Just as an aside, is it the 14th? Yesterday
11 in Australia somebody claimed to have found the process
12 that makes little boys and little girls. That's an
13 amazing discovery in science, just unbelievable. That
14 could be a real key to this thing, really. Every
15 embryo would be a little girl unless there is a
16 particular protein that intervenes. Whether it's true
17 or not, it is fantastic research.

18 Q. What are the best studies you think in terms
19 of showing the efficacy -- that get the closest to what
20 you think a study should be --

21 A. Well, unfortunately --

22 Q. -- in terms of showing the efficacy -- I'm
23 sorry. Let me just finish.

24 A. Yes.

25 Q. -- in terms of showing the efficacy of

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1 surgery to treat gender dysphoria?

2 A. Unfortunately, nobody has asked me or paid
3 me. I've done most of this work on my own, my own
4 money to look at that issue. I'd love to review all
5 the studies out on the efficacy of surgery. I
6 collected a bunch of them. That is part of the
7 references I sent you, but it's so complicated in the
8 surgical part, that there are no studies that I would
9 endorse as really being definitive one way or the
10 other. I'd say we know very little. But I do believe
11 in the physician's creed: Above all do no harm.

12 And cutting a little boy's penis off just
13 seems to me a potential for disaster. Should he
14 want -- and they say only a small fraction change their
15 mind, but should he want to identify -- and by the way,
16 I find that strange, because I find children go back
17 and forth quite often, but it's probably not true for
18 adults.

19 Q. So are you saying you believe the standard of
20 care for children with gender dysphoria is to provide
21 genital surgery to them?

22 A. No, sir. Are there advocates for very early
23 gender -- yes, sir, there are advocates for very early
24 hormone blocking, and the earlier the gender surgery
25 done the better. There is paper after paper that

43 (Pages 166 to 169)

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1 states that. I believe Schechter wrote a paper that
2 says that.

3 Q. What paper is that?

4 A. Well, I don't remember. I have to go -- he's
5 written quite a bit. But the idea is, the earlier the
6 adjustment procedure, having the surgery, the younger
7 the patient is. I'm not talking about teens now, I'm
8 talking about 20s, 30s, 40s. It would seem to me more
9 likely to get a benefit out of a younger person than an
10 older person.

11 Q. So when you're talking about a little boy,
12 you're talking about a 20-year-old individual?

13 A. Who's the little boy?

14 Q. You said that you were objecting to having
15 surgery on a little boy. And I'm trying to
16 understand --

17 A. I apologize. I object to putting a little
18 boy in a gender-affirming environment where he knows
19 nothing else but that being raised as a little girl,
20 let's say. Let's say he's a biological boy, raised as
21 a little girl. Then he's on this developmental path,
22 puberty blocking, hormone addition, and then surgery,
23 that when he wakes up in 20 years after being on this
24 path -- but certainly the surgery doesn't occur in
25 adolescence. We're not that barbaric yet.

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1 MR. KILPATRICK: Do you mind if we go off the
2 record?

3 MR. KNIGHT: You want to take a break? Sure.
4 (Recess taken.)

5 BY MR. KNIGHT:

6 Q. In your report when you talk about safety,
7 were you talking -- were you opining about complication
8 rates in surgery for treatment of gender dysphoria?

9 A. No, sir.

10 Q. You were talking about safety in a more
11 general way, or you were talking about -- let me make
12 sure. You were not addressing complication rates
13 compared with respect to surgery; is that right,
14 comparative complication rates?

15 A. No, that is right.

16 Q. You were talking about surgery as opposed to
17 another form of treatment?

18 A. Well, the end point is dysphoria, yes, sir.

19 Q. Would you agree with Dr. Schechter that
20 surgery can be effective treatment for some individuals
21 with gender dysphoria?

22 A. I don't know that for sure, because I don't
23 have the experience. But I would be surprised if there
24 are no individuals for which it is good. I mean, could
25 there be an individual out there that's dysphoric and

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1 you could show they had plastic surgery and they have a
2 more positive outlook on life and they're less burdened
3 in their daily work, yes. I would not be surprised at
4 all.

5 Q. So your criticism or your opinions are
6 limited to the notion that the surgery -- or I'm sorry,
7 that the research does not show that this surgical
8 treatment is effective; is that -- am I understanding
9 correctly?

10 A. Well, it doesn't show it is safe and
11 effective, and effective also means cost effective
12 compared to other treatment. Make it simple. When you
13 talk about kidney transplant and whether it's a
14 successful transplant -- and I've worked on this
15 problem. You can take one of two measures. One is,
16 how well does the kidney work? And you get 99 percent
17 effective now. We have very high rates of successful
18 surgery.

19 The other measure is, how good is the quality
20 of life after a year? And I'm sorry to say the results
21 of surgery are much better than the results when you
22 measure quality of life. The fact is, the majority of
23 people with transplants don't die of the transplant,
24 they die of other diseases that occur in part because
25 their immune system is weakened.

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1 So the issue of how much did surgery, even
2 the most basic transplant, contribute to the increase
3 in quality of life, is what is critical. That is the
4 piece. That is the piece I'm missing that I would like
5 to see. But could there be -- are there likely to be
6 patients for which it has a positive impact equal of
7 life? Sure.

8 Q. And are you suggesting that kidney
9 transplants should not be provided for patients because
10 you don't think there's enough research to support it?

11 A. Well, no, there is quite a bit of research
12 now on quality of life. In the early days -- when did
13 it start, in the '80s? Starzl did it at Pittsburgh.
14 There wasn't enough research. But now we have
15 research, but we also know there are a lot of patients
16 we don't transplant that we used to transplant.

17 I was involved in a case whether or not a man
18 on death row should be provided a liver transplant.
19 And these are very complicated issues when it comes to
20 quality of life. But, yes, I would love to see a study
21 that shows that surgery improves quality of life for
22 transgender patients, and particularly with respect to
23 the risk of dysphoria.

24 Q. But my question was about transplants, and
25 maybe I'll ask kidney transplants. And I will ask it

44 (Pages 170 to 173)

1 slightly differently than I did before.

2 Are you saying that in the early days when
3 the research was not there to show that a surgery
4 transplant was effective -- safe and effective
5 treatment for someone with kidney failure that that
6 should not have been provided?

7 A. Well, now we're getting confused. Because in
8 the kidney transplant your kidney is failing, you have
9 end-stage renal disease. The goal of the surgery is to
10 have a translated kidney. So that is a medical
11 procedure.

12 In this case, it's an indirect case, because
13 it is a surgical procedure, but the outcome, which is
14 what is critical in a clinical study, is the risk of
15 dysphoria, and do we have evidence that it reduces the
16 risk of dysphoria?

17 So it is a very good point you are making.
18 When people got the kidney transplant, if we could show
19 they now have an effective kidney, that's all -- that's
20 what we asked for in the early days. It took a long
21 time to show improvement of quality of life. Maybe
22 that's what we do here. Maybe that's what we do here.
23 I don't know. I don't know.

24 Q. Isn't that what the studies show here with
25 respect to gender dysphoria, that surgery improves

1 quality of life for individuals with gender dysphoria?

2 A. Actually, the studies are silly. They show
3 that you spent \$50,000, people have a better body
4 image. You spend \$50,000 on me, I'll have a better
5 body image too.

6 I go back. Dysphoria is a serious mental
7 illness. Does anyone show that the incidence, the
8 prevalence, or the risk of dysphoric behavior is
9 reduced, the answer is no, and that is what bothers
10 me.

11 Q. Well, we looked earlier at one of the studies
12 you had cited. Let me just find my reference to that.

13 So the Murad story that you cited in the New
14 Atlantis paper?

15 A. Where are you, sir.

16 Q. Where in the New Atlantis did you cite it?

17 A. Yes, sir. Oh, I thought that is what you
18 were reading from.

19 Q. I'm not. I was going to ask -- so I'm
20 reading from the study itself. The Murad study
21 concludes that gender reassignment with the use of
22 hormone therapies -- I'm sorry. With the use of
23 hormone therapies were associated with the improvements
24 in gender dysphoria. I thought you were saying --
25 trying to tell me that there were no studies showing

1 that hormone therapy improves people's experience with
2 gender dysphoria?

3 A. I didn't say that. I said there is not
4 sufficient evidence at a group level that it's an
5 effective treatment, meaning the percentage of
6 people -- I don't remember the Murad study right off
7 the top of my head, but I'm 99 percent sure it did not
8 talk about the incidence of gender dysphoria or show
9 the decreases. I will go back to check the study to be
10 sure.

11 (Exhibit 7 was marked for identification.)

12 MR. KILPATRICK: I'm sorry, Jim, did we ever
13 mark the New Atlantis? Yes? What number was that? 5.
14 Okay, thank you.

15 BY MR. KNIGHT:

16 Q. I just want to direct you to couple of the
17 studies that she mentions here.

18 So the De Cuypere study -- I'm looking at her
19 reference list on page 38.

20 Are you familiar with that study?

21 A. Yes, sir.

22 Q. And does that show the efficacy -- does that
23 study show the efficacy of surgery as treatment for
24 gender dysphoria?

25 A. I don't remember specifically. I mean, I

1 knew of the study. There are so many studies here, I
2 would have to go back and take a look at it. I do
3 remember that they have some statements about cause and
4 effect, whether it is actually the percent that
5 dysphoria -- I don't think it is, but I want to make
6 sure.

7 Q. So I guess what I am trying to get at is, in
8 general, what is it you think is wrong with these --
9 all these studies that have been done to show that
10 surgery and hormone therapy are effective treatment for
11 gender dysphoria?

12 A. First of all, the investigators clearly are
13 not equipoise. They're not equal between the
14 hypothesis that works and that doesn't. The people
15 that published this can be on one side or the other,
16 but it's clear, in my opinion, their analysis follows,
17 at least in part, from their prior beliefs about it.

18 Second of all --

19 Q. I'm sorry. How do you -- why do you come to
20 that conclusion?

21 A. Because they'll have statements -- for
22 example, I mean, she has a statement that transitioning
23 is medically necessary. I believe she has the
24 statement that transition is medically necessary. What
25 do you mean to transition? What is it that gets

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1 transitioned? That's an opinion piece. What does it
2 mean to even transition? You are a transgender woman.
3 Does "transition" mean to transition your appearance?
4 Then that's an empirical question. The most important
5 question is the idea that you feel good about yourself.

6 Like the goat gonads. Once you have a third
7 gonad into your testicle sack, you feel empowered
8 sexually. Is not surprising at all. It's called the
9 theory of sum cost to economists.

10 So they don't actually measure the gender
11 dysphoria, they don't actually break it down into the
12 incident rate, and they don't show, which is clinical
13 trials 101, a significant difference between people who
14 get the treatment and people who don't in terms of risk
15 of being gender dysphoric. So as they improve body
16 image, feel better about themselves, more positive
17 outlook in life, those are fine. You know, they may be
18 fine for surgery. They aren't fine in psychiatry.

19 The question is, are these people having
20 serious life adjustment problems, and are those
21 problems alleviated by the surgery? That is all I want
22 to say on that.

23 Q. But you don't think there is any study that
24 shows that?

25 A. I could not find a study that shows that; not

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1 even close.

2 Q. But you said that these researchers -- and
3 I'm asking about all of these researchers -- who find
4 that their research shows that the treatment is
5 effective, you are saying that the problem is that they
6 are not on equipoise?

7 A. Correct.

8 Q. And what does that mean?

9 A. Equipoise, meaning they have no prior
10 hypothesis about whether it works or not. Because if
11 you believe it works, then you should not be giving
12 people an alternative treatment. You're supposed to be
13 neutral. This is science. There isn't advocacy.
14 We're not selling medication. This is science. You
15 should be equipoise between the two hypotheses that it
16 works or it doesn't.

17 But I didn't mean to say there's bias on one
18 side. There is bias on the other side. People who
19 opposed this. No matter what, they oppose it. And
20 that may be fine too, but that's not what science is
21 about. Science is about testing empirical
22 propositions. And I want to test that this works for
23 these people. That is all I want.

24 Q. And you are saying all of these researchers
25 are -- have a -- I guess I'm trying to understand.

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1 You're saying they all have a position about whether
2 it's effective prior to doing the research?

3 A. Yes. Just read the Hopkins thing. They're
4 advocates one way or the other way. I mean, the way I
5 was treated at Hopkins by people, including the dean,
6 is if I -- I'm going to finish this. If I had not been
7 a very senior person, it would have ended my career.

8 I would tell any young person who wants to be
9 an independent medical researcher, don't work on this
10 topic, because this topic will destroy your career.
11 Because when a topic becomes so political, we have
12 people on one side, people on the other, then all we do
13 is talk past each other. We use all sorts of
14 inflammatory language.

15 And the question ought to be, what really
16 works for these people? And I hope surgery really
17 works for them, but, boy, I will tell you with all the
18 patients they've had and all they've done, not to be
19 able to demonstrate any stronger than this makes me
20 really worried. When they have very strong studies
21 showing breast augmentation, tummy tucks, face lifts,
22 and all that give people a much more positive image of
23 themselves.

24 I don't see the same with the transgender.
25 And one of the reasons I don't is these are very

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1 troubled people. Are they less -- significantly less
2 troubled afterwards? I hope so, but I don't see the
3 results.

4 And by the way, when the results are not
5 positive, like the suicide rates stay high, they say,
6 well, that is social stigma. Budge just got a whole
7 bunch of stuff on social stigma. Some of the arguments
8 that the reason they don't do as well is because of
9 social stigma. Social stigma is there. But the
10 question is, how do you function in the world you have
11 around you? I'd like these treatments to work, very
12 much.

13 Q. Would you agree that many of these studies
14 show a reduced suicide rate among people who have had
15 the treatment as opposed to those who have not?

16 A. Well, I have seen studies that claim that.
17 But I want to say that being in a supportive
18 environment and doing these other things seems to have
19 an effect on significantly decreasing the suicide rate.
20 We're talking about a suicide rate, by my memory, that
21 is 15, 20 times as high as the suicide rate. So if you
22 take that down by a few percentage, then that would be
23 positive evidence that it makes a difference.

24 Is that cost effective versus other
25 treatment? Is the control group correctly done? Would

46 (Pages 178 to 181)

1 it be true if you just gave them an active control of
2 time and attention? I don't know, because particularly
3 in psychiatry, placebos are so powerful. Placebos are
4 so powerful. The fact that you're having a surgery and
5 people are fussing over you and they're trying to help
6 you, does that produce the positive result? I don't
7 know. I want to know. I want to know. I just truly
8 don't know.

9 Q. So the researcher that would be able to do
10 this would be, from what you're telling me, would have
11 to be someone who is completely removed from treatment
12 with respect to people with gender dysphoria.

13 Is that what you are saying?

14 A. They could be treating. They'd have to be
15 open minded. I doubt they could be part of a gender
16 mill, which I'll encourage some of these patients. And
17 I go to their lectures. They've never met a child who
18 comes in that wasn't having some sort of sexual --
19 they're transgender. Two years old, three years old,
20 they're transgender. And they put them in an
21 environment that propagandizes them. Particularly the
22 parents.

23 The parents I'm really concerned. I have
24 seen -- I believe he has triplets, let me say this.
25 Parents of two boys, and mom tells me when they came

1 out, it was clear that one of the twins was a male and
2 the other was a female.

3 I said, At what age? At three days. I knew
4 that was a female at three days. Yes, I've seen these
5 patients. Three days. She wants a girl and she's
6 going to have a little girl. There's nothing wrong
7 with this. The point is, do these treatments work?
8 All I want to know is what works.

9 Q. So you're saying every clinician treating
10 gender dysphoria tells everyone who walks in that they
11 have gender dysphoria?

12 Is that what you are saying?

13 A. I've explained to you that people that come
14 into the gender clinic that show the condition, A, seem
15 to be told they have gender dysphoria and are
16 immediately put in a supportive environment. If there
17 are others that that does not happen for, in other
18 words, we say, you're struggling with your gender
19 identity and that's fine. We don't think you need any
20 treatment. You are not dysphoric. Where is the
21 publication on those patients?

22 I'm telling you I see a one-to-one
23 correspondence in the literature between being
24 transgender and being gender dysphoric. So we got rid
25 of the label of gender identity disorder, because we

1 don't want the stigma of being a disease, but on the
2 other hand, if you have this condition, you do have
3 this condition, and we'll treat this condition.

4 Q. So you are saying all the literature treats
5 every transgender person as someone with gender
6 dysphoria?

7 A. Not every literature. I believe these gender
8 mills run by surgeons that make their money off
9 transgender surgery. I'm not saying consciously. I
10 think they have an unconscious bias to believe every
11 patient that comes in has gender dysphoria. Most of
12 them would not know gender dysphoria if it bit them in
13 the ass. They didn't become plastic surgeons to worry
14 about people feelings. They became plastic surgeons to
15 do surgery.

16 I teach surgeons. I know who becomes a
17 surgeon, particularly orthopedic and plastic surgery.
18 So do they think they're doing well? Yes. But can
19 they demonstrate it? No. All I want them to do is
20 demonstrate it. That's all I want.

21 Q. Do you understand that surgery is not
22 provided by -- to a transgender individual without a
23 clinician who is trained as a mental health
24 practitioner to treat gender dysphoria?

25 A. And I'm telling you right here and now it's a

1 joke. They have a master's level clinical psychologist
2 at Johns Hopkins that -- talking to great big surgeons.
3 And I'd be very interested in seeing their data on how
4 many people they don't have gender dysphoria.

5 Because these people are struggling, and they
6 see they're struggling. That's not enough. That's not
7 enough. Do they have major depressive disorder? Can
8 they not get of out of bed this morning? What is their
9 dysfunction? Then let's go after that dysfunction. If
10 that requires hormone, if that requires surgery, that's
11 fine, but let's get the evidence that it works. That
12 is all I'm asking. Is it that great? That's all I
13 want.

14 MR. KNIGHT: Let's take about a five-minute
15 break.

16 MR. KILPATRICK: Okay.

17 (Recess taken.)

18 BY MR. KNIGHT:

19 Q. When we broke, Dr. Mayer, I think you were
20 talking about the research, and I think you were
21 telling me that researchers -- let me just -- I think
22 you were talking about clinicians and that clinicians
23 provide or make a gender dysphoria diagnosis for
24 everyone who walks into the gender dysphoria clinic.

25 Did I misunderstand what you were saying?

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1 A. I don't know if it's everyone that walks in. 2 I tried to get evidence on how many transgenders they 3 do not believe are dysphoric, and I have not been able 4 to get that. I've not been able. You'd think someone 5 would publish it somewhere unless people believe that 6 if you're transgender you're automatically gender 7 dysphoria, which really just gives gender identity 8 disorder a new name. 9 Q. Well, do you have any basis for this -- your 10 position that everyone is being diagnosed with gender 11 dysphoria? 12 A. No, I don't believe everybody's being 13 diagnosed. I think the bulk is. Or where is the 14 group -- where are the statistics on the group that are 15 not being identified. Let me say it better: I have no 16 access to any data on people that are found to be 17 transgender and not found to be gender dysphoria. I 18 would like to know what happens to them. How well are 19 they adjusted? How will they go on in life? If we're 20 serious about this condition, we have to look at the 21 people who are transgender. 22 And I do believe some of the advocates 23 believe every transgender has gender dysphoria, because 24 it's the struggle they have with the gender that is 25 opposite their sex. And that is not fair, because we	1 you're struggling so badly that you can't function, 2 then we have to do something about that struggle. It's 3 debilitating you. Might that be hormone therapy? 4 Might that be surgery? Might that be talk therapy? 5 Might it be a combination? Yes. 6 I want the answers to those questions, but, 7 yes, I have asked for information and data, including 8 from advocates, including from Bailey who is a 9 well-known sociologist in this, on where are the 10 transgender people who are well-adjusted? And I don't 11 see any papers about it. Is there an equivalence? And 12 I don't see any reports on them. 13 Q. So when you were talking about the -- what 14 you were pointing to in terms of the basis is the 15 absence of studies. 16 Is that what I'm understanding? 17 A. Absolutely. I'm here to say that there's an 18 absence, not only of studies, but there's an absence of 19 evidence. We need evidence. 20 Q. What other evidence would there be other than 21 studies and clinical experience? 22 A. There would be open -- let me say, there is 23 one gender clinic in UK, they're very open about the 24 data. They're open about how many people come in. 25 They're open about how many go on to different
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1 worked too hard to get rid of that diagnosis. 2 Q. But, again, I'm asking, do you have any basis 3 for saying that everyone who -- 4 A. I didn't say it, so I can't have a basis for 5 it. 6 Q. Okay, well -- 7 A. You've repeated it three times. Please don't 8 repeat it a fourth, because I didn't say it. If you 9 want to ask me if I said something, please repeat 10 something I said or have her read it back. Thank you. 11 I didn't say it. I didn't say anything about 12 every transgender being dysphoric. 13 Q. I believe what you said was most gender 14 persons with gender dysphoria. 15 A. I don't even know that. I know I have not 16 been able to get any data, and nobody is publishing on 17 the -- you find me a publication on well-adjusted 18 transgenders. I have tried to find it. Could there be 19 a community somewhere in Greenland of perfectly 20 well-adjusted transgenders? Why not? Why in the world 21 would they need any surgery? Why would they need any 22 treatment? 23 The idea was, get the illness off the back of 24 the transgender and say, Look, you're perfectly fine as 25 people. I truly believe that in my heart, but if	1 procedures. They're very open with the data. Our 2 centers are not open with the data. I've written to 3 the centers. I've gotten no response. 4 I just want a breakdown. I'm asking them for 5 a breakdown of their patients. What else can I do? 6 Nobody pays me to do any of this stuff. 7 It seems to me if you go back to do no harm, 8 you have to have evidence that treatment is effective 9 and safe as a treatment for gender dysphoria. That 10 means the incidence or prevalence of gender dysphoria 11 is decreased by application of this treatment. I don't 12 see evidence to that. 13 Q. I believe you said earlier that the 14 researchers in this area are not at equipoise. 15 (Reporter clarification.) 16 BY MR. KNIGHT: 17 Q. And what is your basis for that statement? 18 A. Well, because it is such a political area, 19 the only people who write in this are people who do so 20 at tremendous professional risk from both sides. 21 Whenever an area becomes this political, like gun 22 control or anything, abortion, you try to be an 23 independent researcher at your own risk. I never would 24 have done this 10 years ago. I never would have 25 written with Paul McHugh 10 years ago. I knew what the

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1 blowback would be.

2 And, by the way, he is the former chair for
3 25 years, the most senior psychiatrist, and Hopkins, in
4 fact, tried to fire him. Tried to get rid of a tenured
5 professor because of his position on these issues.

6 So we have advocates one way that say it's
7 immoral, it's against their religion. We have the
8 advocates the other way who say, these people are
9 suffering, we have to give them A, B, C, and D, and
10 reduce that suffering. And I'm in the middle. I'm
11 sure there are other people too. I just want to find
12 the evidence.

13 Why not have a board, an independent board,
14 you send these patients to made up of people who have
15 no dog in the fight, and they review the reports of why
16 you believe this patient deserves or needs this surgery
17 and let that board decide? We do that in a lot of
18 cases, including burn surgery.

19 Q. I don't understand. What kind of board are
20 you talking about?

21 A. A hospital can have a board or an insurance
22 can have a board like an appeal board. You come in and
23 you state your case. So, for example, they won't give
24 you -- I just worked on one. They wouldn't give
25 someone testosterone because they thought he was using

1 it for sexual enhancement. The board simply looked at
2 his T level. His testosterone was three standard
3 deviation, and they decided to do it.

4 So if you have a specific patient where you
5 believe that this could be of benefit, and you have
6 evidence to that, then why not approve it for that
7 patient?

8 Somehow you seem negative against that. I'm
9 not sure why you'd be -- I can't imagine why you would
10 be negative.

11 Q. Well, I think that's exactly what we are
12 talking about in this case, which is that decisions
13 about whether these treatments should be provided
14 should be decided on an individualized basis.

15 A. Yes, but I don't believe it should be decided
16 by anyone who makes a dime out of that case. I feel
17 that very strongly. He or she should be allowed to
18 testify -- the reason academic physicians are so
19 important is because we don't have a clinical practice.
20 My reputation in 45 -- I've been a tenured professor
21 for 45 years -- rests on my opinion, my prestige, my
22 honesty, my ethics. People trust me. I believe that.
23 They trust me not to have a dog in any of these fights.
24 Have people like that. I've worked for Jehovah's
25 Witnesses whether to give their child a transfusion.

1 When you say that's what this case is about,
2 I don't know what this case is about. No one told me
3 what the case is. Maybe I should have known what the
4 case is about. I don't know what the case is about. I
5 was asked to look at one report and comment on whether
6 or not there is sufficient evidence to show that these
7 are safe and effective for treatment of gender
8 dysphoria.

9 Q. So you really don't understand that this is a
10 case about denying coverage for treatment for people
11 who are transgender, is that what you're telling me?

12 A. First of all, they can't be treated for being
13 transgender, because transgender is not a disorder, so
14 that can't be the issue of the case. If you mean
15 they're being denied treatment for gender dysphoria --

16 Q. That is what I mean.

17 A. Well, I've read it in the complaint. I've
18 read it in Budge, but compared to most cases I'm on,
19 I've read virtually nothing about these two women.
20 Budge -- and I'm sorry I don't want to tell you, but
21 Budge doesn't rate very high in my impression of
22 medical expertise. So the fact of the matter is, I
23 don't know much about these -- about these two women,
24 and I certainly don't know what decisions are made on
25 their behalf. I'm not sure how it would affect my

1 opinion.

2 Q. I've tried to understand the issues with
3 respect to the research that is out there, and I'm
4 still -- you've said that these investigators -- one
5 thing you've told me is that you believe these
6 investigators who have done the research in this area
7 are not in equipoise.

8 What are the other problems with the surveys?

9 A. The fact is, the area is so political that --
10 you know that. The academic leads their advocates one
11 way, advocates the other way, and they're fighting
12 about some greater grand principle of -- I don't
13 exactly know. Is it a religious principle or something
14 like that? I want to take care of patients, so it's a
15 problem when something gets this political, it's hard
16 to find people who are independent.

17 So you have a treating physician. And we
18 used to call this -- by the way, I think the term is
19 gone -- but compassionate care. And as director of
20 research, I often passed on compassionate care. That
21 is where you have a treatment that's still in research,
22 and you apply -- the rules are different now. But you
23 apply to use on a patient for which it is not
24 indicated, it goes to a board, and the board decides
25 whether it should be used on that patient. That board

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1 has got to be independent. My guess is there are
2 patients for which it would be used. And my guess is
3 there are patients for which they'll say there is no
4 adjustment in life severe enough that they'll need to
5 have this treatment.

6 Q. I guess I'm trying to -- if you were saying
7 that this issue is so politicized that -- you seem to
8 be suggesting that research in this area is not
9 possible.

10 Is that what you're saying?

11 A. I worry -- I worry about it. I do worry
12 about that. I hope it's not true, but I worry about
13 this country is so polarized and so many different
14 views. I mean, take it that there are people who not
15 only hate the ACLU, but when they find out I'm a member
16 of the ACLU, they want to kill me and shoot me. How
17 can you be part of that organization? I don't
18 understand, I really don't understand it.

19 Why are we so opinionated that it drives our
20 facts? There are people out there suffering. What
21 works for these people? How do we demonstrate? I
22 would be better at the equipoise if I could see a spark
23 of curiosity in people like this doctor. Is he curious
24 about whether it works? No, he's convinced it works.
25 It works in every case. It's wonderful it works.

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1 Nonsense.

2 Q. And that is your opinion about all of the
3 researchers --

4 A. No, it's not. I don't know all of the
5 researchers. I can talk -- I like to make general
6 characterizations as a statistician. You're very
7 concrete and like to get the -- kind of like an
8 engineer. Specifically I don't know all the people
9 doing research, but I can tell you being beat about the
10 head and neck by people sending in 500 people and
11 writing a letter to the president of the university,
12 and requesting the dean fire me. You'd never survive
13 that as a young professor. Never.

14 So would I -- if someone came to me, like me,
15 and I'm thinking my wife died, left a trust fund of
16 endowing a physician at Hopkins or Harvard to study
17 this issue, it would be very hard to fill that
18 position, even with support, because it is so
19 political.

20 And part of that is people view it as a civil
21 rights issue, and that is very important. Because once
22 you view it as a civil rights issue, you appear to be
23 on a side that is against people's rights.

24 MR. KNIGHT: I think I'm done.

25 MR. KILPATRICK: I don't have any questions.

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1 MR. KNIGHT: Okay. Thank you, sir.

2 (The videotaped deposition of

3 LAWRENCE S. MAYER concluded at 3:51 p.m.)
4
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10
11

12 I, LAWRENCE S. MAYER, do hereby declare under the
13 penalty of perjury that I have read the foregoing
14 transcript; that I have made any corrections as appear
15 noted, in ink, initialed by me, or attached hereto;
16 that my testimony as contained herein, as corrected, is
17 true and correct.

18 EXECUTED this ____ day of _____,
19 20____, at _____, _____.
20 (City) (State)
21
22
23
24
25

LAWRENCE S. MAYER

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1 I, the undersigned, a Certified Shorthand
2 Reporter of the State of California, do hereby certify:

3 That the foregoing proceedings were taken
4 before me at the time and place herein set forth; that
5 any witnesses in the foregoing proceedings, prior to
6 testifying, were duly sworn; that a verbatim record of
7 the proceedings was made by me using machine shorthand
8 which was thereafter transcribed under my direction;
9 that the foregoing transcript is a true record of the
10 testimony given.

11 Further, that if the foregoing pertains to
12 the original transcript of a deposition in a Federal
13 Case, before completion of the proceedings, review of
14 the transcript [X] was [] was not requested.

15 I further certify I am neither financially
16 interested in the action nor a relative or employee of
17 any attorney of party to this action.

18 IN WITNESS WHEREOF, I have this date
19 subscribed my name.

20 Dated: JUNE 21, 2018
21
22
23
24
25

PATRICIA Y. SCHULER
CSR NO. 11949

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1 *** ERRATA SHEET ***

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4 NEW YORK, NEW YORK 10017

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6 CASE: Boyden v. State of Wisconsin

7 DATE: June 15, 2018

8 WITNESS: Lawrence S. Mayer REF: 21911

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21 _____
Lawrence S. Mayer

22 Subscribed and sworn to before me

23 this ____ day of _____, 20__.

24 _____
25 Notary Public

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IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF WISCONSIN

ALINA BOYDEN and
SHANNON ANDREWS,

Plaintiffs,

v.

Case No. 17-CV-0264

STATE OF WISCONSIN DEPARTMENT
OF EMPLOYEE TRUST FUNDS, et al.,

Defendants.

**DECLARATION OF LAWRENCE MAYER
IN SUPPORT OF STATE DEFENDANTS' REPLY
IN SUPPORT OF SUMMARY JUDGMENT**

I, **LAWRENCE MAYER**, pursuant to 28 U.S.C. § 1746, declare as follows:

1. I have been retained by counsel for the State Defendants as an expert in the above-captioned lawsuit to provide an expert opinion. My qualifications to express an expert opinion on the efficacy, safety, and optimality of hormonal and surgical interventions for the treatment of gender dysphoria are outlined in my opening expert report, dated April 19, 2018.

2. On June 27, 2018, I received from State Defendants' counsel supplemental expert reports authored by Dr. Stephanie Budge and Dr. Loren Schechter.

3. It was not my understanding that Plaintiffs were permitted to submit supplemental expert reports, and so I was not expecting to receive these reports. Nevertheless, I have been able to conduct a preliminary review of the opinions expressed in those supplemental reports and the studies cited therein. Nothing I have seen so far in those opinions or studies changes my own opinion, expressed in my original report dated April 19, 2018, that medical and surgical treatments have not been demonstrated to be safe and effective for treating gender dysphoria.

4. Subject to leave from this Court, I reserve the right to respond to the specific opinions in Plaintiffs' supplemental expert reports, once I have had adequate time to fully review those reports and formulate my responsive opinion.

5. I understand that the Hayes Directory is an organization that performs analysis of available evidence regarding the safety and efficacy of medical treatments for various diagnoses. I understand that it is a reliable authority for this type of analysis.

6. Attached as Exhibit A to this declaration is a true and correct copy of three reports released by the Hayes Directory regarding sex reassignment surgery for the treatment of gender dysphoria, hormone therapy for the treatment of gender dysphoria, and ancillary procedures and services for the treatment of gender dysphoria. The conclusions reached in

these reports are consistent with my own analysis of the state of available evidence regarding the safety and efficacy of various medical treatments for gender dysphoria.

I declare under penalty of perjury that the forgoing is true and correct.

Executed on

7/9/18


LAWRENCE MAYER

6/27/14
Paul,
Promised Material
cluster

Hayes directory

May 15, 2014

Sex Reassignment Surgery for the Treatment of Gender Dysphoria

PURPOSE OF TECHNOLOGY:

Sex reassignment surgery (SRS), which involves genital reconstruction surgery and chest surgery, is part of the treatment approach for persons with gender dysphoria (GD). Individuals with GD have persistent feelings of gender discomfort and inappropriateness of their anatomical sex, strong and ongoing cross-gender identification, and a desire to live and be accepted as a member of the opposite sex. SRS includes the surgical procedures by which the physical appearance and function of a person's existing sexual characteristics are changed to those of the other sex in an effort to resolve or minimize GD and improve quality of life.

EXECUTIVE SUMMARY:

Health Problem: People with gender dysphoria (GD) feel a severe incongruity between anatomical sex and gender identity. The prevalence of GD is 1 in 11,900 to 1 in 45,000 persons for male-to-female (MtF) and 1 in 30,400 to 1 in 200,000 persons for female-to-male (FtM) transgender persons.

The earlier term, *gender identity disorder* (GID), has given way to *gender dysphoria* (GD). This change was intended to reflect a consensus that gender nonconformity is not a psychiatric disorder, as it was previously categorized. However, since the condition may cause clinically significant distress and since a diagnosis is necessary for access to medical treatment, the new term was proposed. The diagnostic criteria for GD outlined in the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5), as well as the criteria for GID in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (DSM-IV), require that the individual believes there is a marked difference between the gender assigned to him or her by others and the gender he or she experiences or wishes to express. Additional criteria must also be met for a diagnosis of GD.

Determinants: The determinants of GD are poorly understood. Experts believe that gender identity develops as the result of a combination of biological factors, possibly including genetic and/or prenatal and perinatal hormonal influences, and environmental influences that have psychological effects.

Treatment: Individuals with GD seeking professional help begin with psychotherapy. An American Psychiatric Association Task Force recommends 2 goals for psychotherapy: (1) to explore issues related to the individual's commitment to living in the cross-gender role; and (2) to fully explore other options for the patient including whether to live as a homosexual person without medical and surgical treatments for gender transition.

The full therapeutic approach to GD consists of 3 elements or phases, typically in the following order: (1) hormones of the desired gender, (2) real-life experience for 12 months in the desired role; and (3) surgery to change the genitalia and other sex characteristics (e.g., breast reconstruction or mastectomy). However, not everyone with GD needs or wants all elements of this triadic approach.

Technology: Sex reassignment surgery SRS involves modification of the genitalia and/or breast/chest to resemble that of the opposite sex.

For the FtM patient, surgical procedures may include mastectomy, hysterectomy, salpingo-oophorectomy, vaginectomy, metoidioplasty, scrotoplasty, urethroplasty, placement of testicular prostheses, and phalloplasty.

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Transforming Healthcare with Evidence

Mayer Decl. Ex. A
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Sex Reassignment Surgery for GD

For the MtF patient, surgical procedures may include breast augmentation, penectomy, orchiectomy, vaginoplasty, clitoroplasty, and labiaplasty.

Rationale: The goal of SRS is to feminize or masculinize the body to facilitate an individual's desire to live in the gender role opposite from the biological sex.

Controversy: The medical necessity of SRS for the treatment of GD is under debate. The condition does not readily fit traditional concepts of medical necessity since research to date has not established anatomical or physiological anomalies associated with GD. An evidence-based assessment of the effectiveness of SRS procedures for alleviation of symptoms associated with GD and improvement of recipients' well-being can make a helpful contribution to this controversy.

Relevant Questions:

- Has SRS been shown to be effective in improving patient-important outcomes such as relief of symptoms of GD, quality of life (QOL), satisfaction with sex characteristics, psychological well being, or sexual function?
- Does SRS confer additional benefits to hormone therapy alone?
- Do outcomes vary according to which components of SRS are performed?
- Is SRS safe?
- Have definitive patient selection criteria been established for SRS as treatment for GD?

Evidence Base: Nineteen peer-reviewed studies, primarily case series, cross-sectional studies or pretest-posttest studies assessing the effectiveness of SRS were analyzed in this report. In addition, 6 case series evaluating safety outcomes in ≥ 300 MtF patients or ≥ 200 FtM patients following SRS were analyzed.

Search Dates: November 2004 to April 2014.

Sample Sizes: 35 to 376 patients for main evidence review, 202-390 patients for safety evidence.

Patients: MtF patients (6 studies), FtM patients (6 studies), both MtF and FtM patients (7 studies).

Interventions: Chest surgery only (5 studies), genital surgery only (5 studies), both chest and genital surgery (4 studies), unspecified (5 studies).

Comparisons: Transgendered patients that had undergone SRS vs. those that had not undergone SRS (5 studies) and outcomes in SRS patients that were MtF vs. FtM (1 study).

Outcome Measures: GD, QOL, sexual experience, patient satisfaction, psychological outcomes, and safety outcomes.

Follow-Up: 1 month to 7 years.

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Sex Reassignment Surgery for GD

Findings: Following SRS, patients reported decreased GD, depression and anxiety, and increased QOL. The majority of SRS patients were sexually active, but the ability to orgasm varied across studies. The majority of patients were satisfied with their aesthetic results following SRS.

Gender Dysphoria: GD was decreased following SRS relative to baseline (2 studies).

Quality of Life: Transgendered patients who underwent SRS had improved QOL relative to patients that had not undergone SRS (1 study), improved QOL relative to before SRS (2 of 3 studies), and had QOL scores similar to those of the general population (2 studies).

Sexual Function: The majority of patients were sexually active following SRS (4 studies), and the ability to orgasm varied across studies (5 studies).

Patient Satisfaction: The majority of patients were satisfied with aesthetic results following SRS (10 studies).

Psychological Outcomes: Depression (3 studies) and anxiety (2 studies) decreased following SRS.

Other Outcomes: Following SRS, almost all FtM patients were able to micturate while standing (1 study), and rates of employment were high (3 studies).

Comparative Effectiveness of Hormone Therapy Alone and SRS: The evidence was too sparse to allow any conclusion regarding the comparative benefits of SRS and hormone therapy alone.

Comparative Effectiveness of Different Types of SRS: The evidence was too sparse to allow any conclusion regarding the comparative benefits of different SRS procedures.

Safety: Following SRS, there were very low rates of regret of surgery (0% to 6%) (5 studies) and suicide (2 to 3%) (3 studies). Only 6 of the 19 studies reported on complications following SRS, and the most common complications were urinary tract complications (4% to 33%) (3 studies), necrosis of tissue (1% to 10%) (6 studies), vaginal stenosis or prolapse (2% to 14%) (3 studies), and need for revision surgery (4% to 29%) (3 studies). The most common complications reported in the 6 safety studies were need for revision surgery (22% to 40%) (5 studies), urinary tract complications (40% to 41%) (2 studies), and wound healing difficulties (11% to 33%) (2 studies). The majority of studies reported a length of follow-up of at least 1 year following surgery (12 studies).

Patient Selection Criteria: There is insufficient evidence to establish patient selection criteria for SRS to treat GD. Professional groups recommend that SRS be restricted to individuals who are referred for sex reassignment services by a qualified mental health professional, and that while 1 referral is sufficient for breast or chest surgery, 2 independent referrals should be required for genital SRS. Individuals who have medical contraindications to surgery should not undergo SRS.

Quality of Evidence: Very low.

Overall, the quality of the evidence was very low due to limitations of individual studies, including small sample sizes, few studies evaluating any 1 outcome, retrospective data, lack of randomization of patients to treatment groups, failure to blind outcome assessors to group assignment, lack of a control or comparator group or

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Sex Reassignment Surgery for GD

minimal adjustment for confounders, lack of baseline assessments to assess change over time, a possible procedural learning curve, and a lack of objective and validated outcome measures.

Conclusions: The evidence suggests positive benefits but because of serious limitations permit only weak conclusions regarding sex reassignment surgery (SRS) for gender dysphoria (GD). No conclusions can be made about the comparative benefits of hormone therapy alone and SRS, or about different components of SRS.

- Patients who underwent chest/breast or genital surgery were generally pleased with the aesthetic results.
- Following SRS, patients reported decreased GD, depression and anxiety, and increased quality of life.
- The majority of SRS patients were sexually active, but the ability to orgasm varied across studies.
- Complications of surgery following SRS were common and could be serious.
- Rates of regret of surgery and suicide were very low following SRS.
- Data were too sparse to draw conclusions regarding whether SRS conferred additional benefits to hormone therapy alone.
- Data were too sparse to draw conclusions regarding whether outcomes vary according to which surgeries were performed.

Hayes Rating:

- C - For sex reassignment surgery (SRS) to treat gender dysphoria (GD) in adults for whom a qualified mental health professional has made a formal diagnosis of GD, have undergone hormone therapy and psychotherapy, and have undergone a "real-life" test (i.e., in which they lived as the desired gender role). This Rating reflects the reporting of some positive evidence but serious limitations in the evidence of both effectiveness and safety.
- D2 - For SRS to treat GD in adolescents. This rating reflects the paucity of data of SRS in adolescents.
-

INSIGHTS:

- Since part of the reason for the psychopathology experienced by transgender persons has to do with the reactions or expected reactions of family and society, evolving social norms theoretically could diminish the perceived need to undergo physical changes in order to live in the desired gender role.
- The majority of the studies selected for this report reflect the diagnostic criteria of *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*, rather than the somewhat expanded criteria published in 2013 in the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition*.

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Transforming Healthcare with Evidence

May 19, 2014

Hormone Therapy for the Treatment of Gender Dysphoria

PURPOSE OF TECHNOLOGY:

Continuous feminizing or masculinizing hormone therapy is administered to some adolescents and adults who have a diagnosis of gender identity disorder (GID) or gender dysphoria (GD). The purpose of this therapy is to facilitate a transgender individual's desire to transition to a sexual identity other than his or her biological (natal) sex. Some individuals undergo hormone therapy as a prelude to sex reassignment surgery; other individuals seeking gender transition undergo hormone therapy without ever undergoing any type of surgery.

EXECUTIVE SUMMARY:

Health Problem: Individuals with gender dysphoria (GD) experience a severe incongruity between their biological sex and gender identity.

The prevalence of transsexualism is estimated to be 1 in 11,900 to 1 in 45,000 persons for male-to-female (MtF) prevalence and 1 in 30,400 to 1 in 200,000 for female-to-male (FtM) prevalence. The prevalence of gender dysphoria within the transsexual population is unknown. The earlier term, *gender identity disorder* (GID), has given way to *gender dysphoria* (GD). This change was intended to reflect a consensus that gender nonconformity is not a psychiatric disorder, as it was previously categorized. However, since the condition may cause clinically significant distress and since a diagnosis is necessary for access to medical treatment, the new term was proposed. The diagnostic criteria for GD outlined in the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5), as well as the criteria for GID in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (DSM-IV), require that the individual believes there is a marked difference between the gender assigned to him or her by others and the gender he or she experiences or wishes to express. Additional criteria must also be met for a diagnosis of GD.

Determinants: The determinants of gender dysphoria are poorly understood. Experts believe that gender identity develops as the result of a combination of biological factors, possibly including genetic and/or prenatal and perinatal hormonal influences, and environmental influences that have psychological effects.

Treatment: Individuals with GD seeking professional help begin with psychotherapy. An American Psychiatric Association Task Force recommends 2 goals for psychotherapy: (1) to explore issues related to the individual's commitment to living in the cross-gender role; and (2) to fully explore other options for the patient, including whether to live as a homosexual person without medical and surgical treatments for gender transition. The full therapeutic approach to GD consists of 3 elements or phases, typically in the following order: (1) hormones of the desired gender; (2) real-life experience for 12 months in the desired role; and (3) surgery to change the genitalia and other sex characteristics (e.g., breast reconstruction or mastectomy). However, not everyone with GD needs or wants all elements of this triadic approach.

Technology: The goal of cross-sex hormone therapy for GD is to alter secondary sex characteristics, including such features as fat distribution, hair growth, voice pitch, and muscle strength.

Cross-sex hormone therapy includes estrogens and testosterone-blocking agents administered to natal (biologic) males and androgens (usually testosterone) administered to natal females. Adolescents with a

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Hormone-GD

diagnosis of GD may be eligible for puberty-delaying hormones as soon as pubertal changes begin; the effects of this treatment are fully reversible.

Rationale: Hormone therapy serves to feminize or masculinize the body to facilitate an individual's desire to live in the gender role opposite from biological sex.

Controversy: Numerous professional groups have advocated for third-party payers to cover all medically necessary treatments to alleviate GD. However, the condition does not readily fit traditional concepts of medical necessity since research to date has not established anatomical or physiological anomalies associated with GD.

An evidence-based assessment of the effectiveness of hormone therapy for alleviation of symptoms associated with GD and improvement of recipients' well being can make a helpful contribution to this controversy.

Relevant Questions:

- Has feminizing or masculinizing hormone therapy in adolescents and adults been shown to be effective in improving patient-important outcomes such as relief of symptoms of GD, psychological well-being, sex-specific function, quality of life (QOL), functional status, or employment status?
- How does hormone therapy alone as a treatment for GD compare with sex reassignment surgery (SRS)?
- Is feminizing or masculinizing hormone therapy safe?
- Have definitive patient selection criteria been established for feminizing or masculinizing hormone therapy as a treatment for GD?

Evidence Base: Ten peer-reviewed studies, primarily of a cross-sectional or pretest-posttest design, assessing the effectiveness of hormone therapy plus 11 other studies with safety data for ≥ 100 adult patients or any safety data for adolescent patients.

Search Dates: Inception of databases to April 2014.

Sample Sizes: 50 to 376 pts (effectiveness); 1 to 2307 (safety).

Patients: Adult or adolescent patients with a diagnosis of GD. Mean age in effectiveness studies of adults, 29 to 45 years. Mean age in safety studies of adults, 41 to 52 years. Typical patients had not undergone either chest or genital SRS.

Interventions: Cross-sex hormone therapy or pubertal suppression therapy.

Comparisons: No medical treatment, SRS (chest and/or genital).

Outcome Measures: QOL, functional status, or employment status; psychological well-being (e.g., depression, self-esteem, reduced incidence of suicide); sexual function and satisfaction; and complications of hormone therapy, regret, or any other adverse event attributable to treatment.

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Hormone-GD

Follow-Up: 3 months to 1 year (effectiveness studies, usually not reported); 2 to 23 years (safety studies).

Findings: Studies that evaluated hormone therapy in adults suggested the possibility of a small effect on QOL and function, specific psychological symptoms, social support, and alcoholism. The findings were inconsistent with respect to a relationship between hormone therapy and general psychological health, substance abuse, suicide attempts, and sexual function and satisfaction (9 studies).

QOL/Functional Status (Adults): 5 studies (≥ 812 participants; ≥ 796 FtM) reported positive findings on ≥ 1 scale, but usually not on all scales used in the study. Differences between treated and untreated study participants were very small or of unknown magnitude in cross-sectional analyses that adjusted for potential confounders but were substantial in 1 pretest-posttest study.

Psychological Symptoms (Adults): In 6 studies, the results for a variety of specific psychological states (e.g., depression, anxiety) were positive, but overall measures of change in psychological symptomatology were mixed. In the studies that provided information on the magnitude of scales and/or cutoff points for normal ranges, the differences, if observed, were generally very small and scores for patients representing the control condition were typically already in the normal or mild range.

Other Outcomes (Adults): Improved social support and reduced alcoholism were suggested but the results regarding substance abuse were conflicting (2 studies). The prevalence of suicide attempts was not affected by hormone therapy (2 studies). Findings regarding the association of hormone therapy with sexual function and satisfaction were mixed (3 studies).

Comparative Effectiveness of Hormone Therapy Alone Versus Surgery (Adults): The evidence was too sparse to allow any conclusion regarding the comparative benefits of SRS and hormone therapy alone.

Adolescents (Pubertal Suppression): Evidence from a single small study was insufficient to suggest conclusions regarding the value of pubertal suppression therapy.

Safety (Adults): Hormone therapy has the potential to alter patients' risk of cardiovascular disease, cerebrovascular and thromboembolic events, osteoporosis, and cancer. The risk of no benefit must also be considered. There was an increased risk of cerebrovascular and thromboembolic events in MtF patients. There was no elevated risk of cancer in FtM patients. Hormone therapy and subsequent SRS failed to bring overall mortality, suicide rates, or death from illicit drug use in MtF patients close to rates observed in the general male population. It is possible that mortality is nevertheless reduced by these treatments, but that cannot be determined from the available evidence. Mortality data for FtM patients is less clear than for MtF patients. For safety issues other than the specific findings described here, the evidence was insufficient to suggest conclusions. There was no evidence concerning the prevalence of regret after hormone therapy.

Safety (Adolescents): The chief risks cited for pubertal suppression therapy are related to the possibility the GD could worsen because of the delay in definitive treatment. No serious side effects during pubertal suppression were reported. Older adolescents may begin cross-sex hormone therapy, but only a single case report provided long-term data for individuals who began therapy as adolescents. The body of evidence

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Transforming Healthcare with Evidence

Hormone-GD

concerning the safety of pubertal suppression and cross-sex hormone therapy in adolescents was too sparse and the studies too limited to suggest conclusions.

Patient Selection Criteria: The evidence is insufficient to support patient selection criteria for hormone therapy to treat GD. Professional associations recommend that hormone therapy be restricted to patients who have been referred for such treatment by a health professional who is qualified to assess GD. In adults, medical conditions that can be exacerbated by endocrine treatment must be evaluated and addressed prior to initiation of treatment. Practice guidelines advise that pubertal suppression therapy should not be initiated until adolescents have at least reached Tanner stage 2.

Quality of Evidence: Very low.

Most studies were considered to be of very poor quality due to the nature of the study designs, failure to control for confounders, possible recall bias and selection bias, lack of blinded outcomes assessment, and/or unknown or short follow-up intervals. Not all positive results were statistically significant. For other outcomes, the findings were conflicting. For QOL and function, almost all of the available data were collected from FtM individuals for whom a diagnosis of GD could not be verified. For outcomes other than QOL and function, the quantity of evidence was very small. In safety studies, the relatively young age of study participants at the time of outcomes assessment and the lack of adjustment for risk factors in comparisons of study participants with age-matched general populations seriously diminishes the reliability of the available adverse event rates. No studies analyzed safety outcomes according to whether patients had undergone SRS, which is significant since hormone doses are lowered after SRS. The safety evidence described for adults in the **EXECUTIVE SUMMARY** is considered to be of low quality, but all other adult safety evidence was considered to be of very low quality.

Conclusions: A substantial number of studies of cross-sex hormone therapy each show some positive findings suggesting improvement in well-being after cross-sex hormone therapy. However, there are several serious limitations to the evidence.

Statistically significant improvements have not been consistently demonstrated by multiple studies for most outcomes. Five studies representing primarily female-to-male (FtM) adults reported modestly positive findings on ≥ 1 of the multiple quality of life (QOL) or functional scales for individuals who had undergone cross-sex hormone therapy, but for most of these individuals, a diagnosis of gender dysphoria (GD) was not confirmed. Evidence regarding QOL and function in male-to-female (MtF) adults was very sparse. Evidence for less comprehensive measures of well-being in adult recipients of cross-sex hormone therapy was directly applicable to GD patients but was sparse and/or conflicting. The study designs do not permit conclusions of causality and studies generally had weaknesses associated with study execution as well. There are potentially long-term safety risks associated with hormone therapy but none have been proven or conclusively ruled out. The evidence for adolescent populations was too sparse to suggest any conclusions.

Hayes Rating:

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Hormone-GD

- C - For hormone therapy to treat GD in adults for whom a qualified mental health professional has made a formal diagnosis of GD and a recommendation for hormone therapy and who do not have any medical contraindications to endocrine therapy.

This Rating reflects the reporting of some positive evidence but serious limitations in the evidence of both effectiveness and safety. Also of concern is the fact that the magnitude of suggested benefit was typically small, which diminishes confidence in a true treatment effect.

- D2 - For pubertal suppression therapy or cross-sex hormone therapy in adolescents.

This Rating is based on a paucity of data.

INSIGHTS:

- Since part of the reason for the psychopathology experienced by transgender persons has to do with the reactions or expected reactions of family and society, evolving social norms theoretically could diminish the perceived need to undergo physical changes in order to live in the desired gender role.
- The benefits of hormone therapy appear to be of very small magnitude in the studies published to date. The literature does not provide guidance for assessing the clinical relevance of improvements in this population. One factor that may prevent the observation of large improvements is that individuals with a better social support and a better baseline psychological profile are probably seen to be better candidates by the mental health professionals who make recommendations for treatment.
- As the population of recipients of hormone therapy ages, better data concerning long-term safety risks should become available.
- Most studies have been performed in Europe. The results may not be generalizable to the United States.
- The studies selected for this report reflect the diagnostic criteria of DSM-IV, rather than the somewhat expanded criteria published in 2013 in the DSM-5.

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May 9, 2014

Ancillary Procedures and Services for the Treatment of Gender Dysphoria

PURPOSE OF TECHNOLOGY:

Some persons with gender dysphoria (GD) may seek hormone therapy and /or sex reassignment surgery (SRS) to resolve their incongruity between biological sex and gender identity. Additional ancillary surgeries or services, such as facial modifications, vocal cord surgery, or voice training, may be desired by transgender persons to further feminize or masculinize the body and/or perception of gender. In some cases, ancillary procedures are performed without SRS.

EXECUTIVE SUMMARY:

Health Problem: Individuals with gender dysphoria (GD) feel a severe incongruity between their biological sex and their gender identity. The prevalence of GD is 1 in 11,900 to 1 in 45,000 persons for male-to-female (MtF) and 1 in 30,400 to 1 in 200,000 persons for female-to-male (FtM) transgender persons.

The earlier term, *gender identity disorder* (GID), has given way to *gender dysphoria* (GD). This change was intended to reflect a consensus that gender nonconformity is not a psychiatric disorder, as it had been previously categorized. However, since the condition may cause clinically significant distress and since a diagnosis is necessary for access to medical treatment, the new term was proposed. The diagnostic criteria for GD outlined in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM), Fifth Edition (DSM-V), as well as the criteria for GID in the DSM, Fourth Edition (DSM-IV), require that the individual believes there is a marked difference between the gender assigned to him or her by others and the gender he or she experiences or wishes to express. Additional criteria must also be met for a diagnosis of GD.

Determinants: The determinants of GD are poorly understood. Experts believe that gender identity develops as the result of a combination of biological factors, possibly including genetic and/or prenatal and perinatal hormonal influences, and environmental influences that have psychological effects.

Treatment: The treatment of GD is multifaceted. Psychotherapy helps the individual explore roles and expression and adopt various coping mechanisms to deal with societal and internal conflicts. Some transgender persons may seek hormone therapy to change their secondary sex characteristics and/or apply for sex reassignment surgery (SRS), which may include mastectomy/chest reconstruction or genital reconstruction. Additional ancillary surgeries or services, such as facial modifications, vocal cord surgery, or voice training, may be desired by transgender persons to further feminize or masculinize the body and/or perception of gender.

Technology: Ancillary procedures and services other than cross-sex hormone therapy or SRS for GD.

Some transgender persons desire procedures to feminize or masculinize their body and/or face. Also, some MtF transgender persons may desire voice therapy or vocal cord surgery to feminize their voice. Ancillary procedures include facial modifications, voice modification, reduction of the Adam's apple, enhancement of the buttocks, and permanent hair removal.

Rationale: Additional procedures may enhance the benefits of hormone therapy or SRS for GD, and for some individuals with GD, less comprehensive treatments may be sufficient for assuming the desired gender identity.

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Transforming Healthcare with Evidence

Mayer Decl. Ex. A
Roth Decl. Ex. 1003

Short (Abbreviated) Title

A transgender person who is readily accepted as their chosen gender may have a better quality of life and a reduction in the symptoms of GD.

Controversy: The medical necessity of treatments for GD is under debate. However, the condition does not readily fit traditional concepts of medical necessity since research to date has not established anatomical or physiological anomalies associated with GD. An evidence-based assessment of the effectiveness of ancillary procedures for alleviation of symptoms associated with GD and improvement of recipients' well-being can be a helpful contribution to this issue.

Relevant Questions:

- Have ancillary procedures and services been shown to be effective in improving patient-important outcomes such as relief of symptoms of GD or quality of life?
- Are ancillary procedures and services safe?
- Have definitive patient selection criteria been established for ancillary procedures and services as treatments for GD?

Evidence Base: Thirteen case series studies and chart reviews.

Search Dates: Inception of database to April 2014.

Sample Sizes: 10 to 76 patients; 1 study had 247 patients.

Patients: MtF (n=533) or FtM (n=3) adult transgender patients. It was not specified whether or not patients had a formal diagnosis of GD. The status of cross-sex hormone therapy or SRS among the study population was not reported by 4 of the studies. The remaining studies had variability regarding other GD treatments; however, none had inclusion criteria that specified these characteristics.

Interventions: Vocal cord surgery (5 studies), voice training (3 studies), rhinoplasty (2 studies), facial feminization surgery (2 studies), hair removal (1 study).

Comparisons: Twelve of the studies had no comparison group. One study of facial feminization surgery compared surgery recipients with patients who had not had facial surgery.

Outcome Measures: Patient satisfaction; voice characteristics; Voice Handicap Index; SF-36 Health Survey (QualityMetric Inc.) (1 study); grade, roughness, breathiness, asthenia, strain (GRBAS) Hirano scale.

Follow-Up: Mean of 6 to 30 months (5 studies did not report follow-up).

Findings: Patients were satisfied with the results of facial feminization and rhinoplasty; however, the results of vocal cord procedures and voice training were mixed.

Vocal Cord Procedures: Of the 5 reviewed studies of vocal cord surgery, 2 evaluated cricothyroid approximation, 2 evaluated laser vaporization, and 1 evaluated laryngoplasty. Cricothyroid approximation significantly raised the fundamental frequency of MtF transgender patients by a mean of 74 hertz (Hz). Laser vaporization significantly raised the fundamental frequency of MtF transgender patients by a mean of 48 Hz.

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Short (Abbreviated) Title

Feminization laryngoplasty significantly increased the fundamental frequency by 57 Hz. Patient satisfaction with the vocal cord surgery was variable, but the results suggest that patients were more satisfied following cricothyroid approximation than laser vaporization.

Voice Training: Three studies evaluated voice training as a method to increase the fundamental frequency of MtF transgender patients. The fundamental frequency increased by 14 to 28 Hz after voice training sessions and approximately half of the patients were satisfied with the outcome. One study evaluated voice training to decrease the fundamental frequency of 3 FtM patients; however, results of only 1 patient were available and his fundamental frequency decreased by 35 Hz after vocal training.

Rhinoplasty: Two studies evaluated feminization rhinoplasty on MtF transgender patients. All but 1 of the patients felt that their face had become more feminine in appearance and were satisfied with the results.

Facial Feminization Surgery: Two studies of facial feminization surgery were reviewed. In a retrospective case series study, MtF transgender patients who had various facial modification procedures felt that their faces had become more feminine in appearance. In a large retrospective cross-sectional study, quality of life was measured in MtF transgender patients who did or did not have facial feminization surgery. Patients who had facial feminization surgery were significantly more satisfied with their appearance than those who did not have facial surgery.

Permanent Hair Removal: One study of intense pulsed light epilation for permanent hair removal on MtF transgender patients was reviewed. After a mean of 9 epilation sessions, 90% of the patients achieved treatment success.

Safety: Most of the studies did not report complications; however, complications that were reported included bone nonunion following facial surgery (2% of patients); and dysphagia (34% of patients) or throat pain (29% of patients) following cricothyroid approximation.

Patient Selection Criteria: There is insufficient evidence to establish definitive patient selection criteria for ancillary procedures and services for the treatment of GD.

Quality of Evidence: Very low.

The individual study quality was generally very poor. The quality of the evidence was low because of study limitations, including small sample size and few studies evaluating each procedure category, lack of a control or comparator group, variable follow-up duration, inconsistent availability of results for all outcome measures, lack of baseline data for self-rated outcome measures, and lack of statistical analysis of results. Outcome measures were focused on technical success and patient satisfaction; only 1 study evaluated an overall measure of well-being using a validated instrument.

Conclusions: There is some evidence that transgender patients are satisfied with the results of rhinoplasty and facial feminization surgery, but patient satisfaction with vocal cord surgery and voice training was mixed. The evidence has serious limitations, and the effect of these procedures on overall individual well-being is unknown.

- Patients who had rhinoplasty or facial feminization surgery were generally pleased with the results.

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Short (Abbreviated) Title

- Vocal cord procedures and voice training had variable outcomes. Although the fundamental frequency was reduced by all treatment methods, patient satisfaction with the outcome was mixed.
- Most of the studies did not report complications; however, there was a low rate of bone nonunion following facial surgery, and moderate rates of dysphagia or throat pain following cricothyroid approximation.

Hayes Rating:

- D2 - For vocal cord surgery for voice feminization in patients with GD.
This Rating reflects the positive but limited evidence of this technology for transgender patients.
 - D2 - For voice training for voice feminization in patients with GD.
This Rating reflects the limited evidence of this technology for transgender patients, and conflicting results.
 - D2 - For feminization rhinoplasty for patients with GD.
This Rating reflects the limited evidence of this technology for transgender patients, and conflicting results.
 - D2 - For facial feminization surgery in patients with GD.
This Rating reflects the positive but limited evidence of this technology for transgender patients.
 - D2 - For permanent hair removal technologies for patients with GD.
This Rating reflects the positive but limited evidence of this technology for transgender patients.
-

INSIGHTS:

- Since part of the reason for the psychopathology experienced by transgender persons has to do with the reactions or expected reactions of family and society, evolving social norms theoretically could diminish the perceived need to undergo physical changes in order to live in the desired gender role.
- As the population of recipients of ancillary procedures ages, better understanding concerning long-term safety risks should become available.

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IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF WISCONSIN

ALINA BOYDEN and
SHANNON ANDREWS,

Plaintiffs,

v.

Case No. 17-CV-264

STATE OF WISCONSIN DEPARTMENT
OF EMPLOYEE TRUST FUNDS, et al.,

Defendants.

**EXPERT REPORT OF DAVID V. WILLIAMS
SUBMITTED ON BEHALF OF THE STATE DEFENDANTS**

EXPERT REPORT

Gender Reassignment Benefits

19 April 2018

David V. Williams, Consultant



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I have reviewed the civil rights complaint for sex discrimination filed in United States District Court, W.D. Wisconsin No.: 17-cv-264; Alina Boyden, and Shannon Andrews Plaintiffs vs State of Wisconsin Department of Employee Trust Funds, State of Wisconsin Group Insurance Board, Robert Conlin (Secretary of the Department of Employee Trust Funds), Board of Regents of the University of Wisconsin System, Raymond Cross (President of the UW System), Rebecca Blank (Chancellor of UW – Madison), Robert Golden (Dean of the UW School of Medicine and Public Health), and Dean Health Plan, defendants. This report contains my opinions with respect to healthcare costs for surgical procedures, services and supplies related to surgery and hormone therapy associated with gender reassignment.

Professional Qualifications

I am a Healthcare Consultant working in the Hartford, Connecticut office of Milliman, the largest independent actuarial consulting firm in the United States with offices worldwide. I have 30 years' experience in areas related to medical economics including director positions at two health plans. I hold a degree in Economics from Brigham Young University and have completed graduate course work in statistics, data mining, public health, and software development.

My employment as a Milliman Healthcare Consultant began in 1997. Milliman Healthcare Consultants consist of actuaries, medical professionals, information technology experts, and other professionals who serve clients that include health plans, insurance companies, healthcare providers, employers, governments, pharmaceutical companies, medical device manufacturers and others. Milliman qualifies consultants through a rigorous evaluation process that designates a consultant as an approved professional, which means the consultant is approved to work directly with clients, and/or has signature authority, which means the consultant may sign reports and approve other professional's work products: I am both an approved professional and have signature authority. My professional responsibilities include provider contracting, pricing, insurance premium rate-setting, return on investment analysis for wellness programs and medical devices, value-based insurance design, forecasting and budgeting of health plans, and medical claims data warehousing.

As a result of my technical experience in medical economics, benefit pricing, and data analysis, I have developed an understanding of benefit pricing techniques and approaches used in the healthcare industry.

I have previously serviced, and continue to work as an expert witness for Reasonable Fee Methodologies, particularly for fees paid by automobile related medical claims where there is no contract between the insurer and provider of care. I have developed an understanding of medical provider billing patterns across the healthcare industry.

The opinions set forth in this report are based on my education, training and experience including my knowledge of medical insurance, benefit design and benefit pricing as commonly used by employers in the U.S. market.

My practice is being compensated \$390 per hour for my services as an expert witness. I may use charts or tables attached to or included in the body of this report as demonstrative exhibits if I testify in this matter. I understand that the parties may obtain further information relating to the matters addressed in this report and that I may be asked to review further information. I reserve

the right to review, modify, or expand upon my opinions based on any further information provided to me. I may also develop additional charts or other exhibits to use in my testimony.

Publications

Milliman Reasonable Fee Methodology on behalf of United Services Automobile Association (USAA), 2012

Analysis of Medical Bill Audit Services prepared on behalf of United Services Automobile Association (USAA), June 21, 2004

Frykberg, RG., Williams DV., Negative-Pressure Wound Therapy and Diabetic Foot Amputations: A retrospective study of Payer Claims Data. J. Am Podiatr Med Assoc. Sept/Oct 97(5)2008, P. 351-9.

Prior Expert Litigation Work

Expert Report: 2012-02016-PAB-MJW; Lindsey Parks, representative of a class of injured persons insured with USAA, plaintiff, vs. USAA and AUTO INJURY SOLUTIONS, (AIS), defendants.

Deposition: MySpine, PS Plaintiff v USAA Casualty Insurance Company, et al. Defendant, Civil Action No. C12-1973RAJ

Summary of Opinions

1. Examining retrospective claims data is the preferred starting point for pricing healthcare benefits for procedures, services, and supplies related to surgery and hormones therapy associated with gender reassignment. For purposes of this analysis, I used retrospective claims data from January 1, 2016 through December 31, 2016, from the Truven MarketScan® commercial research dataset.
2. In a population of 20,037,382 persons who likely had health insurance coverage for treatment associated with gender dysphoria, I identified 8200 persons, or 0.041% of the population, who had healthcare claims for treatments associated with gender dysphoria.
3. These real world data show a wide range of costs associated with gender dysphoria treatments among patients—from \$0 to \$311,000. The average cost of treatment per patient with gender dysphoria-related treatment is \$2,974. Using the same data, the average real world costs for persons who undergo gender reassignment surgery is \$21,302.
4. Because the real world data is only recently available and is limited to one year's claims experience, I blended the results with the cost information from Segal's January 23, 2017, report to Lisa Ellinger of the Wisconsin Department of Employee Trust Funds to arrive at an average cost per individual for individuals who had gender dysphoria-related surgical treatment to be \$35,000.
5. Given the relatively small proportion of members obtaining gender dysphoria treatments in the 2016 dataset and the widely varied costs associated with those treatments, I would expect volatile pricing for gender reassignment benefits from year to year. Therefore, it is fiscally prudent to add a risk margin to the final calculated benefit to account for the volatility in expected cost.
6. In my professional opinion, adding a risk margin of 50% for both the expected utilization of services and the average cost per person would be a reasonable way to price this risk margin. This results in total expected yearly cost of roughly \$301,600 and a per-member per-month ("PMPM") cost of \$0.15.

Group Benefit Pricing Approach

Insurers typically price health plan benefits using historical data that includes an insured population and their historical medical claims. Health plans calculate the expected premium they charge to fully insured employers using these basic steps. Self-insured employers follow a similar process when setting budgets for health care benefit expenditures. In the absence of historical claims data, other published sources are sought.

Regardless of who takes the risk, new health plan benefits impose a cost that the employer pays, either through an increased premium that reflects the health plans' increased claims risk (for fully-insured employers) or through medical claims expenses directly imposed on the employer (for self-insured employers).

The following steps are used to estimate the cost of a benefit¹:

1. Define the benefit by stating what services can be included and what services are excluded.
2. Gather enrollment data, also known as exposure data. This would be the number of covered employees and their dependents for an employer.
3. Calculate the average cost of the benefit, per patient, using historical base claim data for the covered services.
4. Estimate the number of the relevant healthcare services using a) how many individuals have the medical disorder at issue (here, gender dysphoria); b) how many of these individuals might seek covered treatments (here, procedures, services, and supplies related to surgery and sex hormones associated with gender reassignment); and c) for individuals who seek that treatment, the average cost of the treatment.
5. Add a reasonable risk margin based on uncertainties associated with the number of members who will seek the relevant treatments and the expected costs of those treatments.

Define the Benefit

The 2017 and 2018 Uniform Benefits for Wisconsin state employees who receive health care coverage through their employment with the State contains the following coverage exclusion (hereafter, the "Exclusion"):

"Surgical Services: Procedures, services, and supplies related to surgery and sex hormones associated with gender reassignment."

I used a broad definition of gender reassignment surgery for this analysis that includes individuals with a diagnosis of gender dysphoria and services that may be related to gender reassignment surgery, both in preparation for surgery or post-surgical treatment. The following

¹ For a more detailed description, see Group Insurance Chapter 33.

describes the basis for identifying, in the historical medical claims database² used here, individuals who submitted relevant claims.

Because the medical claims database used in this analysis contains claims associated with specific procedures, services, and supplies, I must determine which procedures, services, and supplies fall under the coverage exclusion described above. To do so, I reviewed benefit descriptions and medical policies for several health plans including:

- WPS Health Insurance Medical Affairs Policy. Service: Treatment of Gender Dysphoria. PUM 250-0039-1706. Medical Policy Committee approval 06/16/17; Effective Date: 08/21/17; Prior Authorization Needed: Yes.
- Blue Cross Blue Shield of Massachusetts: Medical Policy Transgender Services; Policy Number 189 updated effective 12/2017.
- Dean HealthPlan: Sex transformation Surgery (market-based) MP9465; October 31, 2016 Published/Effective 01/01/2017.
- Dean HealthPlan: Sex Transformation Surgery (standard) MP9469; Originated October 31, 2016; Revised April 19, 2017; Published/Effective 05/01/2017.

I used the Blue Cross Blue Shield of Massachusetts (“BCBSMA”) Medical Policy for selecting specific services related to surgery. The BCBSMA policy includes the most specific coding for gender reassignment surgical services of the policies I reviewed and it is consistent in its general descriptions with the WPS and Dean medical policy descriptions. The procedures listed on BCBSMA medical policy refer to those items that are subject to prior authorization, and when billed, the claim must include a diagnosis code associated with gender dysphoria.³

But the BCBSMA medical policy also indicates that other coded procedures may also relate to gender dysphoria treatments; when referring to the listed gender dysphoria codes, it states that “[t]he following codes are included below for information purposes only; this is not an all - inclusive list.” Likewise, the WPS medical policy states:

“Unless otherwise specified in the health plan, if a plan covers treatment for gender dysphoria, medically necessary services may include diagnostic evaluation, assessment, and treatment planning; psychotherapy; cross-sex hormone therapy; puberty suppressing medications; laboratory testing to monitor the safety of hormone therapy; and certain surgical treatments as listed in the Indications of Coverage section below, the Omnibus Pharmacy Policy for Treatments Reviewed by Medical Affairs, and Specialty Drug guidelines (Diplomat)”

To capture all surgically related services as described in these medical policies, including those not specified with lists of procedure codes, I have 1) created a “surgical bundle”, and 2) listed other related services in the ‘other’ category.

As for the first described method, the combination of surgical procedures listed in the policy and the associated medically necessary services may be combined to form a surgical bundle. For purposes of this report, I define a surgical bundle as all related services incurred 7 days prior to

² 2016 Truven Health MarketScan® Publication and Trademark Guidelines, commercial database. These data contain inpatient, outpatient and pharmacy claims and enrollment from large U.S. employers and health plans. (Hereafter, the “Database.”)

³ These codes include ICD-10 codes F64.0 – F64.9 (DSM-5 codes 302.6 and 302.85).

the surgical procedure and 60 days after the medical procedure. CMS uses a similar method to calculate costs associated with a surgical procedure.⁴

As for the second described method, the “other” category includes services such as lab tests and office visits related to the surgical procedures and treatment for hormonal therapy. This category also captures surgical procedures not otherwise specifically listed in the BCBSMA medial policy.

The Exclusion also specifically applies to “sex hormones associated with gender reassignment.”⁵ I identify hormone therapy related to gender reassignment surgery by first identifying individuals with a gender dysphoria diagnosis, and then querying the pharmacy table for their associated prescriptions of the following therapeutic classes⁶ of drugs:⁷

- 165: Hormones and Synthetics Substitutes. NEC.
- 167: Androgens and Combinations. NEC
- 170: Estrogens and Combinations. NEC
- 177: Progestins, NEC
- 246: Goandotrop Related Hormone Antagonist
- 262: Hormone-Modifying Therapy

Gather Enrollment, or Exposure Data

The Database was queried to find 8,200 de-identified individuals with a gender dysphoria diagnosis, to which I will refer to as the “Study Population.”

The next step is to determine the total members covered by relevant group health insurance plans that provide the defined benefit at issue. Because this analysis is meant to calculate the cost incurred by group health insurance plans that cover procedures, services, and supplies related to surgery and sex hormones associated with gender reassignment, members of plans that do not cover these treatments should be excluded from the total member population. Some individuals in the Database were presumably covered by plans that do not provide benefits for these treatments. However, the Database does not identify how many, if any, of the health plans or large employers exclude these benefits from their plan.

Therefore, I assume that if an individual’s claim was paid that included a gender dysphoria diagnosis, then that individual was covered by a plan that provides benefits for gender dysphoria treatments. Using a data field that allows me to calculate the number of all members of plans that presumably provide these benefits, I summed the enrollment for plans that included at least one individual in the Study Population; this resulted in a total population of 20,037,382.

⁴ Available at <https://innovation.cms.gov/initiatives/Bundled-Payments/learning-area.html> (last accessed April 19, 2018).

⁵ I understand, however, that the Exclusion is not applied to claims for sex hormones when those hormones are not associated with gender reassignment surgery.

⁶ Based on the AHFS Pharmacologic-Therapeutic Classification System as supplied by MarketScan.

⁷ These correspond to the WPATH regimens at pp. 47-50.

The percentage of individuals who were identified in The Database as having sought medical treatment and having a diagnosis related to gender dysphoria is then:

$$8,200 / 20,037,382 = 0.041\%$$

The Study Population ages range from 8 to 65 with a median of 23 and an average of 36.8.

29% of individuals in The Study Population were under age 18.

Estimate Average Cost

Costs described here are the amounts allowed by contract between insurers and providers. I have included inpatient costs, outpatient costs and pharmacy costs in this estimate.

Selecting all 8,200 members with a gender dysphoria diagnosis yields a average cost of \$2,974 per member with a gender dysphoria diagnosis and a median of \$527; actual per-member costs for those with gender dysphoria range from \$0.00 to \$311,000.

TABLE 1A⁸
SUMMARY OF COSTS OF STANDARD POPULATION BY CATEGORY

	Individuals	Total Cost	Cost per Person
Counseling	4,519	\$ 7,836,633	\$ 1,734
Hormone Therapy	4,489	\$ 2,947,095	\$ 657
Reassignment Surgery	469	\$ 7,257,523	\$ 15,474
Other	6,973	\$ 6,349,588	\$ 911
Total	8,200	\$ 24,390,839	\$ 2,974

The resulting PMPM cost is calculated as the percentage of the population who are likely to receive health care services times the average cost of the service provided divided by twelve months, or $8,200/20,037,282 \times \$2,974 / 12 = \$0.10$

The data lacks sufficient detail to determine which patients who have had counseling and hormone therapy are planning to or have had gender reassignment surgical procedures. I understand that counseling and hormone therapy would be covered under the Uniform Benefits at issue, if those services are unrelated to gender reassignment surgery. To address this uncertainty, table 1B isolates services for patients who are known to have had a surgical procedure.

⁸ Note that individuals may fall into several categories of services.

TABLE 1B
SUMMARY OF COSTS FOR SURGICAL PATIENTS

	Individuals	Total Cost	Average Cost
Counseling	259	\$ 424,909	\$ 1,641
Hormone Therapy	417	\$ 229,705	\$ 551
Reassignment Surgery	469	\$ 7,318,440	\$ 15,604
Other	458	\$ 2,017,564	\$ 4,405
Total	469	\$ 9,990,618	\$ 21,302

The resulting PMPM (per member per month) cost is calculated as the percentage of the population who are likely to receive health care services times the average cost of the service provided divided by twelve months, or $469/20,037,282 \times 21,302/12 = \$0.04$

As discussed further below, the “true” PMPM figure based on this data is somewhere between \$0.04 and \$0.10, since each set of calculations does not precisely track the coverage exclusion at issue.

The distribution of costs for surgical patients is as follows:

TABLE 1C
RANGE OF CLAIMS COSTS FOR SURGICAL PATIENTS
WITH A DIAGNOSIS OF GENDER DYSPHORIA/ GID

Cost Range	Percent of Individuals	Percent of Dollars
\$ 250	2.3%	0.0%
\$ 1,000	7.0%	0.2%
\$ 2,500	9.2%	0.7%
\$ 5,000	11.5%	2.0%
\$ 15,000	29.0%	13.8%
\$ 30,000	24.1%	24.4%
\$ 75,000	11.3%	24.8%
\$ 150,000	4.3%	21.7%
\$ 300,000	1.1%	9.2%
\$ 500,000	0.2%	3.1%

Further details regarding details of surgical costs and the age of the study population are provided in Tables 2 and 3, below.

TABLE 2
SUMMARY SURGICAL PROCEDURE DETAILS

Surgical Procedure Details	Individuals	Total Costs
MTF	119	\$ 930,822
FTM	349	\$ 2,797,955
Both	123	\$ 478,604
Face	19	\$ 238,436
Other	26	\$ 114,239
Additional 'Bundled' Services		\$ 1,542,811
Facility Costs when Inpatient	39	\$ 1,154,655

TABLE 3
SUMMARY OF STUDY POPULATION BY AGE

Age	Pct of Individuals
<18	29%
18-40	56%
40-65	16%

Estimate the Number of Expected Services

My review of prior studies of gender dysphoria prevalence and expected benefit utilization showed wide differences. These differences combine to produce uncertainty when attempting to calculate the expected healthcare costs for gender reassignment surgery and related services. Below I review prior studies to demonstrate the nature of the uncertainty.

SELF-REPORTING SURVEYS

The Centers for Disease Control and Prevention (CDC) 2014 Behavioral Risk Factor Surveillance System (BRFSS) estimated a prevalence rate of 0.6% as of 2011. The survey asked respondents whether they considered themselves to be transgender, and if yes, whether male-to-female, female-to-male, or gender nonconforming. This estimate was about twice that of a prior estimate of 0.3% from similar 2011 survey.

The DSM-5 manual describes the prevalence of gender dysphoria as follows:

- Natal adult males: 0.005% to 0.014%
- Natal adult females: 0.002% to 0.003%

The DSM-5 also opines that, “since not all adults seeking hormone treatment and surgical reassignment attend specialty clinics, these rates are likely modest underestimates.”⁹

⁹ DSM Manual at p. 454.

Zuker (2017) pointed out the inaccuracies of self-reported studies to determine incidence of gender dysphoria. He states:

The “recent studies suggest that the prevalence of a self-reported transgender identity in children, adolescents and adults ranges from 0 to 1.3%, markedly higher than prevalence rates based on clinic-referred samples of adults. The stability of a self-reported transgender identity or a gender identity that departs from the traditional male-female binary among non-clinic based populations remains unknown and requires further study.”

Identifying as gender dysmorphic does not necessarily mean the individual will seek related healthcare services or undergo gender transformation. Olyslager and Conway (2007) provide a useful framework to understand data available in claims based data sources:

P(TS) = the prevalence of transsexualism

P(SH) = the prevalence of transsexual people who have sought help from a healthcare provider

P(HT) = the prevalence of those on hormone therapy

P(ST) = the prevalence of those who have socially transitioned, and

P(SRS) = the prevalence of those who have undergone gender (sex) reassignment surgery

$P(TS) > P(SH) > P(HT) > P(ST) > P(SRS)^{10}$.

A retrospective claims based data analysis for pricing will include individuals who have sought help from a healthcare provider (P(SH)), who are on hormone therapy (P(HT)), and who have undergone gender reassignment surgery (P(SRS)). The data will not identify individuals who have socially transitioned (P(ST)) but not sought help from a healthcare provider nor will it identify individuals who may identify as transgender or nongender conforming but have not sought help from a healthcare provider.

It should also be noted that the epidemiology definitions of prevalence and incidence may not be accurately reflected in a retrospective claims dataset consisting of one year's of incurred claims. There may be individuals who identify as transgender or nongender conforming who are included in the enrollment data who have not sought care from a healthcare provider as part of their health benefit.

CLAIMS BASED ANALYSIS

Naugle (2015) searched a 2012 medical claims dataset which found 0.004% of members had an insurance claim related to gender dysphoria. This analysis likely underestimates the true rate of gender dysphoria-related claims. In recent years many health plans and employers have begun to remove exclusions for gender reassignment benefits, which prompts another look at using health insurance claims data as a reliable source for estimating claims costs.

My analysis presents a more accurate picture of the true rate of gender dysphoria-related claims. This is because the Database used for this study represents an early look at the expected utilization of procedures, services, and supplies related to surgery and hormone therapy associated with gender reassignment and represents the first full year ICD-10

¹⁰ The authors point out that these ratios will be factors of many local conditions.

diagnosis codes are used after being first implemented in October 2015. Again, as calculated above, the 2016 medical claims dataset found 0.041% of members had an insurance claim with a diagnosis of gender dysphoria.

While the annual utilization figure found in The Database remains lower than the prevalence rates from the self-reported sources discussed above, the 0.041% utilization rate comes closer to describing the expected medical utilization for gender reassignment benefits than self-reported prevalence studies.

However, as discussed further below, recent movement to remove gender reassignment benefit exclusions and the relatively low prevalence of gender dysphoria, suggests continued caution when applying utilization estimates for pricing purposes. Accordingly, considerations for addressing the risk of underestimating the utilization rate are discussed below as a potential adjustment to the PMPM figures calculated above.

JANUARY 23, 2017, SEGAL REPORT FROM KIRSTEN R. SCHATTEN, ASA AND KENNETH C. VIEIRA, FSA TO LISA ELLINGER RE: TRANSGENDER COST ESTIMATE

Schatten and Viera state that there is a lack of information and data to provide specific information on estimated cost to the Plan. Schatten and Viera provide an estimated PMPM cost range of \$0.05 to \$0.13. The pricing formula and approach used in this report¹¹ is consistent with pricing principles.

However, there is no mention of the definition of the benefit or any adverse outcomes or comorbidities that may be associated with the procedures. The latter omission could cause the Segal report to underestimate the true costs of providing coverage for gender reassignment surgery.

Summary & Risk Margin Discussion

As stated above, the expected utilization rate for surgical procedures, services and supplies related to surgery and hormone therapy associated with gender reassignment is a relatively small fraction of the total insured population. Additionally, there is a wide variance per individual cost (see table 1C). In an insured population of 167,543, the estimated number of individuals who obtain the more expensive gender reassignment surgery is between 3-4 individuals—although this estimate may vary from year to year.

From the summary above, the expected number of individuals obtaining gender dysphoria-related treatment in a population of roughly 167,500 would be:

¹¹ I independently calculated a PMPM of \$0.084 using the information available in the report.

TABLE 5
EXPECTED NUMBER OF GENDER DYSPHORIC INDIVIDUALS OBTAINING CARE IN A POPULATION OF
167,500

36	Counseling
36	Hormone Therapy
4	Reassignment Surgery
55	Other
65	Total

Individuals have complex health care needs and recommended treatment approaches and health care delivery will vary depending on patient complexity and preferences. Moreover, individuals may experience unforeseen complications resulting from gender reassignment procedures; any resulting complications will add to the costs of care for these particular patients.

Based on the claims analysis presented above, I observed that the expected average cost was for all individuals with a gender dysphoria diagnosis was \$2,974 with ranges from \$0.00 to \$311,000 and a median of \$527. The average cost for those who underwent gender reassignment surgery was \$21,302 per individual.

The implication of this wide range of average costs is that the expected total costs for a population of around 167,500 is highly variable. Considering the range of costs, it is plausible that in any given year, ETF and participating health plans could experience an adverse year of claims experience with more individuals seeking surgery than predicted who have higher than average surgical costs. Likewise, it would only take one individual with a catastrophic claim to significantly raise average and total costs.

Some of the reasons for this variability include:

- 1) Variability in the level of reconstruction: FTM surgical procedures may include mastectomy, male chest construction, hysterectomy and oophorectomy (removal of ovaries), urethraplasty, vaginectomy, scrotoplasty, and/or implantation of prostheses. MTF surgical procedures may include breast autmentation, penectomy, orchiectomy, vaginoplasty, clitoroplasty, and vulvoplasty. These procedures may be one in combination (in one surgical episode) or individually over time, and may or may not include the full suite of possible reconstructions.
- 2) Complications: These procedures are not risk free and could result in complications related to surgery or treatment that require further expensive treatment.
- 3) Location: Procedures performed in an ambulatory care setting or surgical center are less expensive than done in an inpatient setting.

For example, it is possible that, in a given year in ETF's population of around 167,500, eight individuals might submit claims for gender reassignment surgery (rather than three to four) at an average cost of \$100,000 (rather than the calculated average cost of around \$21,000). This would result in a total cost of \$800,000 in claims, a six fold increase from the average calculated above. In my professional experience, this would not be an unusual variance, and it therefore it must be acknowledged when pricing the benefit at issue.

I calculated above a range of PMPM costs from \$0.04 to \$0.10 using medical claims data from 2016, depending on the scope of services counted in the calculation. Based on these

calculations, I expect the value to be in-between \$0.04 and \$0.10 and therefore I use a midpoint of \$0.07.

The PMPM calculated above is \$0.07. $\$0.07 \times 167,543 \times 12 = \$140,736$ of expected cost to the Employee Trust Fund which is .01% of total premium based on Segal's report that the Wisconsin Department of Employee Trust Funds expended \$1.3 billion of non-Medicare premiums for 2017.

I observed that the average cost from the Database of those undergoing surgery of \$21,302 is lower than the values presented in the Segal study which were \$41,600 for MTF surgeries and \$64,200 for FTM surgeries.

Confident use of medical claims data for benefit pricing presumes several years of available data. Given that 2016 is the first year that a medical claims database contains sufficient claims for pricing gender reassignment benefits, it is prudent to blend it with other available data such as the pricing sources used in the Segal report.

I blend the average cost from the Database, \$21,302, with the weighted average¹² of Segal's cost estimates ($0.66 \times 41,600 + 0.34 \times 64,200 = \$49,284$) by rounding the midpoint to the nearest thousand to obtain a blended cost estimate of \$35,000 for gender reassignment surgery and related services and supplies resulting in a PMPM of \$0.07.

In my professional opinion and given all the factors discussed in this section, adding a risk margin of 50% for both the expected utilization of services and the average cost per person would be a reasonable way to price a risk margin for these services.

The resulting PMPM would be \$0.15 ($\$35,000 \times 1.5 \times .0023\%^{13} \times 1.5 / 12$). The expected yearly cost to ETF and participating health plans with this added contingency would be $\$0.15 \times 12 \times 167,543 = \$301,577$.

This approach would cover most contingencies of high claim costs associated with a gender reassignment benefit, but it would result in excess revenue during an average or below average utilization year. The risk margin would be reviewed and adjusted annually based on the financial position of the plan at the time and additional, future claims data.

Other Considerations

The 2016 study population from the Database used for my analysis has the following limitations:

1. It is possible there was pent up demand, meaning individuals who had not previously had access to transgender benefits through their employer decides to undergo transgender transformation with the first year of the exclusion removal. This would suggest a spike in utilization that would subside over time.

¹² 34% of the individuals who had surgery in the Database were male.

¹³ 469 / 20,0323,282

2. The treatment period is limited to one year, whereas treatment for gender reassignment surgery, including counseling and hormone treatment may be on-going. Therefore long term costs are not yet understood through the claims data.
3. If considering claims costs for surgical bundles that span 60 days, the annual costs and accompanying prevalence are limited to ten months from the first date of the procedure.

Review of other estimates

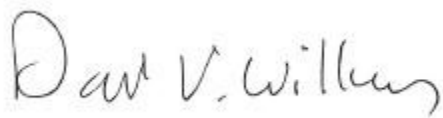
EXPERT WITNESS REPORT OF STEPHANIE BUDGE, PH.D.

I reviewed the Cost of Transition-Related Care section in the Expert Witness Report of Stephanie Budge, Ph.D. found on page 22. The report relies on a cost effectiveness study for insurance companies to cover transition-related care. Padula, et al. (2016). The statistical analysis performed in the Padula study was a Quality of Life Year Cost-Effectiveness analysis using a Markov model based on a transgender discrimination survey, standard utility scores, and costs from disparate sources over different time periods.

These types of studies are not used in the actuarial sciences for benefit pricing purposes. They lack sufficiently detailed information to match the costs with the associated benefit descriptions for a specific time period.

The measured outcome in the Padula study is a Quality Adjusted Life Year at 5 year and 10 year horizons, which are too far out for benefit pricing purposes. The estimated costs are derived from an ad hoc survey¹⁴, and procedures were weighted in an undisclosed fashion by procedure prevalence¹⁵ with a publication reference of 2007. Inputs with attached costs also include measures not included in standard health benefits including cost utilities for items such as job loss, depression, and attempted suicide. None of these study design elements would be used in a current pricing of medical benefits.

Respectfully Submitted



David V. Williams

Date: 19 April 2018

¹⁴ Padula, et al. (2016) at p.100.

¹⁵ Paudla, et al. (2016) at p. 96.

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Bernstein, GR., Brandel, SS.. Chapter 33: Estimating Medical Claims Costs. Group Insurance. Skwire DD. Principal Editor. ACTEX Publications, New Hartford, CT. 2016

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Padula, WV. Heru, S., Campbell, JD. Societal Implications of Health Insurance coverage for Medically Necessary Services in the U.S. Transgender Population: A Cost-Effectiveness Analysis. J Gen Intern Med 31(4): 394-401; doi: 10.1007/s11606-015-3529-6. 2015.

Olyslager, F., Conway L., On the Calculation of Prevalence of Transsexualism. Presented at WPATH 20th International Symposium, Chicago, IL. September 5-8, 2007.

Schatten, KR., Vieira, KC., Transgender Cost Estimate. Letter to Lisa Ellinger. January 23, 2017

Standards of Care for the Health of Transsexual, Transgender, and Gender nonconforming People. The World Professional Association for Transgender Health. 7th Edition. 2011.

Stephanie Budge, PhD. Expert Witness Report. 2/19/2018

Zuker, ZJ., Epidemiology of gender dysphoria and transgender identify, Sexual Health 2017; 14, 404-411. doi: 10.1071/SHI7067.

Exhibit A

CURRICULUM VITA

David Williams
Senior Healthcare Consultant

Milliman Inc.
80 Lamberton, Road
Windsor, CT 06095
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david.williams@milliman.com

WORK HISTORY AND EXPERIENCE

Milliman, Windsor, CT

Senior Healthcare Consultant (1999 – present)

- Consultant to medical device manufacturers seeking economic studies in support of FDA approval, pricing, and market potential. Ongoing
- Lead hospital contracting support for health plans. Ongoing
- Expert witness for UCR related medical billing disputes. Ongoing
- Consultant for risk bearing provider organizations and accountable care organizations. Ongoing
- Lead consultant for State of Connecticut employee benefits managing \$1.4 billion in medical claims. 2006-2015
- Creator of CTHEP.COM, an employee internet portal that captures employee adherence to an innovative Value Based Insurance Design (VBI-D), 2012
- Developer of physician payment system for automobile related claims, 2009
- Project Manager GASBHelp.com, a sophisticated on-line reporting system to meet phase III GASB 45 requirements. 2008
- Office technology committee chair and HIPAA compliance officer.

MedSpan, Inc. Hartford CT

Director, Quality Management/Risk Share Arrangements (1994 – 1999)

- Executed and managed Medicare risk share agreements with ten physician hospital organizations.
- Responsible for Total Quality Management that resulted in NCQA accreditation. This was NCQA's first Physician Hospital Organization accreditation.
- Built a network of 23 hospitals with over 5,500 physicians for a newly created Health Maintenance Organization.
- Researched and implemented clinical guidelines and utilization management policies and procedures

Kaiser Permanente

Director, Medical Economics, Southern California and Northeast Regions, (1987-1994)

EDUCATION

BA, Economics – Brigham Young University, Provo, UT
Masters courses, Managerial Economics; quantitative emphasis, BYU, Provo, UT
Database Administration: Microsoft Professional Development Course
Master Classes, Data Mining – Central Connecticut State University, on-line
Master Classes, Public Health – UMASS, Amherst, on-line
Predictive Modeling and Data Science using R – Coursera

PROFESSIONAL PUBLICATIONS

Expert Report: Lyndsey Parks plaintiff vs. USAA and Auto Injury Solutions (AIS) defendants. 2013
Negative-Pressure Wound Therapy and Diabetic Foot Amputations: A retrospective study of Payer Claims Data.
Journal of the American Podiatric Medical Association, Sept/Oct 2007. P. 351
Demystifying the Medical Underwriting Cycle. Kaiser Foundation, 1990, unpublished manuscript.

SPEAKING ENGAGEMENTS

2018 MassMedic: Using Real World Data for Medical Device FDA Approval
2017 Milliman Forum: Tiered Network Analysis
2017 Milliman Forum: Advances and ROI in Wellness Programs and Wearables
2013 Milliman Forum: Big Data
2013 Milliman Forum: Value Based Insurance Design
2013 Milliman Forum: Advances in Wellness Programs
2012 Causality Actuarial Society Issues in Auto Injury Medical Reimbursement
2012 Milliman Forum: Value Based Insurance Design at the State of Connecticut
2010 Milliman Forum: Innovations in Physician Fee Schedules
2009 Milliman Forum: Wellness Programs
2005 Milliman Forum: Milliman Data Sources
2005 Florida HMO Association: Data Warehouse Basics
2005 KCI National Sales Conference: The Economic Value of the V.A.C. System
2004 National Pressure Ulcer Conference: Comorbid Conditions in Pressure Ulcers
2004 ISPOR: Avoiding Amputations using the V.A.C. System
2004 Milliman Forum: Milliman Data Sources
2002 Society of Actuaries: Advances in Data Warehousing
2002 Milliman Forum: Medical Device Economic Modeling
2001 Society of Actuaries: Issues in Healthcare Data Quality
2001 Milliman Forum: Auditing Using Claims Data
2000 Milliman Forum: Medical Data Warehousing
1995 New England HEDIS Coalition: Issues in HEDIS Reporting

ASSOCIATIONS AND VOLUNTEER WORK

Board of Directors: Farmington Valley Symphony Orchestra
Friends of Music, Farmington Connecticut School District
International Society for Pharmacoeconomics and Outcomes Research (ISPOR)
MassMedic

LANGUAGES

Chinese Cantonese– conversationally fluent
Chinese Mandarin – early intermediate level

Exhibit B



Medical Affairs Policy

Service: Treatment of Gender Dysphoria

PUM 250-0039-1706

Medical Policy Committee Approval	06/16/17
Effective Date	08/21/17
Prior Authorization Needed	Yes

Disclaimer: This policy is for informational purposes only and does not constitute medical advice, plan authorization, an explanation of benefits, or a guarantee of payment. Benefit plans vary in coverage and some plans may not provide coverage for all services listed in this policy. Coverage decisions are subject to all terms and conditions of the applicable benefit plan, including specific exclusions and limitations, and to applicable state and federal law. Some benefit plans administered by the organization may not utilize Medical Affairs medical policy in all their coverage determinations. Contact customer services as listed on the member card for specific plan, benefit, and network status information.

Medical policies are based on constantly changing medical science and are reviewed annually and subject to change. The organization uses tools developed by third parties, such as the evidence-based clinical guidelines developed by MCG to assist in administering health benefits. This medical policy and MCG guidelines are intended to be used in conjunction with the independent professional medical judgment of a qualified health care provider. To obtain additional information about MCG, email medical.policies@wpsc.com.

Description:

Gender dysphoria is a condition in which there is a marked incongruence (discrepancy) between an individual's experienced/expressed gender and the assigned gender (biologic sex assigned at birth) and the associated gender role and/or primary and secondary sex characteristics.

Unless otherwise specified in the health plan, if a plan covers treatment for gender dysphoria, medically necessary services may include diagnostic evaluation, assessment, and treatment planning; psychotherapy; cross-sex hormone therapy; puberty suppressing medications; laboratory testing to monitor the safety of hormone therapy; and certain surgical treatments as listed in the Indications of Coverage section below, the Omnibus Pharmacy Policy for Treatments Reviewed by Medical Affairs, and Specialty Drug guidelines (Diplomat).

This policy is based on the World Professional Association for Transgender Health (WPATH) Standards of Care for the Health of Transsexual, Transgender, and Gender Nonconforming People, 7th version, Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5), American Psychiatric Association recommendations as well as other evidence based publications.

WPATH describes the transition from one gender to another in three stages:

1. Living in the gender role consistent with gender identity
2. The use of cross-sex hormone therapy after living in the new gender role for a least three months



3. Gender-affirmation surgery after living in the new gender role and using hormonal therapy for at least 12 months.

Clinical evidence for many of these services is limited and lacks long term safety data. Statistically robust randomized controlled trials are needed to address benefits versus clinical risks and long-term health outcomes. Expert consensus recommendations include that diagnosis be made by mental health professionals and that care is coordinated between the behavioral health professional, endocrinologists, and experienced surgeons.

This medical policy does not apply to individuals with ambiguous genitalia or disorders of sexual development, unless there is concurrent / concomitant diagnosed gender dysphoria.

Indications of Coverage:

When criteria below are met, the following gender reassignment surgical procedures may be considered medically necessary:

Note: In the absence of health plan limits, more than one gender transformation reassignment (which may include several staged surgeries) per lifetime will be considered experimental investigational and unproven

Female-to-Male (FtM)

1. Bilateral mastectomy or breast reduction
2. Hysterectomy (removal of uterus)
3. Metoidioplasty (creation of penis, using clitoris)
4. Penile prosthesis
5. Phalloplasty (creation of penis)
6. Salpingo-oophorectomy (removal of fallopian tubes and ovaries)
7. Scrotoplasty (creation of scrotum)
8. Testicular prostheses
9. Urethroplasty (reconstruction of male urethra)
10. Vaginectomy (removal of vagina)
11. Vulvectomy (removal of vulva)



12. Bilateral mastectomy or breast reduction may be done as a stand-alone procedure, without having genital reconstruction procedures. In those cases, the individual does not need to complete hormone therapy prior to procedure.

Male-to-Female (MtF)

1. Clitoroplasty (creation of clitoris)
2. Labiaplasty (creation of labia)
3. Orchiectomy (removal of testicles)
4. Penectomy (removal of penis)
5. Urethroplasty (reconstruction of female urethra)
6. Vaginoplasty (creation of vagina)

A. Mastectomy for Female-to-Male (FtM) Patients

1. Single letter of referral from a qualified mental health professional; **and**
2. Persistent, well-documented gender dysphoria; **and**
3. Capacity to make a fully informed decision and to consent for treatment; **and**
4. Age of majority (18 years of age or older); **and**
5. If significant medical or mental health concerns are present, they must be reasonably well controlled

➤ Note: A trial of hormone therapy is not a pre-requisite to qualifying for a mastectomy

B. Requirements for gonadectomy (hysterectomy and oophorectomy in female-to-male and orchiectomy in male-to-female)

1. Two referral letters from qualified mental health professionals, one in a purely evaluative role; **and**
2. Persistent, well-documented gender dysphoria; **and**
3. Capacity to make a fully informed decision and to consent for treatment; **and**
4. Age of majority (18 years or older); **and**



5. If significant medical or mental health concerns are present, they must be reasonably well controlled; **and**
6. Twelve months of continuous hormone therapy as appropriate to the member's gender goals (unless the member has a medical contraindication or is otherwise unable or unwilling to take hormones)

C. Genital reconstructive surgery

1. Two referral letters from qualified mental health professionals, one in a purely evaluative role; **and**
 2. Persistent, well-documented gender dysphoria; **and**
 3. Capacity to make a fully informed decision and to consent for treatment; **and**
 4. Age of majority (age 18 years and older); **and**
 5. If significant medical or mental health concerns are present, they must be reasonably well controlled; **and**
 6. Twelve months of continuous hormone therapy as appropriate to the member's gender goals (unless the member has a medical contraindication or is otherwise unable or unwilling to take hormones); **and**
 7. Twelve months of living in a gender role that is congruent with their gender identity (real life experience)
- Note: Blepharoplasty, body contouring (liposuction of the waist), breast enlargement procedures such as augmentation mammoplasty and implants, face-lifting, facial bone reduction, feminization of torso, hair removal, lip enhancement, reduction thyroid chondroplasty, rhinoplasty, skin resurfacing (dermabrasion, chemical peel), and voice modification surgery (laryngoplasty, cricothyroid approximation or shortening of the vocal cords), which have been used in feminization, are considered cosmetic. Similarly, chin implants, lip reduction, masculinization of torso, and nose implants, which have been used to assist masculinization, are considered cosmetic.

***Requirements for a Qualified Mental Health Professional:**

1. Master's degree or equivalent in a clinical behavioral science field granted by an institution accredited by the appropriate national accrediting board. The professional should also have documented credentials from the relevant licensing board or equivalent; **and**



2. Competence in using the Diagnostic Statistical Manual of Mental Disorders and/or the International Classification of Disease for diagnostic purposes; **and**
3. Ability to recognize and diagnose co-existing mental health concerns and to distinguish these from gender dysphoria; **and**
4. Knowledgeable about gender nonconforming identities and expressions; and the assessment and treatment of gender dysphoria; **and**
5. Continuing education in the assessment and treatment of gender dysphoria. This may include attending relevant professional meetings, workshops, or seminars; obtaining supervision from a mental health professional with relevant experience; or participating in research related to gender nonconformity and gender dysphoria.

Limitations of Coverage:

- A. Review health plan and endorsements for exclusions and prior authorization or benefit requirements.
- B. If used for a condition/diagnosis other than is listed in the Indications of Coverage, deny as experimental, investigational, and unproven to affect health outcomes.
- C. If used for a condition/diagnosis that is listed in the Indications of Coverage, but the criteria are not met, deny as not medically necessary.
- D. **Certain ancillary procedures, including but not limited to the following, are exclusions of the health plan for all individuals or are considered cosmetic, when performed as part of gender reassignment:**
 1. Abdominoplasty
 2. Blepharoplasty
 3. Body contouring (e.g., fat transfer, lipoplasty, panniculectomy)
 4. Breast enlargement, including augmentation mammoplasty and breast implants
 5. Brow lift
 6. Calf implants
 7. Cheek, chin and nose implants
 8. Injection of fillers or neurotoxins



9. Face/forehead lift and/or neck tightening
10. Facial bone remodeling for facial feminization
11. Hair removal (e.g., electrolysis or laser)
12. Hair transplantation
13. Lip augmentation
14. Lip reduction
15. Liposuction (suction-assisted lipectomy)
16. Mastopexy
17. Pectoral implants for chest masculinization
18. Reproductive services including, but not limited to, sperm or oocyte preservation, cryopreservation of fertilized embryos
19. Reversal of genital surgery or reversal of surgery to revise secondary sexual characteristics
20. Rhinoplasty
21. Skin resurfacing (e.g., dermabrasion, chemical peels, laser)
22. Thyroid cartilage reduction/reduction thyroid chondroplasty/trachea shave (removal or reduction of the Adam's apple)
23. Voice modification surgery (e.g. laryngoplasty, glottoplasty or shortening of the vocal cords)
24. Voice lessons and voice therapy

Documentation Required:

- Referral letters from a qualified mental health professional as described in the indications containing all of the following:
 1. Client's general identifying characteristics (include pertinent clinical information such as preferred gender pronoun); **and**
 2. Results of the client's psychosocial assessment, including any diagnoses; **and**



3. The duration of the mental health professional's relationship with the client, including the type of evaluation and therapy or counseling to date; **and**
 4. An explanation that the WPATH criteria for surgery have been met, and a brief description of the clinical rationale for supporting the patient's request for surgery; **and**
 5. A statement about the fact that informed consent has been obtained from the patient; **and**
 6. A statement that the mental health professional is available for coordination of care and how contact can be made
- Medication Records
 - Laboratory records if indicated

References:

1. Markwick L. Male, Female, Other: Transgender and the Impact in Primary Care. The Journal for Nurse Practitioners Vol 12, Issue 5, May 2016.
2. Hayes MTD Sex reassignment for the Treatment of gender Dysphoria. Publication Date May 15, 2014. Annual Review April 12, 2016.
3. Hayes MTD Hormone Therapy for the Treatment of Gender Dysphoria. Publication Date May 19, 2014. Annual Review April 15, 2016.
4. Hayes MTD Ancillary Procedures and Services for the Treatment of Gender Dysphoria. Publication Date May 9, 2014. Annual Review April 12, 2016.
5. World Professional Association for Transgender Health (WPATH): 2012 WPATH Standards of care for the health of transsexual, transgender, and gender nonconforming people, version 7
6. MCG 21st ed. ORG: B-010-IOP (BHG). Other Psychiatric disorders: Intensive Outpatient Program.
7. MCG 21st ed. ORG: B-010-RES (BHG). Other Psychiatric disorders: Residential Care.



WPS/Arise Review History:

Implemented	08/21/17
Medical Policy Committee Approval	06/16/17
Reviewed	
Revised	
Developed	06/16/17

Approved by the Medical Director

Exhibit C



Medical Policy

Transgender Services

Table of Contents

• Policy: Commercial	• Description	• References
• Policy: Medicare	• Policy History	• Coding Information
• Authorization Information	• Information Pertaining to All Policies	• Endnotes

Policy Number: 189

BCBSA Reference Number: N/A

NCD/LCD: N/A

Related Policies

None

Policy¹

Commercial Members: Managed Care (HMO and POS), PPO, and Indemnity Medicare HMO BlueSM and Medicare PPO BlueSM Members

Please Note: According to the American Psychiatric Association, the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5) defines gender dysphoria as a condition where a person's gender at birth is contrary to the one they identify with. This definition replaces the criteria for gender identity disorder which will no longer be used in DSM-5. However, ICD-10 codes continue to use the term gender identity disorder, and providers will need to submit claims for coverage using this diagnosis.

Mastectomy and/or creation of a male chest for female to male/gender neutral patients may be considered **MEDICALLY NECESSARY** when **ALL** of the following candidate criteria are met:

- The candidate is at least 18 years of age,
 - If the candidate is less than 18 years of age, then treating clinician must submit information indicating why it would be clinically inappropriate to require the candidate to meet this criterion.
- The candidate has been diagnosed with gender dysphoria (ICD-10 codes F64.0-F64.9 gender identity disorder), including meeting **ALL** of the following indications:
 - The desire to live and be accepted as a member of another sex other than one's assigned sex, typically accompanied by the desire to make the physical body as congruent as possible with the identified sex through surgery and hormone treatment
 - The new gender identity has been present for at least 12 months
 - The gender dysphoria (ICD-10 codes F64.0-F64.9 gender identity disorder) is not a symptom of another mental disorder.
- The candidate has completed a minimum of 12 months of successful continuous full time real-life experience in their new gender, with no returning to their original gender. This includes members who identify as genders other than male or female.

- If the candidate does not meet the 12 month time frame criteria of 12 months of successful continuous full time real-life experience in their new gender noted above, then the treating clinician must submit information indicating why it would be clinically inappropriate to require the candidate to meet these criteria. When submitted, the criteria of 12 months of successful continuous full time real-life experience in their new gender may be waived.

Breast augmentation in male to female patients may be considered MEDICALLY NECESSARY when **ALL** of the following candidate criteria are met:

- The candidate is at least 18 years of age,
 - If the candidate is less than 18 years of age, then treating clinician must submit information indicating why it would be clinically inappropriate to require the candidate to meet this criterion.
- The candidate has been diagnosed with gender dysphoria (ICD-10 codes F64.0-F64.9 gender identity disorder), including meeting **ALL** of the following indications:
 - The desire to live and be accepted as a member of another sex other than one's assigned sex, typically accompanied by the desire to make the physical body as congruent as possible with the identified sex through surgery and hormone treatment
 - The new gender identity has been present for at least 12 months
 - The gender dysphoria (ICD-10 codes F64.0-F64.9 gender identity disorder) is not a symptom of another mental disorder.
- For those candidates without a medical contraindication, the candidate has undergone a minimum of 12 months of continuous hormonal therapy that is provided under the supervision of a licensed clinician.
- The candidate has completed a minimum of 12 months of successful continuous full time real-life experience in their new gender, with no returning to their original gender. This includes members who identify as genders other than male or female.
 - If the candidate does not meet the 12 month time frame criteria of 12 months of successful continuous full time real-life experience in their new gender noted above, then the treating clinician must submit information indicating why it would be clinically inappropriate to require the candidate to meet these criteria. When submitted, the criteria of 12 months of successful continuous full time real-life experience in their new gender may be waived.

Genital surgery in male to female, female to male, or gender neutral patients may be considered MEDICALLY NECESSARY when **ALL** of the following candidate criteria are met as documented by **two** treating clinicians:

- The candidate is at least 18 years of age,
 - If the candidate is less than 18 years of age, then treating clinicians must submit information indicating why it would be clinically inappropriate to require the candidate to meet this criterion.
- The candidate has been diagnosed with gender dysphoria (ICD-10 codes F64.0-F64.9 gender identity disorder), including meeting **ALL** of the following indications:
 - The desire to live and be accepted as a member of another sex other than one's assigned sex, typically accompanied by the desire to make the physical body as congruent as possible with the identified sex through surgery and hormone treatment
 - The new gender identity has been present for at least 12 months
 - The gender dysphoria (ICD-10 codes F64.0-F64.9 gender identity disorder) is not a symptom of another mental disorder.
- For those candidates without a medical contraindication, the candidate has undergone a minimum of 12 months of continuous hormonal therapy that is provided under the supervision of a licensed clinician.
- The candidate has completed a minimum of 12 months of successful continuous full time real-life experience in their new gender, with no returning to their original gender. This includes members who identify as genders other than male or female.
 - If the candidate does not meet the 12 month time frame criteria of 12 months of successful continuous full time real-life experience in their new gender noted above, then the treating

clinician must submit information indicating why it would be clinically inappropriate to require the candidate to meet these criteria. When submitted, the criteria of 12 months of successful continuous full time real-life experience in their new gender may be waived.

Facial Feminization (typical components of facial feminization) or Masculinization may be considered **MEDICALLY NECESSARY** when **ALL** of the following candidate criteria are met:

- The candidate is at least 18 years of age,
 - If the candidate is less than 18 years of age, then the treating clinician must submit information indicating why it would be clinically inappropriate to require the candidate to meet this criterion.
- The candidate has been diagnosed with gender dysphoria (ICD-10 codes F64.0-F64.9 gender identity disorder), including meeting **ALL** of the following indications:
 - The desire to live and be accepted as a member of another sex other than one's assigned sex, typically accompanied by the desire to make the physical body as congruent as possible with the identified sex through surgery and hormone treatment
 - The new gender identity has been present for at least 12 months
 - The gender dysphoria (ICD-10 codes F64.0-F64.9 gender identity disorder) is not a symptom of another mental disorder.
- The candidate has completed a minimum of 12 months of successful continuous full time real-life experience in their new gender, with no returning to their original gender.
 - If the candidate does not meet the 12 month time frame criteria of 12 months of successful continuous full time real-life experience in their new gender noted above, then the treating clinician must submit information indicating why it would be clinically inappropriate to require the candidate to meet these criteria. When submitted, the criteria of 12 months of successful continuous full time real-life experience in their new gender may be waived.
- Covered procedures when medical necessity criteria are met:
 - Forehead contouring
 - Rhinoplasty
 - Mandible reconstruction
 - Trachea shave
 - Blepharoplasty
 - Brow lift
 - Cheek augmentation
 - Face lift or liposuction (only as needed in conjunction with one of the above procedures).

The following facial procedures are considered **INVESTIGATIONAL** and are not covered:

- Lip enhancement
- Neck lift
- Dermabrasion
- Chemical peel
- Hair transplant
- Electrolysis (except for genital surgery as noted below).

Electrolysis performed by a licensed dermatologist may be considered **MEDICALLY NECESSARY** for the removal of hair on a skin graft donor site prior to its use in genital sex reassignment surgery.

Oocyte, embryo, or sperm retrieval, freezing and storage for up to 24 months for transgender members prior to undergoing hormone therapy or genital sex reassignment surgery may be considered **MEDICALLY NECESSARY**. (See medical policy #086, Infertility Diagnosis and Treatment)

- Per subscriber certificate language, cryopreservation is limited to one cycle only.

GRS is **INVESTIGATIONAL** in the following circumstances:

- When one or more of the criteria above have not been met, OR
- Any services performed to reverse GRS, OR

- GRS procedures that are considered cosmetic are not covered unless otherwise specified in the member's individual subscriber certificate/benefit description.

Prior Authorization Information

Pre-service approval is required for all inpatient services for all products.

See below for situations where prior authorization may be required or may not be required for outpatient services.

Yes indicates that prior authorization is required.

No indicates that prior authorization is not required.

N/A indicates that this service is primarily performed in an inpatient setting.

Outpatient

Commercial Managed Care (HMO and POS)	NO for Gender Reassignment Surgery YES for Oocyte, Embryo or Sperm retrieval, freezing and storage
Commercial PPO and Indemnity	NO for Gender Reassignment Surgery YES for Oocyte, Embryo or Sperm retrieval, freezing and storage
Medicare HMO BlueSM	NO for Gender Reassignment Surgery YES for Oocyte, Embryo or Sperm retrieval, freezing and storage
Medicare PPO BlueSM	No

Description

Gender reassignment surgery (GRS) is a treatment option for Gender Dysphoria, a condition in which a person feels a strong and persistent identification with a gender other than the one assigned at birth accompanied by a severe sense of discomfort with their own gender. People with gender dysphoria often report a feeling of being born as the wrong sex.

GRS is not a single procedure, but part of a complex process involving multiple medical, psychiatric, and surgical modalities performed in conjunction with each other to help the candidate for gender reassignment achieve successful behavioral and medical outcomes. Before undertaking GRS, candidates need to undergo important medical and psychological evaluations, and begin medical therapies and behavioral trials to confirm that surgery is the most appropriate treatment choice.

Policy History

Date	Action
12/2017	Medically necessary criteria revised. New investigational indications described. Clarified coding information. New references added. Effective 12/1/2017.
4/2017	Clarified coding information.
2/2017	Clarified coding information.
4/2016	Electrolysis added as medically necessary prior to sex reassignment surgery. Clarified coding information. Clarified cryopreservation statement. Effective 4/1/2016.
10/2015	Clarified coding information.
9/2015	Clarified coding information.
8/2015	Ongoing coverage on cryopreservation for transgender members added. Statement transferred from medical policy #086, Infertility Diagnosis and Treatment. 8/1/2015
4/2015	Coverage for facial surgical procedures and documentation requirement clarified. Effective 4/1/2015.
11/2014	Medically necessary statement clarified. Effective 11/14/2014.
10/2014	Coding information clarified.
9/2014	Coding information clarified.
8/2014	Updated criteria for SRS qualification. Added facial feminization to non-cosmetic surgery section. Coding information clarified. Effective 8/27/2014.

6/2014	Updated Coding section with ICD10 procedure and diagnosis codes, effective 10/2015.
4/2014	Language on benefit riders added.
4/2014	Coding information clarified.
11/2011-4/2012	Medical policy ICD 10 remediation: Formatting, editing and coding updates. No changes to policy statements.
11/2011	Reviewed - Medical Policy Group - Plastic Surgery and Dermatology. No changes to policy statements.
12/2010	Reviewed - Medical Policy Group - Plastic Surgery and Dermatology. No changes to policy statements.
1/2/2010	New policy, effective 1/2/2010, describing covered and non-covered services.

Information Pertaining to All Blue Cross Blue Shield Medical Policies

Click on any of the following terms to access the relevant information:

[Medical Policy Terms of Use](#)

[Managed Care Guidelines](#)

[Indemnity/PPO Guidelines](#)

[Clinical Exception Process](#)

[Medical Technology Assessment Guidelines](#)

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CPT Codes / HCPCS Codes / ICD Codes

Inclusion or exclusion of a code does not constitute or imply member coverage or provider reimbursement. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage as it applies to an individual member.

Providers should report all services using the most up-to-date industry-standard procedure, revenue, and diagnosis codes, including modifiers where applicable.

The following codes are included below for informational purposes only; this is not an all-inclusive list.

The above [medical necessity criteria](#) on pp. 1-2 **MUST** be met for the following codes to be covered for Commercial Members: Managed Care (HMO and POS), PPO, Indemnity, Medicare HMO Blue and Medicare PPO Blue:

CPT Codes

Male to Female Surgery

CPT codes:	Code Description
17380	Electrolysis epilation, each 30 minutes
19325	Mammaplasty, augmentation; with prosthetic implant
19350	Nipple/areola reconstruction
19357	Breast reconstruction, immediate or delayed, with tissue expander, including subsequent expansion
19380	Breast reconstruction, immediate or delayed, with tissue expander, including subsequent expansion
53410	Urethroplasty, 1-stage reconstruction of male anterior urethra
54120	Amputation of penis; partial
54125	Amputation of penis; complete
54300	Plastic operation of penis for straightening of chordee (eg, hypospadias), with or without mobilization of urethra
54520	Orchiectomy, simple (including subcapsular), with or without testicular prosthesis, scrotal or inguinal approach
54690	Laparoscopy, surgical; orchiectomy
55970	Intersex surgery; male to female
56800	Plastic repair of introitus
56805	Clitoroplasty for intersex state
57291	Construction of artificial vagina; without graft
57292	Construction of artificial vagina; with graft
57335	Vaginoplasty for intersex state

Facial Surgery (Male or Female)**Brow Reconstruction**

CPT codes	Code Description
21137	Reduction forehead; contouring only
21138	Reduction forehead; contouring and application of prosthetic material or bone graft (includes obtaining autograft)
21139	Reduction forehead; contouring and setback of anterior frontal sinus wall
21208	Osteoplasty, facial bones; augmentation (autograft, allograft, or prosthetic implant)
21209	Osteoplasty, facial bones; reduction

Brow Lift

CPT codes	Code Description
67900	Repair of brow ptosis (supraciliary, mid-forehead or coronal approach)

Blepharoplasty

CPT codes	Code Description
15820	Blepharoplasty, lower eyelid
15821	Blepharoplasty, lower eyelid; with extensive herniated fat pad
15822	Blepharoplasty, upper eyelid
15823	Blepharoplasty, upper eyelid; with excessive skin weighting down lid

Rhinoplasty

CPT codes	Code Description
30400	Rhinoplasty, primary; lateral and alar cartilages and/or elevation of nasal tip
30410	Rhinoplasty, primary; complete, external parts including bony pyramid, lateral and alar cartilages, and/or elevation of nasal tip
30420	Rhinoplasty, primary; including major septal repair

Cheek Augmentation

CPT codes	Code Description
21270	Malar augmentation, prosthetic material
21208	Osteoplasty, facial bones; augmentation (autograft, allograft, or prosthetic implant)
21209	Osteoplasty, facial bones; reduction

Jaw Reconstruction

CPT codes	Code Description
21125	Augmentation, mandibular body or angle; prosthetic material
21127	Augmentation, mandibular body or angle; with bone graft, onlay or interpositional (includes obtaining autograft)
21208	Osteoplasty, facial bones; augmentation (autograft, allograft, or prosthetic implant)
21209	Osteoplasty, facial bones; reduction

Chin Reconstruction

CPT codes	Code Description
21120	Genioplasty; augmentation (autograft, allograft, prosthetic material)
21121	Genioplasty; sliding osteotomy, single piece
21122	Genioplasty; sliding osteotomies, 2 or more osteotomies (eg, wedge excision or bone wedge reversal for asymmetrical chin)
21123	Genioplasty; sliding, augmentation with interpositional bone grafts (includes obtaining autografts)
21208	Osteoplasty, facial bones; augmentation (autograft, allograft, or prosthetic implant)
21209	Osteoplasty, facial bones; reduction

Face Lift

The following codes are covered when required as part of a medically necessary facial feminization procedure.

CPT codes	Code Description
15824	Rhytidectomy; forehead
15825	Rhytidectomy; neck with platysmal tightening (platysmal flap, P-flap)
15826	Rhytidectomy; glabellar frown lines
15828	Rhytidectomy; cheek, chin, and neck

Liposuction

The following codes are covered when required as part of a medically necessary facial feminization procedure.

CPT codes	Code Description
15876	Suction assisted lipectomy; head and neck
15877	Suction assisted lipectomy; trunk
15878	Suction assisted lipectomy; upper extremity
15879	Suction assisted lipectomy; lower extremity

Trachea Shave

CPT codes	Code Description
31599	Unlisted procedure, larynx

Female to Male Surgery

CPT codes:	Code Description
19303	Mastectomy, simple, complete
19304	Mastectomy, subcutaneous
19316	Mastopexy
19350	Nipple/areola reconstruction
53430	Urethroplasty, reconstruction of female urethra
54660	Insertion testicular prosthesis
55175	Scrotoplasty; simple
55180	Scrotoplasty; complex
55980	Intersex surgery; female to male
56620	Vulvectomy; simple
56625	Vulvectomy; complete
56800	Plastic repair of introitus
56805	Clitoroplasty for intersex state
56810	Perineoplasty, repair of perineum, nonobstetrical
57110	Vaginectomy; complete removal of vaginal wall
57111	Vaginectomy; with removal of paravaginal tissue (radical vaginectomy)
58150	Total abdominal hysterectomy (corpus and cervix), with or without removal of tube(s), with or without removal of ovary(s)
58180	Supracervical abdominal hysterectomy (subtotal hysterectomy), with or without removal of tube(s), with or without removal of ovary(s)
58260	Vaginal hysterectomy, for uterus 250 gms or less
58262	Vaginal hysterectomy, for uterus 250 g or less; with removal of tube(s), and/or ovary(s)
58275	Vaginal hysterectomy, with total or partial vaginectomy
58290	Vaginal hysterectomy, for uterus greater than 250 g
58291	Vaginal hysterectomy, for uterus greater than 250 g; with removal of tube(s) and/or ovary(s)
58541	Laparoscopy, surgical, supracervical hysterectomy, for uterus 250 g or less;
58542	Laparoscopy, surgical, supracervical hysterectomy, for uterus 250 g or less; with removal of tube(s) and/or ovary(s)
58543	Laparoscopy, surgical, supracervical hysterectomy, for uterus greater than 250 g

58544	Laparoscopy, surgical, supracervical hysterectomy, for uterus greater than 250 g; with removal of tube(s) and/or ovary(s)
58550	Laparoscopy, surgical, with vaginal hysterectomy, for uterus 250 g or less;
58552	Laparoscopy, surgical, with vaginal hysterectomy, for uterus 250 grams or less; with removal of tube(s) and/or ovary(s)
58553	Laparoscopy, surgical, with vaginal hysterectomy, for uterus greater than 250 g
58554	Laparoscopy, surgical, with vaginal hysterectomy, for uterus greater than 250 grams; with removal of tube(s) and/or ovary(s)
58570	Laparoscopy, surgical, with total hysterectomy, for uterus 250 g or less;
58571	Laparoscopy, surgical, with total hysterectomy, for uterus 250 g or less; with removal of tube(s) and/or ovary(s)
58572	Laparoscopy, surgical, with total hysterectomy, for uterus greater than 250 g;
58573	Laparoscopy, surgical, with total hysterectomy, for uterus greater than 250 g; with removal of tube(s) and/or ovary(s)

The following ICD Diagnosis Codes are considered medically necessary when submitted with the CPT code above if above medical necessity criteria on pp. 1-2 are met:

ICD-10 Diagnosis Codes

ICD-10-CM Diagnosis codes:	Code Description
F64.0	Transsexualism
F64.1	Gender identity disorder in adolescence and adulthood
F64.2	Gender identity disorder of childhood
F64.8	Other gender identity disorders
F64.9	Gender identity disorder, unspecified

The above [medical necessity criteria](#) on pp. 1-2 **MUST** be met for the following codes to be covered for Commercial Members: Managed Care (HMO and POS), PPO, Indemnity, Medicare HMO Blue and Medicare PPO Blue:

ICD-10 Procedure Codes Male to Female Surgery

ICD-10-PCS procedure codes:	Code Description
0VTC0ZZ	Resection of Bilateral Testes, Open Approach
0H0T0ZZ	Alteration of Right Breast, Open Approach
0H0T3ZZ	Alteration of Right Breast, Percutaneous Approach
0H0TXZZ	Alteration of Right Breast, External Approach
0H0U0ZZ	Alteration of Left Breast, Open Approach
0H0U3ZZ	Alteration of Left Breast, Percutaneous Approach
0H0UXZZ	Alteration of Left Breast, External Approach
0H0V07Z	Alteration of Bilateral Breast with Autologous Tissue Substitute, Open Approach
0H0V0JZ	Alteration of Bilateral Breast with Synthetic Substitute, Open Approach
0H0V0KZ	Alteration of Bilateral Breast with Nonautologous Tissue Substitute, Open Approach
0H0V0ZZ	Alteration of Bilateral Breast, Open Approach
0H0V37Z	Alteration of Bilateral Breast with Autologous Tissue Substitute, Percutaneous Approach
0H0V3JZ	Alteration of Bilateral Breast with Synthetic Substitute, Percutaneous Approach
0H0V3KZ	Alteration of Bilateral Breast with Nonautologous Tissue Substitute, Percutaneous Approach

0H0V3ZZ	Alteration of Bilateral Breast, Percutaneous Approach
0H0VXZZ	Alteration of Bilateral Breast, External Approach
0HDSXZZ	Extraction of Hair, External Approach
0HMTXZZ	Reattachment of Right Breast, External Approach
0HMUXZZ	Reattachment of Left Breast, External Approach
0HMOVZZ	Reattachment of Bilateral Breast, External Approach
0HMXWZZ	Reattachment of Right Nipple, External Approach
0HMXXZZ	Reattachment of Left Nipple, External Approach
0U5J0ZZ	Destruction of Clitoris, Open Approach
0U5JXZZ	Destruction of Clitoris, External Approach
0U9J00Z	Drainage of Clitoris with Drainage Device, Open Approach
0U9J0ZZ	Drainage of Clitoris, Open Approach
0U9JX0Z	Drainage of Clitoris with Drainage Device, External Approach
0U9JXZZ	Drainage of Clitoris, External Approach
0UBJ0ZX	Excision of Clitoris, Open Approach, Diagnostic
0UBJ0ZZ	Excision of Clitoris, Open Approach
0UBJXZX	Excision of Clitoris, External Approach, Diagnostic
0UBJXZZ	Excision of Clitoris, External Approach
0UCJ0ZZ	Extirpation of Matter from Clitoris, Open Approach
0UCJXZZ	Extirpation of Matter from Clitoris, External Approach
0UMJXZZ	Reattachment of Clitoris, External Approach
0UNJ0ZZ	Release Clitoris, Open Approach
0UNJXZZ	Release Clitoris, External Approach
0UQG0ZZ	Repair Vagina, Open Approach
0UQJ0ZZ	Repair Clitoris, Open Approach
0UQJXZZ	Repair Clitoris, External Approach
0UTJ0ZZ	Resection of Clitoris, Open Approach
0UTJXZZ	Resection of Clitoris, External Approach
0UUG07Z	Supplement Vagina with Autologous Tissue Substitute, Open Approach
0UUG0JZ	Supplement Vagina with Synthetic Substitute, Open Approach
0UUG0KZ	Supplement Vagina with Nonautologous Tissue Substitute, Open Approach
0UUG47Z	Supplement Vagina with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0UUG4JZ	Supplement Vagina with Synthetic Substitute, Percutaneous Endoscopic Approach
0UUG4KZ	Supplement Vagina with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0UUG77Z	Supplement Vagina with Autologous Tissue Substitute, Via Natural or Artificial Opening
0UUG7JZ	Supplement Vagina with Synthetic Substitute, Via Natural or Artificial Opening
0UUG7KZ	Supplement Vagina with Nonautologous Tissue Substitute, Via Natural or Artificial Opening
0UUG87Z	Supplement Vagina with Autologous Tissue Substitute, Via Natural or Artificial Opening Endoscopic
0UUG8JZ	Supplement Vagina with Synthetic Substitute, Via Natural or Artificial Opening Endoscopic
0UUG8KZ	Supplement Vagina with Nonautologous Tissue Substitute, Via Natural or Artificial Opening Endoscopic
0UUGX7Z	Supplement Vagina with Autologous Tissue Substitute, External Approach
0UUGXJZ	Supplement Vagina with Synthetic Substitute, External Approach
0UUGXKZ	Supplement Vagina with Nonautologous Tissue Substitute, External Approach
0UUJ07Z	Supplement Clitoris with Autologous Tissue Substitute, Open Approach
0UUJ0JZ	Supplement Clitoris with Synthetic Substitute, Open Approach
0UUJ0KZ	Supplement Clitoris with Nonautologous Tissue Substitute, Open Approach

0UUJX7Z	Supplement Clitoris with Autologous Tissue Substitute, External Approach
0UUJXJZ	Supplement Clitoris with Synthetic Substitute, External Approach
0UUJXKZ	Supplement Clitoris with Nonautologous Tissue Substitute, External Approach
0VT90ZZ	Resection of Right Testis, Open Approach
0VT94ZZ	Resection of Right Testis, Percutaneous Endoscopic Approach
0VTB0ZZ	Resection of Left Testis, Open Approach
0VTB4ZZ	Resection of Left Testis, Percutaneous Endoscopic Approach
0VTC4ZZ	Resection of Bilateral Testes, Percutaneous Endoscopic Approach
0VTS0ZZ	Resection of Penis, Open Approach
0VTS4ZZ	Resection of Penis, Percutaneous Endoscopic Approach
0VTSXZZ	Resection of Penis, External Approach
0W4M070	Creation of Vagina in Male Perineum with Autologous Tissue Substitute, Open Approach
0W4M0J0	Creation of Vagina in Male Perineum with Synthetic Substitute, Open Approach
0W4M0K0	Creation of Vagina in Male Perineum with Nonautologous Tissue Substitute, Open Approach
0W4M0Z0	Creation of Vagina in Male Perineum, Open Approach

Facial Surgery (Male or Female)

ICD-10-PCS procedure codes:	Code Description
080N0ZZ	Alteration of Right Upper Eyelid, Open Approach
080N3ZZ	Alteration of Right Upper Eyelid, Percutaneous Approach
080NXZZ	Alteration of Right Upper Eyelid, External Approach
080P0ZZ	Alteration of Left Upper Eyelid, Open Approach
080P3ZZ	Alteration of Left Upper Eyelid, Percutaneous Approach
080PXZZ	Alteration of Left Upper Eyelid, External Approach
080Q0ZZ	Alteration of Right Lower Eyelid, Open Approach
080Q3ZZ	Alteration of Right Lower Eyelid, Percutaneous Approach
080QXZZ	Alteration of Right Lower Eyelid, External Approach
080R0ZZ	Alteration of Left Lower Eyelid, Open Approach
080R3ZZ	Alteration of Left Lower Eyelid, Percutaneous Approach
080RXZZ	Alteration of Left Lower Eyelid, External Approach
090K0ZZ	Alteration of Nose, Open Approach
090K3ZZ	Alteration of Nose, Percutaneous Approach
090K4ZZ	Alteration of Nose, Percutaneous Endoscopic Approach
090KXZZ	Alteration of Nose, External Approach
09QM0ZZ	Repair Nasal Septum, Open Approach
09QM3ZZ	Repair Nasal Septum, Percutaneous Approach
09QM4ZZ	Repair Nasal Septum, Percutaneous Endoscopic Approach
0J040ZZ	Alteration of Anterior Neck Subcutaneous Tissue and Fascia, Open Approach
0J043ZZ	Alteration of Anterior Neck Subcutaneous Tissue and Fascia, Percutaneous Approach
0J050ZZ	Alteration of Posterior Neck Subcutaneous Tissue and Fascia, Open Approach
0J053ZZ	Alteration of Posterior Neck Subcutaneous Tissue and Fascia, Percutaneous Approach
0J060ZZ	Alteration of Chest Subcutaneous Tissue and Fascia, Open Approach
0J063ZZ	Alteration of Chest Subcutaneous Tissue and Fascia, Percutaneous Approach
0J070ZZ	Alteration of Back Subcutaneous Tissue and Fascia, Open Approach
0J073ZZ	Alteration of Back Subcutaneous Tissue and Fascia, Percutaneous Approach
0J080ZZ	Alteration of Abdomen Subcutaneous Tissue and Fascia, Open Approach
0J083ZZ	Alteration of Abdomen Subcutaneous Tissue and Fascia, Percutaneous Approach

0J090ZZ	Alteration of Buttock Subcutaneous Tissue and Fascia, Open Approach
0J093ZZ	Alteration of Buttock Subcutaneous Tissue and Fascia, Percutaneous Approach
0J0D0ZZ	Alteration of Right Upper Arm Subcutaneous Tissue and Fascia, Open Approach
0J0D3ZZ	Alteration of Right Upper Arm Subcutaneous Tissue and Fascia, Percutaneous Approach
0J0F0ZZ	Alteration of Left Upper Arm Subcutaneous Tissue and Fascia, Open Approach
0J0F3ZZ	Alteration of Left Upper Arm Subcutaneous Tissue and Fascia, Percutaneous Approach
0J0G0ZZ	Alteration of Right Lower Arm Subcutaneous Tissue and Fascia, Open Approach
0J0G3ZZ	Alteration of Right Lower Arm Subcutaneous Tissue and Fascia, Percutaneous Approach
0J0H0ZZ	Alteration of Left Lower Arm Subcutaneous Tissue and Fascia, Open Approach
0J0H3ZZ	Alteration of Left Lower Arm Subcutaneous Tissue and Fascia, Percutaneous Approach
0J0L0ZZ	Alteration of Right Upper Leg Subcutaneous Tissue and Fascia, Open Approach
0J0L3ZZ	Alteration of Right Upper Leg Subcutaneous Tissue and Fascia, Percutaneous Approach
0J0M0ZZ	Alteration of Left Upper Leg Subcutaneous Tissue and Fascia, Open Approach
0J0M3ZZ	Alteration of Left Upper Leg Subcutaneous Tissue and Fascia, Percutaneous Approach
0J0N0ZZ	Alteration of Right Lower Leg Subcutaneous Tissue and Fascia, Open Approach
0J0N3ZZ	Alteration of Right Lower Leg Subcutaneous Tissue and Fascia, Percutaneous Approach
0J0P0ZZ	Alteration of Left Lower Leg Subcutaneous Tissue and Fascia, Open Approach
0J0P3ZZ	Alteration of Left Lower Leg Subcutaneous Tissue and Fascia, Percutaneous Approach
08SN0ZZ	Reposition Right Upper Eyelid, Open Approach
08SN3ZZ	Reposition Right Upper Eyelid, Percutaneous Approach
08SNXZZ	Reposition Right Upper Eyelid, External Approach
08SP0ZZ	Reposition Left Upper Eyelid, Open Approach
08SP3ZZ	Reposition Left Upper Eyelid, Percutaneous Approach
08SPXZZ	Reposition Left Upper Eyelid, External Approach
08SQ0ZZ	Reposition Right Lower Eyelid, Open Approach
08SQ3ZZ	Reposition Right Lower Eyelid, Percutaneous Approach
08SQXZZ	Reposition Right Lower Eyelid, External Approach
08SR0ZZ	Reposition Left Lower Eyelid, Open Approach
08SR3ZZ	Reposition Left Lower Eyelid, Percutaneous Approach
08SRXZZ	Reposition Left Lower Eyelid, External Approach
0KS10ZZ	Reposition Facial Muscle, Open Approach
0KS14ZZ	Reposition Facial Muscle, Percutaneous Endoscopic Approach
0NNC0ZZ	Release Right Sphenoid Bone, Open Approach
0NNC3ZZ	Release Right Sphenoid Bone, Percutaneous Approach
0NNC4ZZ	Release Right Sphenoid Bone, Percutaneous Endoscopic Approach
0NND0ZZ	Release Left Sphenoid Bone, Open Approach
0NND3ZZ	Release Left Sphenoid Bone, Percutaneous Approach
0NND4ZZ	Release Left Sphenoid Bone, Percutaneous Endoscopic Approach
0NNF0ZZ	Release Right Ethmoid Bone, Open Approach
0NNF3ZZ	Release Right Ethmoid Bone, Percutaneous Approach
0NNF4ZZ	Release Right Ethmoid Bone, Percutaneous Endoscopic Approach
0NNG0ZZ	Release Left Ethmoid Bone, Open Approach
0NNG3ZZ	Release Left Ethmoid Bone, Percutaneous Approach
0NNG4ZZ	Release Left Ethmoid Bone, Percutaneous Endoscopic Approach
0NNH0ZZ	Release Right Lacrimal Bone, Open Approach
0NNH3ZZ	Release Right Lacrimal Bone, Percutaneous Approach

0NNH4ZZ	Release Right Lacrimal Bone, Percutaneous Endoscopic Approach
0NNJ0ZZ	Release Left Lacrimal Bone, Open Approach
0NNJ3ZZ	Release Left Lacrimal Bone, Percutaneous Approach
0NNJ4ZZ	Release Left Lacrimal Bone, Percutaneous Endoscopic Approach
0NNK0ZZ	Release Right Palatine Bone, Open Approach
0NNK3ZZ	Release Right Palatine Bone, Percutaneous Approach
0NNK4ZZ	Release Right Palatine Bone, Percutaneous Endoscopic Approach
0NNL0ZZ	Release Left Palatine Bone, Open Approach
0NNL3ZZ	Release Left Palatine Bone, Percutaneous Approach
0NNL4ZZ	Release Left Palatine Bone, Percutaneous Endoscopic Approach
0NNM0ZZ	Release Right Zygomatic Bone, Open Approach
0NNM3ZZ	Release Right Zygomatic Bone, Percutaneous Approach
0NNM4ZZ	Release Right Zygomatic Bone, Percutaneous Endoscopic Approach
0NNN0ZZ	Release Left Zygomatic Bone, Open Approach
0NNN3ZZ	Release Left Zygomatic Bone, Percutaneous Approach
0NNN4ZZ	Release Left Zygomatic Bone, Percutaneous Endoscopic Approach
0NNP0ZZ	Release Right Orbit, Open Approach
0NNP3ZZ	Release Right Orbit, Percutaneous Approach
0NNP4ZZ	Release Right Orbit, Percutaneous Endoscopic Approach
0NNQ0ZZ	Release Left Orbit, Open Approach
0NNQ3ZZ	Release Left Orbit, Percutaneous Approach
0NNQ4ZZ	Release Left Orbit, Percutaneous Endoscopic Approach
0NNR0ZZ	Release Right Maxilla, Open Approach
0NNR3ZZ	Release Right Maxilla, Percutaneous Approach
0NNR4ZZ	Release Right Maxilla, Percutaneous Endoscopic Approach
0NNS0ZZ	Release Left Maxilla, Open Approach
0NNS3ZZ	Release Left Maxilla, Percutaneous Approach
0NNS4ZZ	Release Left Maxilla, Percutaneous Endoscopic Approach
0NNT0ZZ	Release Right Mandible, Open Approach
0NNT3ZZ	Release Right Mandible, Percutaneous Approach
0NNT4ZZ	Release Right Mandible, Percutaneous Endoscopic Approach
0NNV0ZZ	Release Left Mandible, Open Approach
0NNV3ZZ	Release Left Mandible, Percutaneous Approach
0NNV4ZZ	Release Left Mandible, Percutaneous Endoscopic Approach
0NQC0ZZ	Repair Right Sphenoid Bone, Open Approach
0NQC3ZZ	Repair Right Sphenoid Bone, Percutaneous Approach
0NQC4ZZ	Repair Right Sphenoid Bone, Percutaneous Endoscopic Approach
0NQCXZZ	Repair Right Sphenoid Bone, External Approach
0NQD0ZZ	Repair Left Sphenoid Bone, Open Approach
0NQD3ZZ	Repair Left Sphenoid Bone, Percutaneous Approach
0NQD4ZZ	Repair Left Sphenoid Bone, Percutaneous Endoscopic Approach
0NQDXZZ	Repair Left Sphenoid Bone, External Approach
0NQF0ZZ	Repair Right Ethmoid Bone, Open Approach
0NQF3ZZ	Repair Right Ethmoid Bone, Percutaneous Approach
0NQF4ZZ	Repair Right Ethmoid Bone, Percutaneous Endoscopic Approach
0NQFXZZ	Repair Right Ethmoid Bone, External Approach
0NQG0ZZ	Repair Left Ethmoid Bone, Open Approach
0NQG3ZZ	Repair Left Ethmoid Bone, Percutaneous Approach
0NQG4ZZ	Repair Left Ethmoid Bone, Percutaneous Endoscopic Approach
0NQGXZZ	Repair Left Ethmoid Bone, External Approach
0NQH0ZZ	Repair Right Lacrimal Bone, Open Approach

0NQH3ZZ	Repair Right Lacrimal Bone, Percutaneous Approach
0NQH4ZZ	Repair Right Lacrimal Bone, Percutaneous Endoscopic Approach
0NQHXZZ	Repair Right Lacrimal Bone, External Approach
0NQJ0ZZ	Repair Left Lacrimal Bone, Open Approach
0NQJ3ZZ	Repair Left Lacrimal Bone, Percutaneous Approach
0NQJ4ZZ	Repair Left Lacrimal Bone, Percutaneous Endoscopic Approach
0NQJXZZ	Repair Left Lacrimal Bone, External Approach
0NQK0ZZ	Repair Right Palatine Bone, Open Approach
0NQK3ZZ	Repair Right Palatine Bone, Percutaneous Approach
0NQK4ZZ	Repair Right Palatine Bone, Percutaneous Endoscopic Approach
0NQKXZZ	Repair Right Palatine Bone, External Approach
0NQL0ZZ	Repair Left Palatine Bone, Open Approach
0NQL3ZZ	Repair Left Palatine Bone, Percutaneous Approach
0NQL4ZZ	Repair Left Palatine Bone, Percutaneous Endoscopic Approach
0NQLXZZ	Repair Left Palatine Bone, External Approach
0NQM0ZZ	Repair Right Zygomatic Bone, Open Approach
0NQM3ZZ	Repair Right Zygomatic Bone, Percutaneous Approach
0NQM4ZZ	Repair Right Zygomatic Bone, Percutaneous Endoscopic Approach
0NQMXZZ	Repair Right Zygomatic Bone, External Approach
0NQN0ZZ	Repair Left Zygomatic Bone, Open Approach
0NQN3ZZ	Repair Left Zygomatic Bone, Percutaneous Approach
0NQN4ZZ	Repair Left Zygomatic Bone, Percutaneous Endoscopic Approach
0NQNXZZ	Repair Left Zygomatic Bone, External Approach
0NQX0ZZ	Repair Hyoid Bone, Open Approach
0NQX3ZZ	Repair Hyoid Bone, Percutaneous Approach
0NQX4ZZ	Repair Hyoid Bone, Percutaneous Endoscopic Approach
0NQXXZZ	Repair Hyoid Bone, External Approach
0NRC07Z	Replacement of Right Sphenoid Bone with Autologous Tissue Substitute, Open Approach
0NRC0JZ	Replacement of Right Sphenoid Bone with Synthetic Substitute, Open Approach
0NRC0KZ	Replacement of Right Sphenoid Bone with Nonautologous Tissue Substitute, Open Approach
0NRC37Z	Replacement of Right Sphenoid Bone with Autologous Tissue Substitute, Percutaneous Approach
0NRC3JZ	Replacement of Right Sphenoid Bone with Synthetic Substitute, Percutaneous Approach
0NRC3KZ	Replacement of Right Sphenoid Bone with Nonautologous Tissue Substitute, Percutaneous Approach
0NRC47Z	Replacement of Right Sphenoid Bone with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NRC4JZ	Replacement of Right Sphenoid Bone with Synthetic Substitute, Percutaneous Endoscopic Approach
0NRC4KZ	Replacement of Right Sphenoid Bone with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NRD07Z	Replacement of Left Sphenoid Bone with Autologous Tissue Substitute, Open Approach
0NRD0JZ	Replacement of Left Sphenoid Bone with Synthetic Substitute, Open Approach
0NRD0KZ	Replacement of Left Sphenoid Bone with Nonautologous Tissue Substitute, Open Approach
0NRD37Z	Replacement of Left Sphenoid Bone with Autologous Tissue Substitute, Percutaneous Approach
0NRD3JZ	Replacement of Left Sphenoid Bone with Synthetic Substitute, Percutaneous Approach

0NRD3KZ	Replacement of Left Sphenoid Bone with Nonautologous Tissue Substitute, Percutaneous Approach
0NRD47Z	Replacement of Left Sphenoid Bone with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NRD4JZ	Replacement of Left Sphenoid Bone with Synthetic Substitute, Percutaneous Endoscopic Approach
0NRD4KZ	Replacement of Left Sphenoid Bone with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NRF07Z	Replacement of Right Ethmoid Bone with Autologous Tissue Substitute, Open Approach
0NRF0JZ	Replacement of Right Ethmoid Bone with Synthetic Substitute, Open Approach
0NRF0KZ	Replacement of Right Ethmoid Bone with Nonautologous Tissue Substitute, Open Approach
0NRF37Z	Replacement of Right Ethmoid Bone with Autologous Tissue Substitute, Percutaneous Approach
0NRF3JZ	Replacement of Right Ethmoid Bone with Synthetic Substitute, Percutaneous Approach
0NRF3KZ	Replacement of Right Ethmoid Bone with Nonautologous Tissue Substitute, Percutaneous Approach
0NRF47Z	Replacement of Right Ethmoid Bone with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NRF4JZ	Replacement of Right Ethmoid Bone with Synthetic Substitute, Percutaneous Endoscopic Approach
0NRF4KZ	Replacement of Right Ethmoid Bone with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NRG07Z	Replacement of Left Ethmoid Bone with Autologous Tissue Substitute, Open Approach
0NRG0JZ	Replacement of Left Ethmoid Bone with Synthetic Substitute, Open Approach
0NRG0KZ	Replacement of Left Ethmoid Bone with Nonautologous Tissue Substitute, Open Approach
0NRG37Z	Replacement of Left Ethmoid Bone with Autologous Tissue Substitute, Percutaneous Approach
0NRG3JZ	Replacement of Left Ethmoid Bone with Synthetic Substitute, Percutaneous Approach
0NRG3KZ	Replacement of Left Ethmoid Bone with Nonautologous Tissue Substitute, Percutaneous Approach
0NRG47Z	Replacement of Left Ethmoid Bone with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NRG4JZ	Replacement of Left Ethmoid Bone with Synthetic Substitute, Percutaneous Endoscopic Approach
0NRG4KZ	Replacement of Left Ethmoid Bone with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NRH07Z	Replacement of Right Lacrimal Bone with Autologous Tissue Substitute, Open Approach
0NRH0JZ	Replacement of Right Lacrimal Bone with Synthetic Substitute, Open Approach
0NRH0KZ	Replacement of Right Lacrimal Bone with Nonautologous Tissue Substitute, Open Approach
0NRH37Z	Replacement of Right Lacrimal Bone with Autologous Tissue Substitute, Percutaneous Approach
0NRH3JZ	Replacement of Right Lacrimal Bone with Synthetic Substitute, Percutaneous Approach
0NRH3KZ	Replacement of Right Lacrimal Bone with Nonautologous Tissue Substitute, Percutaneous Approach
0NRH47Z	Replacement of Right Lacrimal Bone with Autologous Tissue Substitute, Percutaneous Endoscopic Approach

0NRH4JZ	Replacement of Right Lacrimal Bone with Synthetic Substitute, Percutaneous Endoscopic Approach
0NRH4KZ	Replacement of Right Lacrimal Bone with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NRJ07Z	Replacement of Left Lacrimal Bone with Autologous Tissue Substitute, Open Approach
0NRJ0JZ	Replacement of Left Lacrimal Bone with Synthetic Substitute, Open Approach
0NRJ0KZ	Replacement of Left Lacrimal Bone with Nonautologous Tissue Substitute, Open Approach
0NRJ37Z	Replacement of Left Lacrimal Bone with Autologous Tissue Substitute, Percutaneous Approach
0NRJ3JZ	Replacement of Left Lacrimal Bone with Synthetic Substitute, Percutaneous Approach
0NRJ3KZ	Replacement of Left Lacrimal Bone with Nonautologous Tissue Substitute, Percutaneous Approach
0NRJ47Z	Replacement of Left Lacrimal Bone with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NRJ4JZ	Replacement of Left Lacrimal Bone with Synthetic Substitute, Percutaneous Endoscopic Approach
0NRJ4KZ	Replacement of Left Lacrimal Bone with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NRK07Z	Replacement of Right Palatine Bone with Autologous Tissue Substitute, Open Approach
0NRK0JZ	Replacement of Right Palatine Bone with Synthetic Substitute, Open Approach
0NRK0KZ	Replacement of Right Palatine Bone with Nonautologous Tissue Substitute, Open Approach
0NRK37Z	Replacement of Right Palatine Bone with Autologous Tissue Substitute, Percutaneous Approach
0NRK3JZ	Replacement of Right Palatine Bone with Synthetic Substitute, Percutaneous Approach
0NRK3KZ	Replacement of Right Palatine Bone with Nonautologous Tissue Substitute, Percutaneous Approach
0NRK47Z	Replacement of Right Palatine Bone with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NRK4JZ	Replacement of Right Palatine Bone with Synthetic Substitute, Percutaneous Endoscopic Approach
0NRK4KZ	Replacement of Right Palatine Bone with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NRL07Z	Replacement of Left Palatine Bone with Autologous Tissue Substitute, Open Approach
0NRL0JZ	Replacement of Left Palatine Bone with Synthetic Substitute, Open Approach
0NRL0KZ	Replacement of Left Palatine Bone with Nonautologous Tissue Substitute, Open Approach
0NRL37Z	Replacement of Left Palatine Bone with Autologous Tissue Substitute, Percutaneous Approach
0NRL3JZ	Replacement of Left Palatine Bone with Synthetic Substitute, Percutaneous Approach
0NRL3KZ	Replacement of Left Palatine Bone with Nonautologous Tissue Substitute, Percutaneous Approach
0NRL47Z	Replacement of Left Palatine Bone with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NRL4JZ	Replacement of Left Palatine Bone with Synthetic Substitute, Percutaneous Endoscopic Approach
0NRL4KZ	Replacement of Left Palatine Bone with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NRM07Z	Replacement of Right Zygomatic Bone with Autologous Tissue Substitute, Open Approach
0NRM0JZ	Replacement of Right Zygomatic Bone with Synthetic Substitute, Open Approach

0NRM0KZ	Replacement of Right Zygomatic Bone with Nonautologous Tissue Substitute, Open Approach
0NRM37Z	Replacement of Right Zygomatic Bone with Autologous Tissue Substitute, Percutaneous Approach
0NRM3JZ	Replacement of Right Zygomatic Bone with Synthetic Substitute, Percutaneous Approach
0NRM3KZ	Replacement of Right Zygomatic Bone with Nonautologous Tissue Substitute, Percutaneous Approach
0NRM47Z	Replacement of Right Zygomatic Bone with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NRM4JZ	Replacement of Right Zygomatic Bone with Synthetic Substitute, Percutaneous Endoscopic Approach
0NRM4KZ	Replacement of Right Zygomatic Bone with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NRR07Z	Replacement of Left Zygomatic Bone with Autologous Tissue Substitute, Open Approach
0NRR0JZ	Replacement of Left Zygomatic Bone with Synthetic Substitute, Open Approach
0NRR0KZ	Replacement of Left Zygomatic Bone with Nonautologous Tissue Substitute, Open Approach
0NRR37Z	Replacement of Left Zygomatic Bone with Autologous Tissue Substitute, Percutaneous Approach
0NRR3JZ	Replacement of Left Zygomatic Bone with Synthetic Substitute, Percutaneous Approach
0NRR3KZ	Replacement of Left Zygomatic Bone with Nonautologous Tissue Substitute, Percutaneous Approach
0NRR47Z	Replacement of Left Zygomatic Bone with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NRR4JZ	Replacement of Left Zygomatic Bone with Synthetic Substitute, Percutaneous Endoscopic Approach
0NRR4KZ	Replacement of Left Zygomatic Bone with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NRP0KZ	Replacement of Right Orbit with Nonautologous Tissue Substitute, Open Approach
0NRP3KZ	Replacement of Right Orbit with Nonautologous Tissue Substitute, Percutaneous Approach
0NRP4KZ	Replacement of Right Orbit with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NRQ0KZ	Replacement of Left Orbit with Nonautologous Tissue Substitute, Open Approach
0NRQ3KZ	Replacement of Left Orbit with Nonautologous Tissue Substitute, Percutaneous Approach
0NRQ4KZ	Replacement of Left Orbit with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NRR07Z	Replacement of Right Maxilla with Autologous Tissue Substitute, Open Approach
0NRR0JZ	Replacement of Right Maxilla with Synthetic Substitute, Open Approach
0NRR0KZ	Replacement of Right Maxilla with Nonautologous Tissue Substitute, Open Approach
0NRR37Z	Replacement of Right Maxilla with Autologous Tissue Substitute, Percutaneous Approach
0NRR3JZ	Replacement of Right Maxilla with Synthetic Substitute, Percutaneous Approach
0NRR3KZ	Replacement of Right Maxilla with Nonautologous Tissue Substitute, Percutaneous Approach
0NRR47Z	Replacement of Right Maxilla with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NRR4JZ	Replacement of Right Maxilla with Synthetic Substitute, Percutaneous Endoscopic Approach

0NRR4KZ	Replacement of Right Maxilla with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NRS07Z	Replacement of Left Maxilla with Autologous Tissue Substitute, Open Approach
0NRS0JZ	Replacement of Left Maxilla with Synthetic Substitute, Open Approach
0NRS0KZ	Replacement of Left Maxilla with Nonautologous Tissue Substitute, Open Approach
0NRS37Z	Replacement of Left Maxilla with Autologous Tissue Substitute, Percutaneous Approach
0NRS3JZ	Replacement of Left Maxilla with Synthetic Substitute, Percutaneous Approach
0NRS3KZ	Replacement of Left Maxilla with Nonautologous Tissue Substitute, Percutaneous Approach
0NRS47Z	Replacement of Left Maxilla with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NRS4JZ	Replacement of Left Maxilla with Synthetic Substitute, Percutaneous Endoscopic Approach
0NRS4KZ	Replacement of Left Maxilla with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NRX07Z	Replacement of Hyoid Bone with Autologous Tissue Substitute, Open Approach
0NRX0JZ	Replacement of Hyoid Bone with Synthetic Substitute, Open Approach
0NRX0KZ	Replacement of Hyoid Bone with Nonautologous Tissue Substitute, Open Approach
0NRX37Z	Replacement of Hyoid Bone with Autologous Tissue Substitute, Percutaneous Approach
0NRX3JZ	Replacement of Hyoid Bone with Synthetic Substitute, Percutaneous Approach
0NRX3KZ	Replacement of Hyoid Bone with Nonautologous Tissue Substitute, Percutaneous Approach
0NRX47Z	Replacement of Hyoid Bone with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NRX4JZ	Replacement of Hyoid Bone with Synthetic Substitute, Percutaneous Endoscopic Approach
0NRX4KZ	Replacement of Hyoid Bone with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUC07Z	Supplement Right Sphenoid Bone with Autologous Tissue Substitute, Open Approach
0NUC0JZ	Supplement Right Sphenoid Bone with Synthetic Substitute, Open Approach
0NUC0KZ	Supplement Right Sphenoid Bone with Nonautologous Tissue Substitute, Open Approach
0NUC37Z	Supplement Right Sphenoid Bone with Autologous Tissue Substitute, Percutaneous Approach
0NUC3JZ	Supplement Right Sphenoid Bone with Synthetic Substitute, Percutaneous Approach
0NUC3KZ	Supplement Right Sphenoid Bone with Nonautologous Tissue Substitute, Percutaneous Approach
0NUC47Z	Supplement Right Sphenoid Bone with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUC4JZ	Supplement Right Sphenoid Bone with Synthetic Substitute, Percutaneous Endoscopic Approach
0NUC4KZ	Supplement Right Sphenoid Bone with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUD07Z	Supplement Left Sphenoid Bone with Autologous Tissue Substitute, Open Approach
0NUD0JZ	Supplement Left Sphenoid Bone with Synthetic Substitute, Open Approach
0NUD0KZ	Supplement Left Sphenoid Bone with Nonautologous Tissue Substitute, Open Approach
0NUD37Z	Supplement Left Sphenoid Bone with Autologous Tissue Substitute, Percutaneous Approach
0NUD3JZ	Supplement Left Sphenoid Bone with Synthetic Substitute, Percutaneous Approach
0NUD3KZ	Supplement Left Sphenoid Bone with Nonautologous Tissue Substitute, Percutaneous Approach

0NUD47Z	Supplement Left Sphenoid Bone with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUD4JZ	Supplement Left Sphenoid Bone with Synthetic Substitute, Percutaneous Endoscopic Approach
0NUD4KZ	Supplement Left Sphenoid Bone with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUF07Z	Supplement Right Ethmoid Bone with Autologous Tissue Substitute, Open Approach
0NUF0JZ	Supplement Right Ethmoid Bone with Synthetic Substitute, Open Approach
0NUF0KZ	Supplement Right Ethmoid Bone with Nonautologous Tissue Substitute, Open Approach
0NUF37Z	Supplement Right Ethmoid Bone with Autologous Tissue Substitute, Percutaneous Approach
0NUF3JZ	Supplement Right Ethmoid Bone with Synthetic Substitute, Percutaneous Approach
0NUF3KZ	Supplement Right Ethmoid Bone with Nonautologous Tissue Substitute, Percutaneous Approach
0NUF47Z	Supplement Right Ethmoid Bone with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUF4JZ	Supplement Right Ethmoid Bone with Synthetic Substitute, Percutaneous Endoscopic Approach
0NUF4KZ	Supplement Right Ethmoid Bone with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUG07Z	Supplement Left Ethmoid Bone with Autologous Tissue Substitute, Open Approach
0NUG0JZ	Supplement Left Ethmoid Bone with Synthetic Substitute, Open Approach
0NUG0KZ	Supplement Left Ethmoid Bone with Nonautologous Tissue Substitute, Open Approach
0NUG37Z	Supplement Left Ethmoid Bone with Autologous Tissue Substitute, Percutaneous Approach
0NUG3JZ	Supplement Left Ethmoid Bone with Synthetic Substitute, Percutaneous Approach
0NUG3KZ	Supplement Left Ethmoid Bone with Nonautologous Tissue Substitute, Percutaneous Approach
0NUG47Z	Supplement Left Ethmoid Bone with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUG4JZ	Supplement Left Ethmoid Bone with Synthetic Substitute, Percutaneous Endoscopic Approach
0NUG4KZ	Supplement Left Ethmoid Bone with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUH07Z	Supplement Right Lacrimal Bone with Autologous Tissue Substitute, Open Approach
0NUH0JZ	Supplement Right Lacrimal Bone with Synthetic Substitute, Open Approach
0NUH0KZ	Supplement Right Lacrimal Bone with Nonautologous Tissue Substitute, Open Approach
0NUH37Z	Supplement Right Lacrimal Bone with Autologous Tissue Substitute, Percutaneous Approach
0NUH3JZ	Supplement Right Lacrimal Bone with Synthetic Substitute, Percutaneous Approach
0NUH3KZ	Supplement Right Lacrimal Bone with Nonautologous Tissue Substitute, Percutaneous Approach
0NUH47Z	Supplement Right Lacrimal Bone with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUH4JZ	Supplement Right Lacrimal Bone with Synthetic Substitute, Percutaneous Endoscopic Approach
0NUH4KZ	Supplement Right Lacrimal Bone with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUJ07Z	Supplement Left Lacrimal Bone with Autologous Tissue Substitute, Open Approach
0NUJ0JZ	Supplement Left Lacrimal Bone with Synthetic Substitute, Open Approach
0NUJ0KZ	Supplement Left Lacrimal Bone with Nonautologous Tissue Substitute, Open Approach

0NUJ37Z	Supplement Left Lacrimal Bone with Autologous Tissue Substitute, Percutaneous Approach
0NUJ3JZ	Supplement Left Lacrimal Bone with Synthetic Substitute, Percutaneous Approach
0NUJ3KZ	Supplement Left Lacrimal Bone with Nonautologous Tissue Substitute, Percutaneous Approach
0NUJ47Z	Supplement Left Lacrimal Bone with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUJ4JZ	Supplement Left Lacrimal Bone with Synthetic Substitute, Percutaneous Endoscopic Approach
0NUJ4KZ	Supplement Left Lacrimal Bone with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUK07Z	Supplement Right Palatine Bone with Autologous Tissue Substitute, Open Approach
0NUK0JZ	Supplement Right Palatine Bone with Synthetic Substitute, Open Approach
0NUK0KZ	Supplement Right Palatine Bone with Nonautologous Tissue Substitute, Open Approach
0NUK37Z	Supplement Right Palatine Bone with Autologous Tissue Substitute, Percutaneous Approach
0NUK3JZ	Supplement Right Palatine Bone with Synthetic Substitute, Percutaneous Approach
0NUK3KZ	Supplement Right Palatine Bone with Nonautologous Tissue Substitute, Percutaneous Approach
0NUK47Z	Supplement Right Palatine Bone with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUK4JZ	Supplement Right Palatine Bone with Synthetic Substitute, Percutaneous Endoscopic Approach
0NUK4KZ	Supplement Right Palatine Bone with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUL07Z	Supplement Left Palatine Bone with Autologous Tissue Substitute, Open Approach
0NUL0JZ	Supplement Left Palatine Bone with Synthetic Substitute, Open Approach
0NUL0KZ	Supplement Left Palatine Bone with Nonautologous Tissue Substitute, Open Approach
0NUL37Z	Supplement Left Palatine Bone with Autologous Tissue Substitute, Percutaneous Approach
0NUL3JZ	Supplement Left Palatine Bone with Synthetic Substitute, Percutaneous Approach
0NUL3KZ	Supplement Left Palatine Bone with Nonautologous Tissue Substitute, Percutaneous Approach
0NUL47Z	Supplement Left Palatine Bone with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUL4JZ	Supplement Left Palatine Bone with Synthetic Substitute, Percutaneous Endoscopic Approach
0NUL4KZ	Supplement Left Palatine Bone with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUM07Z	Supplement Right Zygomatic Bone with Autologous Tissue Substitute, Open Approach
0NUM0JZ	Supplement Right Zygomatic Bone with Synthetic Substitute, Open Approach
0NUM0KZ	Supplement Right Zygomatic Bone with Nonautologous Tissue Substitute, Open Approach
0NUM37Z	Supplement Right Zygomatic Bone with Autologous Tissue Substitute, Percutaneous Approach
0NUM3JZ	Supplement Right Zygomatic Bone with Synthetic Substitute, Percutaneous Approach
0NUM3KZ	Supplement Right Zygomatic Bone with Nonautologous Tissue Substitute, Percutaneous Approach
0NUM47Z	Supplement Right Zygomatic Bone with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUM4JZ	Supplement Right Zygomatic Bone with Synthetic Substitute, Percutaneous Endoscopic Approach

0NUM4KZ	Supplement Right Zygomatic Bone with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUN07Z	Supplement Left Zygomatic Bone with Autologous Tissue Substitute, Open Approach
0NUN0JZ	Supplement Left Zygomatic Bone with Synthetic Substitute, Open Approach
0NUN0KZ	Supplement Left Zygomatic Bone with Nonautologous Tissue Substitute, Open Approach
0NUN37Z	Supplement Left Zygomatic Bone with Autologous Tissue Substitute, Percutaneous Approach
0NUN3JZ	Supplement Left Zygomatic Bone with Synthetic Substitute, Percutaneous Approach
0NUN3KZ	Supplement Left Zygomatic Bone with Nonautologous Tissue Substitute, Percutaneous Approach
0NUN47Z	Supplement Left Zygomatic Bone with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUN4JZ	Supplement Left Zygomatic Bone with Synthetic Substitute, Percutaneous Endoscopic Approach
0NUN4KZ	Supplement Left Zygomatic Bone with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUP07Z	Supplement Right Orbit with Autologous Tissue Substitute, Open Approach
0NUP0KZ	Supplement Right Orbit with Nonautologous Tissue Substitute, Open Approach
0NUP37Z	Supplement Right Orbit with Autologous Tissue Substitute, Percutaneous Approach
0NUP3KZ	Supplement Right Orbit with Nonautologous Tissue Substitute, Percutaneous Approach
0NUP47Z	Supplement Right Orbit with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUP4KZ	Supplement Right Orbit with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUQ07Z	Supplement Left Orbit with Autologous Tissue Substitute, Open Approach
0NUQ0KZ	Supplement Left Orbit with Nonautologous Tissue Substitute, Open Approach
0NUQ37Z	Supplement Left Orbit with Autologous Tissue Substitute, Percutaneous Approach
0NUQ3KZ	Supplement Left Orbit with Nonautologous Tissue Substitute, Percutaneous Approach
0NUQ47Z	Supplement Left Orbit with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUQ4KZ	Supplement Left Orbit with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUR07Z	Supplement Right Maxilla with Autologous Tissue Substitute, Open Approach
0NUR0JZ	Supplement Right Maxilla with Synthetic Substitute, Open Approach
0NUR0KZ	Supplement Right Maxilla with Nonautologous Tissue Substitute, Open Approach
0NUR37Z	Supplement Right Maxilla with Autologous Tissue Substitute, Percutaneous Approach
0NUR3JZ	Supplement Right Maxilla with Synthetic Substitute, Percutaneous Approach
0NUR3KZ	Supplement Right Maxilla with Nonautologous Tissue Substitute, Percutaneous Approach
0NUR47Z	Supplement Right Maxilla with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUR4JZ	Supplement Right Maxilla with Synthetic Substitute, Percutaneous Endoscopic Approach
0NUR4KZ	Supplement Right Maxilla with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUS07Z	Supplement Left Maxilla with Autologous Tissue Substitute, Open Approach
0NUS0JZ	Supplement Left Maxilla with Synthetic Substitute, Open Approach
0NUS0KZ	Supplement Left Maxilla with Nonautologous Tissue Substitute, Open Approach
0NUS37Z	Supplement Left Maxilla with Autologous Tissue Substitute, Percutaneous Approach
0NUS3JZ	Supplement Left Maxilla with Synthetic Substitute, Percutaneous Approach

0NUS3KZ	Supplement Left Maxilla with Nonautologous Tissue Substitute, Percutaneous Approach
0NUS47Z	Supplement Left Maxilla with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUS4JZ	Supplement Left Maxilla with Synthetic Substitute, Percutaneous Endoscopic Approach
0NUS4KZ	Supplement Left Maxilla with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUX07Z	Supplement Hyoid Bone with Autologous Tissue Substitute, Open Approach
0NUX0JZ	Supplement Hyoid Bone with Synthetic Substitute, Open Approach
0NUX0KZ	Supplement Hyoid Bone with Nonautologous Tissue Substitute, Open Approach
0NUX37Z	Supplement Hyoid Bone with Autologous Tissue Substitute, Percutaneous Approach
0NUX3JZ	Supplement Hyoid Bone with Synthetic Substitute, Percutaneous Approach
0NUX3KZ	Supplement Hyoid Bone with Nonautologous Tissue Substitute, Percutaneous Approach
0NUX47Z	Supplement Hyoid Bone with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0NUX4JZ	Supplement Hyoid Bone with Synthetic Substitute, Percutaneous Endoscopic Approach
0NUX4KZ	Supplement Hyoid Bone with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0RNC0ZZ	Release Right Temporomandibular Joint, Open Approach
0RNC3ZZ	Release Right Temporomandibular Joint, Percutaneous Approach
0RNC4ZZ	Release Right Temporomandibular Joint, Percutaneous Endoscopic Approach
0RND0ZZ	Release Left Temporomandibular Joint, Open Approach
0RND3ZZ	Release Left Temporomandibular Joint, Percutaneous Approach
0RND4ZZ	Release Left Temporomandibular Joint, Percutaneous Endoscopic Approach
0W0407Z	Alteration of Upper Jaw with Autologous Tissue Substitute, Open Approach
0W040JZ	Alteration of Upper Jaw with Synthetic Substitute, Open Approach
0W040KZ	Alteration of Upper Jaw with Nonautologous Tissue Substitute, Open Approach
0W040ZZ	Alteration of Upper Jaw, Open Approach
0W0437Z	Alteration of Upper Jaw with Autologous Tissue Substitute, Percutaneous Approach
0W043JZ	Alteration of Upper Jaw with Synthetic Substitute, Percutaneous Approach
0W043KZ	Alteration of Upper Jaw with Nonautologous Tissue Substitute, Percutaneous Approach
0W043ZZ	Alteration of Upper Jaw, Percutaneous Approach
0W0447Z	Alteration of Upper Jaw with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0W044JZ	Alteration of Upper Jaw with Synthetic Substitute, Percutaneous Endoscopic Approach
0W044KZ	Alteration of Upper Jaw with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0W044ZZ	Alteration of Upper Jaw, Percutaneous Endoscopic Approach
0W0507Z	Alteration of Lower Jaw with Autologous Tissue Substitute, Open Approach
0W050JZ	Alteration of Lower Jaw with Synthetic Substitute, Open Approach
0W050KZ	Alteration of Lower Jaw with Nonautologous Tissue Substitute, Open Approach
0W050ZZ	Alteration of Lower Jaw, Open Approach
0W0537Z	Alteration of Lower Jaw with Autologous Tissue Substitute, Percutaneous Approach
0W053JZ	Alteration of Lower Jaw with Synthetic Substitute, Percutaneous Approach
0W053KZ	Alteration of Lower Jaw with Nonautologous Tissue Substitute, Percutaneous Approach
0W053ZZ	Alteration of Lower Jaw, Percutaneous Approach
0W0547Z	Alteration of Lower Jaw with Autologous Tissue Substitute, Percutaneous Endoscopic Approach

0W054JZ	Alteration of Lower Jaw with Synthetic Substitute, Percutaneous Endoscopic Approach
0W054KZ	Alteration of Lower Jaw with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0W054ZZ	Alteration of Lower Jaw, Percutaneous Endoscopic Approach
0W020ZZ	Alteration of Face, Open Approach
0W0207Z	Alteration of Face with Autologous Tissue Substitute, Open Approach
0W020JZ	Alteration of Face with Synthetic Substitute, Open Approach
0W020KZ	Alteration of Face with Nonautologous Tissue Substitute, Open Approach
0W023ZZ	Alteration of Face, Percutaneous Approach
0W0247Z	Alteration of Face with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0W024JZ	Alteration of Face with Synthetic Substitute, Percutaneous Endoscopic Approach
0W024KZ	Alteration of Face with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0W024ZZ	Alteration of Face, Percutaneous Endoscopic Approach
0NS104Z	Reposition Right Frontal Bone with Internal Fixation Device, Open Approach
0NS204Z	Reposition Left Frontal Bone with Internal Fixation Device, Open Approach

Female to Male Surgery

ICD-10-PCS procedure codes:	Code Description
0VTC0ZZ	Resection of Bilateral Testes, Open Approach
0H0T0ZZ	Alteration of Right Breast, Open Approach
0H0T3ZZ	Alteration of Right Breast, Percutaneous Approach
0H0TXZZ	Alteration of Right Breast, External Approach
0H0U0ZZ	Alteration of Left Breast, Open Approach
0H0U3ZZ	Alteration of Left Breast, Percutaneous Approach
0H0UXZZ	Alteration of Left Breast, External Approach
0H0V07Z	Alteration of Bilateral Breast with Autologous Tissue Substitute, Open Approach
0H0V0JZ	Alteration of Bilateral Breast with Synthetic Substitute, Open Approach
0H0V0KZ	Alteration of Bilateral Breast with Nonautologous Tissue Substitute, Open Approach
0H0V0ZZ	Alteration of Bilateral Breast, Open Approach
0H0V37Z	Alteration of Bilateral Breast with Autologous Tissue Substitute, Percutaneous Approach
0H0V3JZ	Alteration of Bilateral Breast with Synthetic Substitute, Percutaneous Approach
0H0V3KZ	Alteration of Bilateral Breast with Nonautologous Tissue Substitute, Percutaneous Approach
0H0V3ZZ	Alteration of Bilateral Breast, Percutaneous Approach
0H0VXZZ	Alteration of Bilateral Breast, External Approach
0HDSXZZ	Extraction of Hair, External Approach
0HMTXZZ	Reattachment of Right Breast, External Approach
0HMUXZZ	Reattachment of Left Breast, External Approach
0HMOVXZZ	Reattachment of Bilateral Breast, External Approach
0HMXWZZ	Reattachment of Right Nipple, External Approach
0HMXXZZ	Reattachment of Left Nipple, External Approach
0HNT0ZZ	Release Right Breast, Open Approach
0HNT3ZZ	Release Right Breast, Percutaneous Approach
0HNT7ZZ	Release Right Breast, Via Natural or Artificial Opening
0HNT8ZZ	Release Right Breast, Via Natural or Artificial Opening Endoscopic
0HNTXZZ	Release Right Breast, External Approach
0HNU0ZZ	Release Left Breast, Open Approach

0HNU3ZZ	Release Left Breast, Percutaneous Approach
0HNU7ZZ	Release Left Breast, Via Natural or Artificial Opening
0HNU8ZZ	Release Left Breast, Via Natural or Artificial Opening Endoscopic
0HNUXZZ	Release Left Breast, External Approach
0HNV0ZZ	Release Bilateral Breast, Open Approach
0HNV3ZZ	Release Bilateral Breast, Percutaneous Approach
0HNV7ZZ	Release Bilateral Breast, Via Natural or Artificial Opening
0HNV8ZZ	Release Bilateral Breast, Via Natural or Artificial Opening Endoscopic
0HNVXZZ	Release Bilateral Breast, External Approach
0HNW0ZZ	Release Right Nipple, Open Approach
0HNW3ZZ	Release Right Nipple, Percutaneous Approach
0HNW7ZZ	Release Right Nipple, Via Natural or Artificial Opening
0HNW8ZZ	Release Right Nipple, Via Natural or Artificial Opening Endoscopic
0HNWXZZ	Release Right Nipple, External Approach
0HNX0ZZ	Release Left Nipple, Open Approach
0HNX3ZZ	Release Left Nipple, Percutaneous Approach
0HNX7ZZ	Release Left Nipple, Via Natural or Artificial Opening
0HNX8ZZ	Release Left Nipple, Via Natural or Artificial Opening Endoscopic
0HNXXZZ	Release Left Nipple, External Approach
0HQT0ZZ	Repair Right Breast, Open Approach
0HQT3ZZ	Repair Right Breast, Percutaneous Approach
0HQT7ZZ	Repair Right Breast, Via Natural or Artificial Opening
0HQT8ZZ	Repair Right Breast, Via Natural or Artificial Opening Endoscopic
0HQTXZZ	Repair Right Breast, External Approach
0HQU0ZZ	Repair Left Breast, Open Approach
0HQU3ZZ	Repair Left Breast, Percutaneous Approach
0HQU7ZZ	Repair Left Breast, Via Natural or Artificial Opening
0HQU8ZZ	Repair Left Breast, Via Natural or Artificial Opening Endoscopic
0HQUXZZ	Repair Left Breast, External Approach
0HQV0ZZ	Repair Bilateral Breast, Open Approach
0HQV3ZZ	Repair Bilateral Breast, Percutaneous Approach
0HQV7ZZ	Repair Bilateral Breast, Via Natural or Artificial Opening
0HQV8ZZ	Repair Bilateral Breast, Via Natural or Artificial Opening Endoscopic
0HQVXZZ	Repair Bilateral Breast, External Approach
0HQW0ZZ	Repair Right Nipple, Open Approach
0HQW3ZZ	Repair Right Nipple, Percutaneous Approach
0HQW7ZZ	Repair Right Nipple, Via Natural or Artificial Opening
0HQW8ZZ	Repair Right Nipple, Via Natural or Artificial Opening Endoscopic
0HQWXZZ	Repair Right Nipple, External Approach
0HGX0ZZ	Repair Left Nipple, Open Approach
0HGX3ZZ	Repair Left Nipple, Percutaneous Approach
0HGX7ZZ	Repair Left Nipple, Via Natural or Artificial Opening
0HGX8ZZ	Repair Left Nipple, Via Natural or Artificial Opening Endoscopic
0HGXZZ	Repair Left Nipple, External Approach
0HQY0ZZ	Repair Supernumerary Breast, Open Approach
0HQY3ZZ	Repair Supernumerary Breast, Percutaneous Approach
0HQY7ZZ	Repair Supernumerary Breast, Via Natural or Artificial Opening
0HQY8ZZ	Repair Supernumerary Breast, Via Natural or Artificial Opening Endoscopic
0HQYXZZ	Repair Supernumerary Breast, External Approach
0HRT07Z	Replacement of Right Breast with Autologous Tissue Substitute, Open Approach
0HRT0KZ	Replacement of Right Breast with Nonautologous Tissue Substitute, Open Approach

0HRT37Z	Replacement of Right Breast with Autologous Tissue Substitute, Percutaneous Approach
0HRT3KZ	Replacement of Right Breast with Nonautologous Tissue Substitute, Percutaneous Approach
0HRTXJZ	Replacement of Right Breast with Synthetic Substitute, External Approach
0HRU07Z	Replacement of Left Breast with Autologous Tissue Substitute, Open Approach
0HRU0KZ	Replacement of Left Breast with Nonautologous Tissue Substitute, Open Approach
0HRU37Z	Replacement of Left Breast with Autologous Tissue Substitute, Percutaneous Approach
0HRU3KZ	Replacement of Left Breast with Nonautologous Tissue Substitute, Percutaneous Approach
0HRUXJZ	Replacement of Left Breast with Synthetic Substitute, External Approach
0HRV07Z	Replacement of Bilateral Breast with Autologous Tissue Substitute, Open Approach
0HRV0KZ	Replacement of Bilateral Breast with Nonautologous Tissue Substitute, Open Approach
0HRV37Z	Replacement of Bilateral Breast with Autologous Tissue Substitute, Percutaneous Approach
0HRV3KZ	Replacement of Bilateral Breast with Nonautologous Tissue Substitute, Percutaneous Approach
0HRVXJZ	Replacement of Bilateral Breast with Synthetic Substitute, External Approach
0HRW07Z	Replacement of Right Nipple with Autologous Tissue Substitute, Open Approach
0HRW0JZ	Replacement of Right Nipple with Synthetic Substitute, Open Approach
0HRW0KZ	Replacement of Right Nipple with Nonautologous Tissue Substitute, Open Approach
0HRW37Z	Replacement of Right Nipple with Autologous Tissue Substitute, Percutaneous Approach
0HRW3JZ	Replacement of Right Nipple with Synthetic Substitute, Percutaneous Approach
0HRW3KZ	Replacement of Right Nipple with Nonautologous Tissue Substitute, Percutaneous Approach
0HRWX7Z	Replacement of Right Nipple with Autologous Tissue Substitute, External Approach
0HRWXJZ	Replacement of Right Nipple with Synthetic Substitute, External Approach
0HRWXKZ	Replacement of Right Nipple with Nonautologous Tissue Substitute, External Approach
0HRX07Z	Replacement of Left Nipple with Autologous Tissue Substitute, Open Approach
0HRX0JZ	Replacement of Left Nipple with Synthetic Substitute, Open Approach
0HRX0KZ	Replacement of Left Nipple with Nonautologous Tissue Substitute, Open Approach
0HRX37Z	Replacement of Left Nipple with Autologous Tissue Substitute, Percutaneous Approach
0HRX3JZ	Replacement of Left Nipple with Synthetic Substitute, Percutaneous Approach
0HRX3KZ	Replacement of Left Nipple with Nonautologous Tissue Substitute, Percutaneous Approach
0HRXX7Z	Replacement of Left Nipple with Autologous Tissue Substitute, External Approach
0HRXXJZ	Replacement of Left Nipple with Synthetic Substitute, External Approach
0HRXXKZ	Replacement of Left Nipple with Nonautologous Tissue Substitute, External Approach
0HUT07Z	Supplement Right Breast with Autologous Tissue Substitute, Open Approach
0HUT0JZ	Supplement Right Breast with Synthetic Substitute, Open Approach
0HUT0KZ	Supplement Right Breast with Nonautologous Tissue Substitute, Open Approach
0HUT37Z	Supplement Right Breast with Autologous Tissue Substitute, Percutaneous Approach
0HUT3JZ	Supplement Right Breast with Synthetic Substitute, Percutaneous Approach
0HUT3KZ	Supplement Right Breast with Nonautologous Tissue Substitute, Percutaneous Approach
0HUT77Z	Supplement Right Breast with Autologous Tissue Substitute, Via Natural or Artificial Opening
0HUT7JZ	Supplement Right Breast with Synthetic Substitute, Via Natural or Artificial Opening

0HUT7KZ	Supplement Right Breast with Nonautologous Tissue Substitute, Via Natural or Artificial Opening
0HUT87Z	Supplement Right Breast with Autologous Tissue Substitute, Via Natural or Artificial Opening Endoscopic
0HUT8JZ	Supplement Right Breast with Synthetic Substitute, Via Natural or Artificial Opening Endoscopic
0HUT8KZ	Supplement Right Breast with Nonautologous Tissue Substitute, Via Natural or Artificial Opening Endoscopic
0HUTX7Z	Supplement Right Breast with Autologous Tissue Substitute, External Approach
0HUTXJZ	Supplement Right Breast with Synthetic Substitute, External Approach
0HUTXKZ	Supplement Right Breast with Nonautologous Tissue Substitute, External Approach
0HUU07Z	Supplement Left Breast with Autologous Tissue Substitute, Open Approach
0HUU0JZ	Supplement Left Breast with Synthetic Substitute, Open Approach
0HUU0KZ	Supplement Left Breast with Nonautologous Tissue Substitute, Open Approach
0HUU37Z	Supplement Left Breast with Autologous Tissue Substitute, Percutaneous Approach
0HUU3JZ	Supplement Left Breast with Synthetic Substitute, Percutaneous Approach
0HUU3KZ	Supplement Left Breast with Nonautologous Tissue Substitute, Percutaneous Approach
0HUU77Z	Supplement Left Breast with Autologous Tissue Substitute, Via Natural or Artificial Opening
0HUU7JZ	Supplement Left Breast with Synthetic Substitute, Via Natural or Artificial Opening
0HUU7KZ	Supplement Left Breast with Nonautologous Tissue Substitute, Via Natural or Artificial Opening
0HUU87Z	Supplement Left Breast with Autologous Tissue Substitute, Via Natural or Artificial Opening Endoscopic
0HUU8JZ	Supplement Left Breast with Synthetic Substitute, Via Natural or Artificial Opening Endoscopic
0HUU8KZ	Supplement Left Breast with Nonautologous Tissue Substitute, Via Natural or Artificial Opening Endoscopic
0HUUX7Z	Supplement Left Breast with Autologous Tissue Substitute, External Approach
0HUUXJZ	Supplement Left Breast with Synthetic Substitute, External Approach
0HUU XKZ	Supplement Left Breast with Nonautologous Tissue Substitute, External Approach
0HUV07Z	Supplement Bilateral Breast with Autologous Tissue Substitute, Open Approach
0HUV0JZ	Supplement Bilateral Breast with Synthetic Substitute, Open Approach
0HUV0KZ	Supplement Bilateral Breast with Nonautologous Tissue Substitute, Open Approach
0HUV37Z	Supplement Bilateral Breast with Autologous Tissue Substitute, Percutaneous Approach
0HUV3JZ	Supplement Bilateral Breast with Synthetic Substitute, Percutaneous Approach
0HUV3KZ	Supplement Bilateral Breast with Nonautologous Tissue Substitute, Percutaneous Approach
0HUV77Z	Supplement Bilateral Breast with Autologous Tissue Substitute, Via Natural or Artificial Opening
0HUV7JZ	Supplement Bilateral Breast with Synthetic Substitute, Via Natural or Artificial Opening
0HUV7KZ	Supplement Bilateral Breast with Nonautologous Tissue Substitute, Via Natural or Artificial Opening
0HUV87Z	Supplement Bilateral Breast with Autologous Tissue Substitute, Via Natural or Artificial Opening Endoscopic
0HUV8JZ	Supplement Bilateral Breast with Synthetic Substitute, Via Natural or Artificial Opening Endoscopic
0HUV8KZ	Supplement Bilateral Breast with Nonautologous Tissue Substitute, Via Natural or Artificial Opening Endoscopic
0HUVX7Z	Supplement Bilateral Breast with Autologous Tissue Substitute, External Approach
0HUVXJZ	Supplement Bilateral Breast with Synthetic Substitute, External Approach

0HUVXKZ	Supplement Bilateral Breast with Nonautologous Tissue Substitute, External Approach
0HUW07Z	Supplement Right Nipple with Autologous Tissue Substitute, Open Approach
0HUW0JZ	Supplement Right Nipple with Synthetic Substitute, Open Approach
0HUW0KZ	Supplement Right Nipple with Nonautologous Tissue Substitute, Open Approach
0HUW37Z	Supplement Right Nipple with Autologous Tissue Substitute, Percutaneous Approach
0HUW3JZ	Supplement Right Nipple with Synthetic Substitute, Percutaneous Approach
0HUW3KZ	Supplement Right Nipple with Nonautologous Tissue Substitute, Percutaneous Approach
0HUW77Z	Supplement Right Nipple with Autologous Tissue Substitute, Via Natural or Artificial Opening
0HUW7JZ	Supplement Right Nipple with Synthetic Substitute, Via Natural or Artificial Opening
0HUW7KZ	Supplement Right Nipple with Nonautologous Tissue Substitute, Via Natural or Artificial Opening
0HUW87Z	Supplement Right Nipple with Autologous Tissue Substitute, Via Natural or Artificial Opening Endoscopic
0HUW8JZ	Supplement Right Nipple with Synthetic Substitute, Via Natural or Artificial Opening Endoscopic
0HUW8KZ	Supplement Right Nipple with Nonautologous Tissue Substitute, Via Natural or Artificial Opening Endoscopic
0HUWX7Z	Supplement Right Nipple with Autologous Tissue Substitute, External Approach
0HUWXJZ	Supplement Right Nipple with Synthetic Substitute, External Approach
0HUWXKZ	Supplement Right Nipple with Nonautologous Tissue Substitute, External Approach
0HUX07Z	Supplement Left Nipple with Autologous Tissue Substitute, Open Approach
0HUX0JZ	Supplement Left Nipple with Synthetic Substitute, Open Approach
0HUX0KZ	Supplement Left Nipple with Nonautologous Tissue Substitute, Open Approach
0HUX37Z	Supplement Left Nipple with Autologous Tissue Substitute, Percutaneous Approach
0HUX3JZ	Supplement Left Nipple with Synthetic Substitute, Percutaneous Approach
0HUX3KZ	Supplement Left Nipple with Nonautologous Tissue Substitute, Percutaneous Approach
0HUX77Z	Supplement Left Nipple with Autologous Tissue Substitute, Via Natural or Artificial Opening
0HUX7JZ	Supplement Left Nipple with Synthetic Substitute, Via Natural or Artificial Opening
0HUX7KZ	Supplement Left Nipple with Nonautologous Tissue Substitute, Via Natural or Artificial Opening
0HUX87Z	Supplement Left Nipple with Autologous Tissue Substitute, Via Natural or Artificial Opening Endoscopic
0HUX8JZ	Supplement Left Nipple with Synthetic Substitute, Via Natural or Artificial Opening Endoscopic
0HUX8KZ	Supplement Left Nipple with Nonautologous Tissue Substitute, Via Natural or Artificial Opening Endoscopic
0HUXX7Z	Supplement Left Nipple with Autologous Tissue Substitute, External Approach
0HUXXJZ	Supplement Left Nipple with Synthetic Substitute, External Approach
0HUXXKZ	Supplement Left Nipple with Nonautologous Tissue Substitute, External Approach
0U5J0ZZ	Destruction of Clitoris, Open Approach
0U5JXZZ	Destruction of Clitoris, External Approach
0U9J00Z	Drainage of Clitoris with Drainage Device, Open Approach
0U9J0ZZ	Drainage of Clitoris, Open Approach
0U9JX0Z	Drainage of Clitoris with Drainage Device, External Approach
0U9JXZZ	Drainage of Clitoris, External Approach
0UBJ0ZX	Excision of Clitoris, Open Approach, Diagnostic
0UBJ0ZZ	Excision of Clitoris, Open Approach
0UBJXZX	Excision of Clitoris, External Approach, Diagnostic

0UBJXZZ	Excision of Clitoris, External Approach
0UCJ0ZZ	Extirpation of Matter from Clitoris, Open Approach
0UCJXZZ	Extirpation of Matter from Clitoris, External Approach
0UMJXZZ	Reattachment of Clitoris, External Approach
0UNJ0ZZ	Release Clitoris, Open Approach
0UNJXZZ	Release Clitoris, External Approach
0UQG0ZZ	Repair Vagina, Open Approach
0UQJ0ZZ	Repair Clitoris, Open Approach
0UQJXZZ	Repair Clitoris, External Approach
0UTJ0ZZ	Resection of Clitoris, Open Approach
0UTJXZZ	Resection of Clitoris, External Approach
0UUG07Z	Supplement Vagina with Autologous Tissue Substitute, Open Approach
0UUG0JZ	Supplement Vagina with Synthetic Substitute, Open Approach
0UUG0KZ	Supplement Vagina with Nonautologous Tissue Substitute, Open Approach
0UUG47Z	Supplement Vagina with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
0UUG4JZ	Supplement Vagina with Synthetic Substitute, Percutaneous Endoscopic Approach
0UUG4KZ	Supplement Vagina with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
0UUG77Z	Supplement Vagina with Autologous Tissue Substitute, Via Natural or Artificial Opening
0UUG7JZ	Supplement Vagina with Synthetic Substitute, Via Natural or Artificial Opening
0UUG7KZ	Supplement Vagina with Nonautologous Tissue Substitute, Via Natural or Artificial Opening
0UUG87Z	Supplement Vagina with Autologous Tissue Substitute, Via Natural or Artificial Opening Endoscopic
0UUG8JZ	Supplement Vagina with Synthetic Substitute, Via Natural or Artificial Opening Endoscopic
0UUG8KZ	Supplement Vagina with Nonautologous Tissue Substitute, Via Natural or Artificial Opening Endoscopic
0UUGX7Z	Supplement Vagina with Autologous Tissue Substitute, External Approach
0UUGXJZ	Supplement Vagina with Synthetic Substitute, External Approach
0UUGXKZ	Supplement Vagina with Nonautologous Tissue Substitute, External Approach
0UUJ07Z	Supplement Clitoris with Autologous Tissue Substitute, Open Approach
0UUJ0JZ	Supplement Clitoris with Synthetic Substitute, Open Approach
0UUJ0KZ	Supplement Clitoris with Nonautologous Tissue Substitute, Open Approach
0UUJX7Z	Supplement Clitoris with Autologous Tissue Substitute, External Approach
0UUJXJZ	Supplement Clitoris with Synthetic Substitute, External Approach
0UUJXKZ	Supplement Clitoris with Nonautologous Tissue Substitute, External Approach
0VT90ZZ	Resection of Right Testis, Open Approach
0VT94ZZ	Resection of Right Testis, Percutaneous Endoscopic Approach
0VTB0ZZ	Resection of Left Testis, Open Approach
0VTB4ZZ	Resection of Left Testis, Percutaneous Endoscopic Approach
0VTC4ZZ	Resection of Bilateral Testes, Percutaneous Endoscopic Approach
0VTS0ZZ	Resection of Penis, Open Approach
0VTS4ZZ	Resection of Penis, Percutaneous Endoscopic Approach
0VTSXZZ	Resection of Penis, External Approach
0W4N071	Creation of Penis in Female Perineum with Autologous Tissue Substitute, Open Approach
0W4N0J1	Creation of Penis in Female Perineum with Synthetic Substitute, Open Approach
0W4N0K1	Creation of Penis in Female Perineum with Nonautologous Tissue Substitute, Open Approach
0W4N0Z1	Creation of Penis in Female Perineum, Open Approach

Endnotes

¹ Based on local expert opinion

Exhibit D



DeanHealthPlan.

A member of SSM Health

Coverage of any medical intervention discussed in a Dean Health Plan medical policy is subject to the limitations and exclusions outlined in the member's benefit certificate.

Sex Transformation Surgery (market-based)

MP9465

Covered Service: Yes, when member has the Sex Transformation Surgery Rider and meets criteria below.

Prior Authorization Required:

Yes—as shown below

Additional Information:

The medical policy criteria herein govern coverage determinations for certain Sex Transformation Surgeries for those members covered under a certificate that includes a Sex Transformation Surgery rider. The medical policy applies only to those Sex Transformation Surgery services covered under the rider. All Sex Transformation Surgery services not covered under the rider are governed by MP9469, Sex Transformation Surgery (standard).

Sex Transformation Surgeries for those members covered under a certificate that does not include a Sex Transformation Surgery Rider are governed by MP9469, Sex Transformation Surgery (standard).

Authorization may only be granted if the member is an active participant in a recognized gender identity treatment program.

Sex Transformation Surgery is defined as a surgery performed for the treatment of a confirmed gender dysphoria diagnosis.

Medicare Policy: Does not apply.

BadgerCare Plus Policy: Does not apply.

Dean Health Plan Medical Policy:

1.0 **All** Sex Transformation Surgeries **require** prior authorization through the Quality and Care Management Division and are considered medically appropriate when **all** the following are met:

1.1 Letter of referral for surgery from the individual's qualified mental health professional competent in the assessment and treatment of gender dysphoria, which includes:

1.1.1 Letter of referral should include **all** the following information:

1.1.1.1 Member's general identifying characteristics; and



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Coverage of any medical intervention discussed in a Dean Health Plan medical policy is subject to the limitations and exclusions outlined in the member's benefit certificate.

- 1.1.1.2 Results of the client's psychosocial assessment, including any diagnoses; and
- 1.1.1.3 The duration of the mental health professional's relationship with the client, including the type of evaluation and therapy or counseling to date; and
- 1.1.1.4 An explanation that the World Professional Association for Transgender Health (WPATH) criteria for surgery have been met, and a brief description of the clinical rationale for supporting the member's request for surgery; and
- 1.1.1.5 A statement about the fact that informed consent has been obtained from the member.
- 1.1.2 One letter of referral is required for breast/chest surgery (e.g., mastectomy, chest reconstruction, or augmentation mammoplasty); **and**
- 1.1.3 One independent letter of referral is required for genital surgery
- 1.2 Persistent, well-documented gender dysphoria; **and**
- 1.3 Capacity to make a fully informed decision and to consent to treatment; **and**
- 1.4 Age of majority (18 years of age or older); **and**
- 1.5 If significant medical or mental health concerns are present, conditions must be reasonably well-controlled; **and**
- 1.6 The member may be required to complete twelve months of continuous and compliant hormone therapy as appropriate to the member's gender goals (unless the member has a medical contraindication or is otherwise unable or unwilling to take hormones); **and**
 - 1.6.1 If required documentation of at least 12 months of continuous hormonal sex reassignment therapy; **and**
 - 1.6.2 The physician responsible for endocrine transition therapy must medically clear the individual for sex reassignment surgery and collaborate with the surgeon regarding hormone use during and after surgery.
- 1.7 The treatment plan must conform to identifiable external sources including the World Professional Association for Transgender Health Association (WPATH), and/or professional society guidance.



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	Committee/Source	Date(s)
Originated:	Medical Policy Committee/Quality and Care Management Division	October 31, 2016
Revised:		
Reviewed:		

Published/Effective: 01/01/2017

Exhibit E



DeanHealthPlan.

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Coverage of any medical intervention discussed in a Dean Health Plan medical policy is subject to the limitations and exclusions outlined in the member's benefit certificate.

Sex Transformation Surgery (standard)

MP9469

Covered Service: No

Prior Authorization Required: Not covered

Additional Information: The medical policy criteria herein govern coverage of the identified categories of Sex Transformation Surgery for treatment of persons with gender dysphoria.

For those members covered under a certificate that includes a market-based Sex Transformation Surgery Rider, certain Sex Transformation Surgery services may be governed by MP9465 Sex Transformation Surgery (market-based).

Sex Transformation Surgery is defined as a surgery performed for the treatment of a confirmed gender dysphoria diagnosis.

Medicare Policy: Dean Health Plan makes coverage determinations on an individual claim basis.

BadgerCare Plus Policy: Dean Health Plan covers when BadgerCare Plus also covers the benefit.

Dean Health Plan Medical Policy:

- 1.0 Quality and Care Management has determined the following after review of current medical literature and studies regarding the identified categories of Sex Transformation Surgery:
- 2.0 Based upon lack of published evidence showing conclusively the long-term safety and positive impact on health outcomes, the following categories of Sex Transformation Surgery should be considered not medically necessary:
 - 2.1 Male to Female transition (55970):
 - 2.1.1 Breast augmentation (19324, 19325, 19340, 19342, 19350)
 - 2.1.2 Orchiectomy (54520, 54522, 54690)
 - 2.1.3 Penectomy (54125)
 - 2.1.4 Vaginoplasty (57335)
 - 2.1.5 Colovaginoplasty (55899, 57291, 57292, 58999)
 - 2.1.6 Clitoroplasty (56805)



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- 2.1.7 Labiaplasty (55899, 58999)
- 2.2 Female to Male transition (55980):
 - 2.2.1 Breast reduction/mastectomy (19301, 19303, 19304, 19318)
 - 2.2.2 Hysterectomy (58150, 58180, 58260-58262, 58275, 58285, 58290, 58291, 58541, 58542, 58543, 58544, 58550, 58552, 58553, 58554, 58570, 58571, 58572, 58573)
 - 2.2.3 Salpingo-oophrectomy (58661, 58720)
 - 2.2.4 Colpectomy / vaginectomy (57106, 57107, 57110, 57111)
 - 2.2.5 Metoidioplasty (55899, 58999)
 - 2.2.6 Phalloplasty (55899, 58999)
 - 2.2.7 Urethroplasty (53430)
 - 2.2.8 Scrotoplasty (55175, 55180)
 - 2.2.9 Placement of erectile prosthesis (54400, 54401, 54405, 54406, 54408, 54410, 54411, 54415, 54416, 54417)
 - 2.2.10 Vulvectomy (56625)
- 3.0 The following procedures, which may be requested as part of sex transformation surgery, are non-covered benefits because they are generally performed to enhance body appearance and are not reconstructive in nature. This is not an all-inclusive list. Please see MP9022 Plastic and Reconstructive Surgery for additional information:
 - 3.1 Abdominoplasty
 - 3.2 Blepharoplasty or brow ptosis surgery
 - 3.3 Body contouring (including liposuction or subcutaneous injection of filling material)
 - 3.4 Calf implants
 - 3.5 Cheek (malar) implants, nose implants or chin implants
 - 3.6 Face lift or neck lift (rhytidectomy)
 - 3.7 Facial bone reduction
 - 3.8 Feminization of torso
 - 3.9 Hair transplant or removal
 - 3.10 Lip reduction or enhancement
 - 3.11 Masculinization of torso (pectoral implants)
 - 3.12 Mastopexy
 - 3.13 Reduction thyroid chondroplasty
 - 3.14 Removal of excess or redundant skin



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- 3.15 Rhinoplasty
- 3.16 Skin resurfacing (including dermabrasion, chemical peel or chemical exfoliation)
- 3.17 Voice modification surgery (including laryngoplasty, cricothyroid approximation or vocal cord shortening)
- 4.0 Surgical Procedures accompanying a diagnosis of gender dysphoria that have not been listed above must be reviewed by a Medical Director for medical necessity.

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WPATH WORLD PROFESSIONAL
ASSOCIATION for
TRANSGENDER HEALTH

Standards of Care for the Health of Transsexual, Transgender, and Gender Nonconforming People

The World Professional Association for Transgender Health



Standards of Care

for the Health of Transsexual, Transgender, and Gender Nonconforming People

The World Professional Association for Transgender Health

7th Version¹ | www.wpath.org

¹ This is the seventh version of the Standards of Care. The original SOC were published in 1979. Previous revisions were in 1980, 1981, 1990, 1998, and 2001.

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Purpose and Use of the Standards of Care

The World Professional Association for Transgender Health (WPATH)¹ is an international, multidisciplinary, professional association whose mission is to promote evidence-based care, education, research, advocacy, public policy, and respect for transgender health. The vision of WPATH is to bring together diverse professionals dedicated to developing best practices and supportive policies worldwide that promote health, research, education, respect, dignity, and equality for transsexual, transgender, and gender nonconforming people in all cultural settings.

One of the main functions of WPATH is to promote the highest standards of health care for individuals through the articulation of *Standards of Care (SOC) for the Health of Transsexual, Transgender, and Gender Nonconforming People*. The SOC are based on the best available science and expert professional consensus.² Most of the research and experience in this field comes from a North American and Western European perspective; thus, adaptations of the SOC to other parts of the world are necessary. Suggestions for ways of thinking about cultural relativity and cultural competence are included in this version of the SOC.

The overall goal of the SOC is to provide clinical guidance for health professionals to assist transsexual, transgender, and gender nonconforming people with safe and effective pathways to achieving lasting personal comfort with their gendered selves, in order to maximize their overall health, psychological well-being, and self-fulfillment. This assistance may include primary care, gynecologic and urologic care, reproductive options, voice and communication therapy, mental health services (e.g., assessment, counseling, psychotherapy), and hormonal and surgical treatments. While this is primarily a document for health professionals, the SOC may also be used by individuals, their families, and social institutions to understand how they can assist with promoting optimal health for members of this diverse population.

WPATH recognizes that health is dependent upon not only good clinical care but also social and political climates that provide and ensure social tolerance, equality, and the full rights of citizenship. Health is promoted through public policies and legal reforms that promote tolerance and equity

1 Formerly the Harry Benjamin International Gender Dysphoria Association

2 *Standards of Care (SOC), Version 7* represents a significant departure from previous versions. Changes in this version are based upon significant cultural shifts, advances in clinical knowledge, and appreciation of the many health care issues that can arise for transsexual, transgender, and gender nonconforming people beyond hormone therapy and surgery (Coleman, 2009a, b, c, d).

for gender and sexual diversity and that eliminate prejudice, discrimination, and stigma. WPATH is committed to advocacy for these changes in public policies and legal reforms.

The Standards of Care Are Flexible Clinical Guidelines

The SOC are intended to be flexible in order to meet the diverse health care needs of transsexual, transgender, and gender nonconforming people. While flexible, they offer standards for promoting optimal health care and guiding the treatment of people experiencing gender dysphoria – broadly defined as discomfort or distress that is caused by a discrepancy between a person's gender identity and that person's sex assigned at birth (and the associated gender role and/or primary and secondary sex characteristics) (Fisk, 1974; Knudson, De Cuypere, & Bockting, 2010b).

As for all previous versions of the SOC, the criteria put forth in this document for hormone therapy and surgical treatments for gender dysphoria are clinical guidelines; individual health professionals and programs may modify them. Clinical departures from the SOC may come about because of a patient's unique anatomic, social, or psychological situation; an experienced health professional's evolving method of handling a common situation; a research protocol; lack of resources in various parts of the world; or the need for specific harm reduction strategies. These departures should be recognized as such, explained to the patient, and documented through informed consent for quality patient care and legal protection. This documentation is also valuable for the accumulation of new data, which can be retrospectively examined to allow for health care – and the SOC – to evolve.

The SOC articulate standards of care but also acknowledge the role of making informed choices and the value of harm reduction approaches. In addition, this version of the SOC recognizes and validates various expressions of gender that may not necessitate psychological, hormonal, or surgical treatments. Some patients who present for care will have made significant self-directed progress towards gender role changes, transition, or other resolutions regarding their gender identity or gender dysphoria. Other patients will require more intensive services. Health professionals can use the SOC to help patients consider the full range of health services open to them, in accordance with their clinical needs and goals for gender expression.



Global Applicability of the Standards of Care

While the SOC are intended for worldwide use, WPATH acknowledges that much of the recorded clinical experience and knowledge in this area of health care is derived from North American and Western European sources. From place to place, both across and within nations, there are differences in all of the following: social attitudes towards transsexual, transgender, and gender nonconforming people; constructions of gender roles and identities; language used to describe different gender identities; epidemiology of gender dysphoria; access to and cost of treatment; therapies offered; number and type of professionals who provide care; and legal and policy issues related to this area of health care (Winter, 2009).

It is impossible for the SOC to reflect all of these differences. In applying these standards to other cultural contexts, health professionals must be sensitive to these differences and adapt the SOC according to local realities. For example, in a number of cultures, gender nonconforming people are found in such numbers and living in such ways as to make them highly socially visible (Peletz, 2006). In settings such as these, it is common for people to initiate a change in their gender expression and physical characteristics while in their teens, or even earlier. Many grow up and live in a social, cultural, and even linguistic context quite unlike that of Western cultures. Yet almost all experience prejudice (Peletz, 2006; Winter, 2009). In many cultures, social stigma towards gender nonconformity is widespread and gender roles are highly prescriptive (Winter et al., 2009). Gender nonconforming people in these settings are forced to be hidden, and therefore may lack opportunities for adequate health care (Winter, 2009).

The SOC are not intended to limit efforts to provide the best available care to all individuals. Health professionals throughout the world – even in areas with limited resources and training opportunities – can apply the many core principles that undergird the SOC. These principles include the following: Exhibit respect for patients with nonconforming gender identities (do not pathologize differences in gender identity or expression); provide care (or refer to knowledgeable colleagues) that affirms patients' gender identities and reduces the distress of gender dysphoria, when present; become knowledgeable about the health care needs of transsexual, transgender, and gender nonconforming people, including the benefits and risks of treatment options for gender dysphoria; match the treatment approach to the specific needs of patients, particularly their goals for gender expression and need for relief from gender dysphoria; facilitate access to appropriate care; seek patients' informed consent before providing treatment; offer continuity of care; and be prepared to support and advocate for patients within their families and communities (schools, workplaces, and other settings).

Terminology is culturally and time-dependent and is rapidly evolving. It is important to use respectful language in different places and times, and among different people. As the SOC are translated into other languages, great care must be taken to ensure that the meanings of terms are accurately translated. Terminology in English may not be easily translated into other languages, and vice versa. Some languages do not have equivalent words to describe the various terms within this document; hence, translators should be cognizant of the underlying goals of treatment and articulate culturally applicable guidance for reaching those goals.



The Difference Between Gender Nonconformity and Gender Dysphoria

Being Transsexual, Transgender, or Gender Nonconforming Is a Matter of Diversity, Not Pathology

WPATH released a statement in May 2010 urging the de-psychopathologization of gender nonconformity worldwide (WPATH Board of Directors, 2010). This statement noted that “the expression of gender characteristics, including identities, that are not stereotypically associated with one’s assigned sex at birth is a common and culturally-diverse human phenomenon [that] should not be judged as inherently pathological or negative.”

Unfortunately, there is stigma attached to gender nonconformity in many societies around the world. Such stigma can lead to prejudice and discrimination, resulting in “minority stress” (I. H. Meyer, 2003). Minority stress is unique (additive to general stressors experienced by all people), socially based, and chronic, and may make transsexual, transgender, and gender nonconforming individuals more vulnerable to developing mental health concerns such as anxiety and depression (Institute of Medicine, 2011). In addition to prejudice and discrimination in society at large, stigma can contribute to abuse and neglect in one’s relationships with peers and family members, which in turn can lead to psychological distress. However, these symptoms are socially induced and are not inherent to being transsexual, transgender, or gender nonconforming.

Gender Nonconformity Is Not the Same as Gender Dysphoria

Gender nonconformity refers to the extent to which a person's gender identity, role, or expression differs from the cultural norms prescribed for people of a particular sex (Institute of Medicine, 2011). *Gender dysphoria* refers to discomfort or distress that is caused by a discrepancy between a person's gender identity and that person's sex assigned at birth (and the associated gender role and/or primary and secondary sex characteristics) (Fisk, 1974; Knudson, De Cuypere, & Bockting, 2010b). Only *some* gender nonconforming people experience gender dysphoria at *some* point in their lives.

Treatment is available to assist people with such distress to explore their gender identity and find a gender role that is comfortable for them (Bockting & Goldberg, 2006). Treatment is individualized: What helps one person alleviate gender dysphoria might be very different from what helps another person. This process may or may not involve a change in gender expression or body modifications. Medical treatment options include, for example, feminization or masculinization of the body through hormone therapy and/or surgery, which are effective in alleviating gender dysphoria and are medically necessary for many people. Gender identities and expressions are diverse, and hormones and surgery are just two of many options available to assist people with achieving comfort with self and identity.

Gender dysphoria can in large part be alleviated through treatment (Murad et al., 2010). Hence, while transsexual, transgender, and gender nonconforming people may experience gender dysphoria at some point in their lives, many individuals who receive treatment will find a gender role and expression that is comfortable for them, even if these differ from those associated with their sex assigned at birth, or from prevailing gender norms and expectations.

Diagnoses Related to Gender Dysphoria

Some people experience gender dysphoria at such a level that the distress meets criteria for a formal diagnosis that might be classified as a mental disorder. Such a diagnosis is not a license for stigmatization or for the deprivation of civil and human rights. Existing classification systems such as the *Diagnostic Statistical Manual of Mental Disorders (DSM)* (American Psychiatric Association, 2000) and the *International Classification of Diseases (ICD)* (World Health Organization, 2007) define hundreds of mental disorders that vary in onset, duration, pathogenesis, functional disability, and treatability. All of these systems attempt to classify clusters of symptoms and conditions, not the individuals themselves. A disorder is a description of something with which a person might struggle, not a description of the person or the person's identity.

Thus, transsexual, transgender, and gender nonconforming individuals are not inherently disordered. Rather, the distress of gender dysphoria, when present, is the concern that might be diagnosable and for which various treatment options are available. The existence of a diagnosis for such dysphoria often facilitates access to health care and can guide further research into effective treatments.

Research is leading to new diagnostic nomenclatures, and terms are changing in both the *DSM* (Cohen-Kettenis & Pfäfflin, 2010; Knudson, De Cuypere, & Bockting, 2010b; Meyer-Bahlburg, 2010; Zucker, 2010) and the *ICD*. For this reason, familiar terms are employed in the *SOC* and definitions are provided for terms that may be emerging. Health professionals should refer to the most current diagnostic criteria and appropriate codes to apply in their practice areas.

IV Epidemiologic Considerations

Formal epidemiologic studies on the incidence³ and prevalence⁴ of transsexualism specifically or transgender and gender nonconforming identities in general have not been conducted, and efforts to achieve realistic estimates are fraught with enormous difficulties (Institute of Medicine, 2011; Zucker & Lawrence, 2009). Even if epidemiologic studies established that a similar proportion of transsexual, transgender, or gender nonconforming people existed all over the world, it is likely that cultural differences from one country to another would alter both the behavioral expressions of different gender identities and the extent to which gender dysphoria – distinct from one's gender identity – is actually occurring in a population. While in most countries, crossing normative gender boundaries generates moral censure rather than compassion, there are examples in certain cultures of gender nonconforming behaviors (e.g., in spiritual leaders) that are less stigmatized and even revered (Besnier, 1994; Bolin, 1988; Chiñas, 1995; Coleman, Colgan, & Gooren, 1992; Costa & Matzner, 2007; Jackson & Sullivan, 1999; Nanda, 1998; Taywaditep, Coleman, & Dumronggittigule, 1997).

For various reasons, researchers who have studied incidence and prevalence have tended to focus on the most easily counted subgroup of gender nonconforming individuals: transsexual individuals who experience gender dysphoria and who present for gender-transition-related care at specialist gender clinics (Zucker & Lawrence, 2009). Most studies have been conducted in European

3 **incidence**—the number of new cases arising in a given period (e.g., a year)

4 **prevalence**—the number of individuals having a condition, divided by the number of people in the general population

countries such as Sweden (Wålinder, 1968, 1971), the United Kingdom (Hoenig & Kenna, 1974), the Netherlands (Bakker, Van Kesteren, Gooren, & Bezemer, 1993; Eklund, Gooren, & Bezemer, 1988; van Kesteren, Gooren, & Megens, 1996), Germany (Weitze & Osburg, 1996), and Belgium (De Cuypere et al., 2007). One was conducted in Singapore (Tsoi, 1988).

De Cuypere and colleagues (2007) reviewed such studies, as well as conducted their own. Together, those studies span 39 years. Leaving aside two outlier findings from Pauly in 1968 and Tsoi in 1988, ten studies involving eight countries remain. The prevalence figures reported in these ten studies range from 1:11,900 to 1:45,000 for male-to-female individuals (MtF) and 1:30,400 to 1:200,000 for female-to-male (FtM) individuals. Some scholars have suggested that the prevalence is much higher, depending on the methodology used in the research (for example, Olyslager & Conway, 2007).

Direct comparisons across studies are impossible, as each differed in their data collection methods and in their criteria for documenting a person as transsexual (e.g., whether or not a person had undergone genital reconstruction, versus had initiated hormone therapy, versus had come to the clinic seeking medically-supervised transition services). The trend appears to be towards higher prevalence rates in the more recent studies, possibly indicating increasing numbers of people seeking clinical care. Support for this interpretation comes from research by Reed and colleagues (2009), who reported a doubling of the numbers of people accessing care at gender clinics in the United Kingdom every five or six years. Similarly, Zucker and colleagues (2008) reported a four- to five-fold increase in child and adolescent referrals to their Toronto, Canada clinic over a 30-year period.

The numbers yielded by studies such as these can be considered minimum estimates at best. The published figures are mostly derived from clinics where patients met criteria for severe gender dysphoria and had access to health care at those clinics. These estimates do not take into account that treatments offered in a particular clinic setting might not be perceived as affordable, useful, or acceptable by all self-identified gender dysphoric individuals in a given area. By counting only those people who present at clinics for a specific type of treatment, an unspecified number of gender dysphoric individuals are overlooked.

Other clinical observations (not yet firmly supported by systematic study) support the likelihood of a higher prevalence of gender dysphoria: (i) Previously unrecognized gender dysphoria is occasionally diagnosed when patients are seen with anxiety, depression, conduct disorder, substance abuse, dissociative identity disorders, borderline personality disorder, sexual disorders, and disorders of sex development (Cole, O'Boyle, Emory, & Meyer III, 1997). (ii) Some crossdressers, drag queens/kings or female/male impersonators, and gay and lesbian individuals may be experiencing gender dysphoria (Bullough & Bullough, 1993). (iii) The intensity of some people's gender dysphoria fluctuates below and above a clinical threshold (Docter, 1988). (iv) Gender nonconformity among FtM individuals tends to be relatively invisible in many cultures, particularly to Western health

professionals and researchers who have conducted most of the studies on which the current estimates of prevalence and incidence are based (Winter, 2009).

Overall, the existing data should be considered a starting point, and health care would benefit from more rigorous epidemiologic study in different locations worldwide.



Overview of Therapeutic Approaches for Gender Dysphoria

Advancements in the Knowledge and Treatment of Gender Dysphoria

In the second half of the 20th century, awareness of the phenomenon of gender dysphoria increased when health professionals began to provide assistance to alleviate gender dysphoria by supporting changes in primary and secondary sex characteristics through hormone therapy and surgery, along with a change in gender role. Although Harry Benjamin already acknowledged a spectrum of gender nonconformity (Benjamin, 1966), the initial clinical approach largely focused on identifying who was an appropriate candidate for sex reassignment to facilitate a physical change from male to female or female to male as completely as possible (e.g., Green & Fleming, 1990; Hastings, 1974). This approach was extensively evaluated and proved to be highly effective. Satisfaction rates across studies ranged from 87% of MtF patients to 97% of FtM patients (Green & Fleming, 1990), and regrets were extremely rare (1-1.5% of MtF patients and <1% of FtM patients; Pfäfflin, 1993). Indeed, hormone therapy and surgery have been found to be medically necessary to alleviate gender dysphoria in many people (American Medical Association, 2008; Anton, 2009; The World Professional Association for Transgender Health, 2008).

As the field matured, health professionals recognized that while many individuals need both hormone therapy and surgery to alleviate their gender dysphoria, others need only one of these treatment options and some need neither (Bockting & Goldberg, 2006; Bockting, 2008; Lev, 2004). Often with the help of psychotherapy, some individuals integrate their trans- or cross-gender feelings into the gender role they were assigned at birth and do not feel the need to feminize or masculinize their body. For others, changes in gender role and expression are sufficient to alleviate

gender dysphoria. Some patients may need hormones, a possible change in gender role, but not surgery; others may need a change in gender role along with surgery, but not hormones. In other words, treatment for gender dysphoria has become more individualized.

As a generation of transsexual, transgender, and gender nonconforming individuals has come of age – many of whom have benefitted from different therapeutic approaches – they have become more visible as a community and demonstrated considerable diversity in their gender identities, roles, and expressions. Some individuals describe themselves not as gender nonconforming but as unambiguously cross-sexed (i.e., as a member of the other sex; Bockting, 2008). Other individuals affirm their unique gender identity and no longer consider themselves either male or female (Bornstein, 1994; Kimberly, 1997; Stone, 1991; Warren, 1993). Instead, they may describe their gender identity in specific terms such as transgender, bigender, or genderqueer, affirming their unique experience that may transcend a male/female binary understanding of gender (Bockting, 2008; Ekins & King, 2006; Nestle, Wilchins, & Howell, 2002). They may not experience their process of identity affirmation as a “transition,” because they never fully embraced the gender role they were assigned at birth or because they actualize their gender identity, role, and expression in a way that does not involve a change from one gender role to another. For example, some youth identifying as genderqueer have always experienced their gender identity and role as such (genderqueer). Greater public visibility and awareness of gender diversity (Feinberg, 1996) has further expanded options for people with gender dysphoria to actualize an identity and find a gender role and expression that is comfortable for them.

Health professionals can assist gender dysphoric individuals with affirming their gender identity, exploring different options for expression of that identity, and making decisions about medical treatment options for alleviating gender dysphoria.

Options for Psychological and Medical Treatment of Gender Dysphoria

For individuals seeking care for gender dysphoria, a variety of therapeutic options can be considered. The number and type of interventions applied and the order in which these take place may differ from person to person (e.g., Bockting, Knudson, & Goldberg, 2006; Bolin, 1994; Rachlin, 1999; Rachlin, Green, & Lombardi, 2008; Rachlin, Hansbury, & Pardo, 2010). Treatments options include the following:

- Changes in gender expression and role (which may involve living part time or full time in another gender role, consistent with one’s gender identity);
- Hormone therapy to feminize or masculinize the body;

- Surgery to change primary and/or secondary sex characteristics (e.g., breasts/chest, external and/or internal genitalia, facial features, body contouring);
- Psychotherapy (individual, couple, family, or group) for purposes such as exploring gender identity, role, and expression; addressing the negative impact of gender dysphoria and stigma on mental health; alleviating internalized transphobia; enhancing social and peer support; improving body image; or promoting resilience.

Options for Social Support and Changes in Gender Expression

In addition (or as an alternative) to the psychological and medical treatment options described above, other options can be considered to help alleviate gender dysphoria, for example:

- Offline and online peer support resources, groups, or community organizations that provide avenues for social support and advocacy;
- Offline and online support resources for families and friends;
- Voice and communication therapy to help individuals develop verbal and non-verbal communication skills that facilitate comfort with their gender identity;
- Hair removal through electrolysis, laser treatment, or waxing;
- Breast binding or padding, genital tucking or penile prostheses, padding of hips or buttocks;
- Changes in name and gender marker on identity documents.

VI

Assessment and Treatment of Children and Adolescents with Gender Dysphoria

There are a number of differences in the phenomenology, developmental course, and treatment approaches for gender dysphoria in children, adolescents, and adults. In children and adolescents, a rapid and dramatic developmental process (physical, psychological, and sexual) is involved and

there is greater fluidity and variability in outcomes, particular in prepubertal children. Accordingly, this section of the SOC offers specific clinical guidelines for the assessment and treatment of gender dysphoric children and adolescents.

Differences between Children and Adolescents with Gender Dysphoria

An important difference between gender dysphoric children and adolescents is in the proportion for whom dysphoria persists into adulthood. Gender dysphoria during childhood does not inevitably continue into adulthood.⁵ Rather, in follow-up studies of prepubertal children (mainly boys) who were referred to clinics for assessment of gender dysphoria, the dysphoria persisted into adulthood for only 6-23% of children (Cohen-Kettenis, 2001; Zucker & Bradley, 1995). Boys in these studies were more likely to identify as gay in adulthood than as transgender (Green, 1987; Money & Russo, 1979; Zucker & Bradley, 1995; Zuger, 1984). Newer studies, also including girls, showed a 12-27% persistence rate of gender dysphoria into adulthood (Drummond, Bradley, Peterson-Badali, & Zucker, 2008; Wallien & Cohen-Kettenis, 2008).

In contrast, the persistence of gender dysphoria into adulthood appears to be much higher for adolescents. No formal prospective studies exist. However, in a follow-up study of 70 adolescents who were diagnosed with gender dysphoria and given puberty suppressing hormones, all continued with the actual sex reassignment, beginning with feminizing/masculinizing hormone therapy (de Vries, Steensma, Doreleijers, & Cohen-Kettenis, 2010).

Another difference between gender dysphoric children and adolescents is in the sex ratios for each age group. In clinically referred, gender dysphoric children under age 12, the male/female ratio ranges from 6:1 to 3:1 (Zucker, 2004). In clinically referred, gender dysphoric adolescents older than age 12, the male/female ratio is close to 1:1 (Cohen-Kettenis & Pfäfflin, 2003).

As discussed in section IV and by Zucker and Lawrence (2009), formal epidemiologic studies on gender dysphoria – in children, adolescents, and adults – are lacking. Additional research is needed to refine estimates of its prevalence and persistence in different populations worldwide.

⁵ Gender nonconforming behaviors in children may continue into adulthood, but such behaviors are not necessarily indicative of gender dysphoria and a need for treatment. As described in section III, gender dysphoria is not synonymous with diversity in gender expression.

Phenomenology in Children

Children as young as age two may show features that could indicate gender dysphoria. They may express a wish to be of the other sex and be unhappy about their physical sex characteristics and functions. In addition, they may prefer clothes, toys, and games that are commonly associated with the other sex and prefer playing with other-sex peers. There appears to be heterogeneity in these features: Some children demonstrate extremely gender nonconforming behavior and wishes, accompanied by persistent and severe discomfort with their primary sex characteristics. In other children, these characteristics are less intense or only partially present (Cohen-Kettenis et al., 2006; Knudson, De Cuypere, & Bockting, 2010a).

It is relatively common for gender dysphoric children to have co-existing internalizing disorders such as anxiety and depression (Cohen-Kettenis, Owen, Kaijser, Bradley, & Zucker, 2003; Wallien, Swaab, & Cohen-Kettenis, 2007; Zucker, Owen, Bradley, & Ameeriar, 2002). The prevalence of autistic spectrum disorders seems to be higher in clinically referred, gender dysphoric children than in the general population (de Vries, Noens, Cohen-Kettenis, van Berckelaer-Onnes, & Doreleijers, 2010).

Phenomenology in Adolescents

In most children, gender dysphoria will disappear before or early in puberty. However, in some children these feelings will intensify and body aversion will develop or increase as they become adolescents and their secondary sex characteristics develop (Cohen-Kettenis, 2001; Cohen-Kettenis & Pfäfflin, 2003; Drummond et al., 2008; Wallien & Cohen-Kettenis, 2008; Zucker & Bradley, 1995). Data from one study suggest that more extreme gender nonconformity in childhood is associated with persistence of gender dysphoria into late adolescence and early adulthood (Wallien & Cohen-Kettenis, 2008). Yet many adolescents and adults presenting with gender dysphoria do not report a history of childhood gender nonconforming behaviors (Docter, 1988; Landén, Wålinder, & Lundström, 1998). Therefore, it may come as a surprise to others (parents, other family members, friends, and community members) when a youth's gender dysphoria first becomes evident in adolescence.

Adolescents who experience their primary and/or secondary sex characteristics and their sex assigned at birth as inconsistent with their gender identity may be intensely distressed about it. Many, but not all, gender dysphoric adolescents have a strong wish for hormones and surgery. Increasing numbers of adolescents have already started living in their desired gender role upon entering high school (Cohen-Kettenis & Pfäfflin, 2003).

Among adolescents who are referred to gender identity clinics, the number considered eligible for early medical treatment – starting with GnRH analogues to suppress puberty in the first Tanner stages – differs among countries and centers. Not all clinics offer puberty suppression. If such treatment is offered, the pubertal stage at which adolescents are allowed to start varies from Tanner stage 2 to stage 4 (Delemarre-van de Waal & Cohen-Kettenis, 2006; Zucker et al., in press). The percentages of treated adolescents are likely influenced by the organization of health care, insurance aspects, cultural differences, opinions of health professionals, and diagnostic procedures offered in different settings.

Inexperienced clinicians may mistake indications of gender dysphoria for delusions. Phenomenologically, there is a qualitative difference between the presentation of gender dysphoria and the presentation of delusions or other psychotic symptoms. The vast majority of children and adolescents with gender dysphoria are not suffering from underlying severe psychiatric illness such as psychotic disorders (Steensma, Biemond, de Boer, & Cohen-Kettenis, published online ahead of print January 7, 2011).

It is more common for adolescents with gender dysphoria to have co-existing internalizing disorders such as anxiety and depression, and/or externalizing disorders such as oppositional defiant disorder (de Vries et al., 2010). As in children, there seems to be a higher prevalence of autistic spectrum disorders in clinically referred, gender dysphoric adolescents than in the general adolescent population (de Vries et al., 2010).

Competency of Mental Health Professionals Working with Children or Adolescents with Gender Dysphoria

The following are recommended minimum credentials for mental health professionals who assess, refer, and offer therapy to children and adolescents presenting with gender dysphoria:

1. Meet the competency requirements for mental health professionals working with adults, as outlined in section VII;
2. Trained in childhood and adolescent developmental psychopathology;
3. Competent in diagnosing and treating the ordinary problems of children and adolescents.

Roles of Mental Health Professionals Working with Children and Adolescents with Gender Dysphoria

The roles of mental health professionals working with gender dysphoric children and adolescents may include the following:

1. Directly assess gender dysphoria in children and adolescents (see general guidelines for assessment, below).
2. Provide family counseling and supportive psychotherapy to assist children and adolescents with exploring their gender identity, alleviating distress related to their gender dysphoria, and ameliorating any other psychosocial difficulties.
3. Assess and treat any co-existing mental health concerns of children or adolescents (or refer to another mental health professional for treatment). Such concerns should be addressed as part of the overall treatment plan.
4. Refer adolescents for additional physical interventions (such as puberty suppressing hormones) to alleviate gender dysphoria. The referral should include documentation of an assessment of gender dysphoria and mental health, the adolescent's eligibility for physical interventions (outlined below), the mental health professional's relevant expertise, and any other information pertinent to the youth's health and referral for specific treatments.
5. Educate and advocate on behalf of gender dysphoric children, adolescents, and their families in their community (e.g., day care centers, schools, camps, other organizations). This is particularly important in light of evidence that children and adolescents who do not conform to socially prescribed gender norms may experience harassment in school (Grossman, D'Augelli, & Salter, 2006; Grossman, D'Augelli, Howell, & Hubbard, 2006; Sausa, 2005), putting them at risk for social isolation, depression, and other negative sequelae (Nuttbrock et al., 2010).
6. Provide children, youth, and their families with information and referral for peer support, such as support groups for parents of gender nonconforming and transgender children (Gold & MacNish, 2011; Pleak, 1999; Rosenberg, 2002).

Assessment and psychosocial interventions for children and adolescents are often provided within a multi-disciplinary gender identity specialty service. If such a multidisciplinary service is not available, a mental health professional should provide consultation and liaison arrangements with a pediatric endocrinologist for the purpose of assessment, education, and involvement in any decisions about physical interventions.

Psychological Assessment of Children and Adolescents

When assessing children and adolescents who present with gender dysphoria, mental health professionals should broadly conform to the following guidelines:

1. Mental health professionals should not dismiss or express a negative attitude towards nonconforming gender identities or indications of gender dysphoria. Rather, they should acknowledge the presenting concerns of children, adolescents, and their families; offer a thorough assessment for gender dysphoria and any co-existing mental health concerns; and educate clients and their families about therapeutic options, if needed. Acceptance and removal of secrecy can bring considerable relief to gender dysphoric children/adolescents and their families.
2. Assessment of gender dysphoria and mental health should explore the nature and characteristics of a child's or adolescent's gender identity. A psychodiagnostic and psychiatric assessment – covering the areas of emotional functioning, peer and other social relationships, and intellectual functioning/school achievement – should be performed. Assessment should include an evaluation of the strengths and weaknesses of family functioning. Emotional and behavioral problems are relatively common, and unresolved issues in a child's or youth's environment may be present (de Vries, Doreleijers, Steensma, & Cohen-Kettenis, 2011; Di Ceglie & Thümmel, 2006; Wallien et al., 2007).
3. For adolescents, the assessment phase should also be used to inform youth and their families about the possibilities and limitations of different treatments. This is necessary for informed consent, but also important for assessment. The way that adolescents respond to information about the reality of sex reassignment can be diagnostically informative. Correct information may alter a youth's desire for certain treatment, if the desire was based on unrealistic expectations of its possibilities.

Psychological and Social Interventions for Children and Adolescents

When supporting and treating children and adolescents with gender dysphoria, health professionals should broadly conform to the following guidelines:

1. Mental health professionals should help families to have an accepting and nurturing response to the concerns of their gender dysphoric child or adolescent. Families play an important role in the psychological health and well-being of youth (Brill & Pepper, 2008; Lev, 2004). This also applies to peers and mentors from the community, who can be another source of social support.

2. Psychotherapy should focus on reducing a child's or adolescent's distress related to the gender dysphoria and on ameliorating any other psychosocial difficulties. For youth pursuing sex reassignment, psychotherapy may focus on supporting them before, during, and after reassignment. Formal evaluations of different psychotherapeutic approaches for this situation have not been published, but several counseling methods have been described (Cohen-Kettenis, 2006; de Vries, Cohen-Kettenis, & Delemarre-van de Waal, 2006; Di Ceglie & Thümmel, 2006; Hill, Menvielle, Sica, & Johnson, 2010; Malpas, in press; Menvielle & Tuerk, 2002; Rosenberg, 2002; Vanderburgh, 2009; Zucker, 2006).

Treatment aimed at trying to change a person's gender identity and expression to become more congruent with sex assigned at birth has been attempted in the past without success (Gelder & Marks, 1969; Greenson, 1964), particularly in the long term (Cohen-Kettenis & Kuiper, 1984; Pauly, 1965). Such treatment is no longer considered ethical.

1. Families should be supported in managing uncertainty and anxiety about their child's or adolescent's psychosexual outcomes and in helping youth to develop a positive self-concept.
2. Mental health professionals should not impose a binary view of gender. They should give ample room for clients to explore different options for gender expression. Hormonal or surgical interventions are appropriate for some adolescents, but not for others.
3. Clients and their families should be supported in making difficult decisions regarding the extent to which clients are allowed to express a gender role that is consistent with their gender identity, as well as the timing of changes in gender role and possible social transition. For example, a client might attend school while undergoing social transition only partly (e.g., by wearing clothing and having a hairstyle that reflects gender identity) or completely (e.g., by also using a name and pronouns congruent with gender identity). Difficult issues include whether and when to inform other people of the client's situation, and how others in their lives should respond.
4. Health professionals should support clients and their families as educators and advocates in their interactions with community members and authorities such as teachers, school boards, and courts.
5. Mental health professionals should strive to maintain a therapeutic relationship with gender nonconforming children/adolescents and their families throughout any subsequent social changes or physical interventions. This ensures that decisions about gender expression and the treatment of gender dysphoria are thoughtfully and recurrently considered. The same reasoning applies if a child or adolescent has already socially changed gender role prior to being seen by a mental health professional.

Social Transition in Early Childhood

Some children state that they want to make a social transition to a different gender role long before puberty. For some children, this may reflect an expression of their gender identity. For others, this could be motivated by other forces. Families vary in the extent to which they allow their young children to make a social transition to another gender role. Social transitions in early childhood do occur within some families with early success. This is a controversial issue, and divergent views are held by health professionals. The current evidence base is insufficient to predict the long-term outcomes of completing a gender role transition during early childhood. Outcomes research with children who completed early social transitions would greatly inform future clinical recommendations.

Mental health professionals can help families to make decisions regarding the timing and process of any gender role changes for their young children. They should provide information and help parents to weigh the potential benefits and challenges of particular choices. Relevant in this respect are the previously described relatively low persistence rates of childhood gender dysphoria (Drummond et al., 2008; Wallien & Cohen-Kettenis, 2008). A change back to the original gender role can be highly distressing and even result in postponement of this second social transition on the child's part (Steensma & Cohen-Kettenis, 2011). For reasons such as these, parents may want to present this role change as an exploration of living in another gender role, rather than an irreversible situation. Mental health professionals can assist parents in identifying potential in-between solutions or compromises (e.g., only when on vacation). It is also important that parents explicitly let the child know that there is a way back.

Regardless of a family's decisions regarding transition (timing, extent), professionals should counsel and support them as they work through the options and implications. If parents do not allow their young child to make a gender role transition, they may need counseling to assist them with meeting their child's needs in a sensitive and nurturing way, ensuring that the child has ample possibilities to explore gender feelings and behavior in a safe environment. If parents do allow their young child to make a gender role transition, they may need counseling to facilitate a positive experience for their child. For example, they may need support in using correct pronouns, maintaining a safe and supportive environment for their transitioning child (e.g., in school, peer group settings), and communicating with other people in their child's life. In either case, as a child nears puberty, further assessment may be needed as options for physical interventions become relevant.

Physical Interventions for Adolescents

Before any physical interventions are considered for adolescents, extensive exploration of psychological, family, and social issues should be undertaken, as outlined above. The duration of this exploration may vary considerably depending on the complexity of the situation.

Physical interventions should be addressed in the context of adolescent development. Some identity beliefs in adolescents may become firmly held and strongly expressed, giving a false impression of irreversibility. An adolescent's shift towards gender conformity can occur primarily to please the parents and may not persist or reflect a permanent change in gender dysphoria (Hembree et al., 2009; Steensma et al., published online ahead of print January 7, 2011).

Physical interventions for adolescents fall into three categories or stages (Hembree et al., 2009):

1. *Fully reversible interventions.* These involve the use of GnRH analogues to suppress estrogen or testosterone production and consequently delay the physical changes of puberty. Alternative treatment options include progestins (most commonly medroxyprogesterone) or other medications (such as spironolactone) that decrease the effects of androgens secreted by the testicles of adolescents who are not receiving GnRH analogues. Continuous oral contraceptives (or depot medroxyprogesterone) may be used to suppress menses.
2. *Partially reversible interventions.* These include hormone therapy to masculinize or feminize the body. Some hormone-induced changes may need reconstructive surgery to reverse the effect (e.g., gynaecomastia caused by estrogens), while other changes are not reversible (e.g., deepening of the voice caused by testosterone).
3. *Irreversible interventions.* These are surgical procedures.

A staged process is recommended to keep options open through the first two stages. Moving from one stage to another should not occur until there has been adequate time for adolescents and their parents to assimilate fully the effects of earlier interventions.

Fully Reversible Interventions

Adolescents may be eligible for puberty suppressing hormones as soon as pubertal changes have begun. In order for adolescents and their parents to make an informed decision about pubertal delay, it is recommended that adolescents experience the onset of puberty to at least Tanner Stage 2. Some children may arrive at this stage at very young ages (e.g., 9 years of age). Studies

evaluating this approach only included children who were at least 12 years of age (Cohen-Kettenis, Schagen, Steensma, de Vries, & Delemarre-van de Waal, 2011; de Vries, Steensma et al., 2010; Delemarre-van de Waal, van Weissenbruch, & Cohen Kettenis, 2004; Delemarre-van de Waal & Cohen-Kettenis, 2006).

Two goals justify intervention with puberty suppressing hormones: (i) their use gives adolescents more time to explore their gender nonconformity and other developmental issues; and (ii) their use may facilitate transition by preventing the development of sex characteristics that are difficult or impossible to reverse if adolescents continue on to pursue sex reassignment.

Puberty suppression may continue for a few years, at which time a decision is made to either discontinue all hormone therapy or transition to a feminizing/masculinizing hormone regimen. Pubertal suppression does not inevitably lead to social transition or to sex reassignment.

Criteria for puberty suppressing hormones

In order for adolescents to receive puberty suppressing hormones, the following minimum criteria must be met:

1. The adolescent has demonstrated a long-lasting and intense pattern of gender nonconformity or gender dysphoria (whether suppressed or expressed);
2. Gender dysphoria emerged or worsened with the onset of puberty;
3. Any co-existing psychological, medical, or social problems that could interfere with treatment (e.g., that may compromise treatment adherence) have been addressed, such that the adolescent's situation and functioning are stable enough to start treatment;
4. The adolescent has given informed consent and, particularly when the adolescent has not reached the age of medical consent, the parents or other caretakers or guardians have consented to the treatment and are involved in supporting the adolescent throughout the treatment process.

Regimens, monitoring, and risks for puberty suppression

For puberty suppression, adolescents with male genitalia should be treated with GnRH analogues, which stop luteinizing hormone secretion and therefore testosterone secretion. Alternatively, they may be treated with progestins (such as medroxyprogesterone) or with other medications that block testosterone secretion and/or neutralize testosterone action. Adolescents with female genitalia should be treated with GnRH analogues, which stop the production of estrogens and

progesterone. Alternatively, they may be treated with progestins (such as medroxyprogesterone). Continuous oral contraceptives (or depot medroxyprogesterone) may be used to suppress menses. In both groups of adolescents, use of GnRH analogues is the preferred treatment (Hembree et al., 2009), but their high cost is prohibitive for some patients

During pubertal suppression, an adolescent's physical development should be carefully monitored – preferably by a pediatric endocrinologist – so that any necessary interventions can occur (e.g., to establish an adequate gender appropriate height, to improve iatrogenic low bone marrow density) (Hembree et al., 2009).

Early use of puberty suppressing hormones may avert negative social and emotional consequences of gender dysphoria more effectively than their later use would. Intervention in early adolescence should be managed with pediatric endocrinological advice, when available. Adolescents with male genitalia who start GnRH analogues early in puberty should be informed that this could result in insufficient penile tissue for penile inversion vaginoplasty techniques (alternative techniques, such as the use of a skin graft or colon tissue, are available).

Neither puberty suppression nor allowing puberty to occur is a neutral act. On the one hand, functioning in later life can be compromised by the development of irreversible secondary sex characteristics during puberty and by years spent experiencing intense gender dysphoria. On the other hand, there are concerns about negative physical side effects of GnRH analog use (e.g., on bone development and height). Although the very first results of this approach (as assessed for adolescents followed over 10 years) are promising (Cohen-Kettenis et al., 2011; Delemarre-van de Waal & Cohen-Kettenis, 2006), the long-term effects can only be determined when the earliest treated patients reach the appropriate age.

Partially Reversible Interventions

Adolescents may be eligible to begin feminizing/masculinizing hormone therapy, preferably with parental consent. In many countries, 16-year-olds are legal adults for medical decision-making and do not require parental consent. Ideally, treatment decisions should be made among the adolescent, the family, and the treatment team.

Regimens for hormone therapy in gender dysphoric adolescents differ substantially from those used in adults (Hembree et al., 2009). The hormone regimens for youth are adapted to account for the somatic, emotional, and mental development that occurs throughout adolescence (Hembree et al., 2009).

Irreversible Interventions

Genital surgery should not be carried out until (i) patients reach the legal age of majority in a given country, and (ii) patients have lived continuously for at least 12 months in the gender role that is congruent with their gender identity. The age threshold should be seen as a minimum criterion and not an indication in and of itself for active intervention.

Chest surgery in FtM patients could be carried out earlier, preferably after ample time of living in the desired gender role and after one year of testosterone treatment. The intent of this suggested sequence is to give adolescents sufficient opportunity to experience and socially adjust in a more masculine gender role, before undergoing irreversible surgery. However, different approaches may be more suitable, depending on an adolescent's specific clinical situation and goals for gender identity expression.

Risks of Withholding Medical Treatment for Adolescents

Refusing timely medical interventions for adolescents might prolong gender dysphoria and contribute to an appearance that could provoke abuse and stigmatization. As the level of gender-related abuse is strongly associated with the degree of psychiatric distress during adolescence (Nuttbrock et al., 2010), withholding puberty suppression and subsequent feminizing or masculinizing hormone therapy is not a neutral option for adolescents.

VII

Mental Health

Transsexual, transgender, and gender nonconforming people might seek the assistance of a mental health professional for any number of reasons. Regardless of a person's reason for seeking care, mental health professionals should have familiarity with gender nonconformity, act with appropriate cultural competence, and exhibit sensitivity in providing care.

This section of the SOC focuses on the role of mental health professionals in the care of adults seeking help for gender dysphoria and related concerns. Professionals working with gender dysphoric children, adolescents, and their families should consult section VI.

Competency of Mental Health Professionals Working with Adults Who Present with Gender Dysphoria

The training of mental health professionals competent to work with gender dysphoric adults rests upon basic general clinical competence in the assessment, diagnosis, and treatment of mental health concerns. Clinical training may occur within any discipline that prepares mental health professionals for clinical practice, such as psychology, psychiatry, social work, mental health counseling, marriage and family therapy, nursing, or family medicine with specific training in behavioral health and counseling. The following are recommended minimum credentials for mental health professionals who work with adults presenting with gender dysphoria:

1. A master's degree or its equivalent in a clinical behavioral science field. This degree or a more advanced one should be granted by an institution accredited by the appropriate national or regional accrediting board. The mental health professional should have documented credentials from a relevant licensing board or equivalent for that country.
2. Competence in using the *Diagnostic Statistical Manual of Mental Disorders* and/or the *International Classification of Diseases* for diagnostic purposes.
3. Ability to recognize and diagnose co-existing mental health concerns and to distinguish these from gender dysphoria.
4. Documented supervised training and competence in psychotherapy or counseling.
5. Knowledgeable about gender nonconforming identities and expressions, and the assessment and treatment of gender dysphoria.
6. Continuing education in the assessment and treatment of gender dysphoria. This may include attending relevant professional meetings, workshops, or seminars; obtaining supervision from a mental health professional with relevant experience; or participating in research related to gender nonconformity and gender dysphoria.

In addition to the minimum credentials above, it is recommended that mental health professionals develop and maintain cultural competence to facilitate their work with transsexual, transgender, and gender nonconforming clients. This may involve, for example, becoming knowledgeable about current community, advocacy, and public policy issues relevant to these clients and their families. Additionally, knowledge about sexuality, sexual health concerns, and the assessment and treatment of sexual disorders is preferred.

Mental health professionals who are new to the field (irrespective of their level of training and other experience) should work under the supervision of a mental health professional with established competence in the assessment and treatment of gender dysphoria.

Tasks of Mental Health Professionals Working with Adults Who Present with Gender Dysphoria

Mental health professionals may serve transsexual, transgender, and gender nonconforming individuals and their families in many ways, depending on a client's needs. For example, mental health professionals may serve as a psychotherapist, counselor, or family therapist, or as a diagnostician/assessor, advocate, or educator.

Mental health professionals should determine a client's reasons for seeking professional assistance. For example, a client may be presenting for any combination of the following health care services: psychotherapeutic assistance to explore gender identity and expression or to facilitate a coming out process; assessment and referral for feminizing/masculinizing medical interventions; psychological support for family members (partners, children, extended family); or psychotherapy unrelated to gender concerns or other professional services.

Below are general guidelines for common tasks that mental health professionals may fulfill in working with adults who present with gender dysphoria.

Tasks Related to Assessment and Referral

1. Assess gender dysphoria

Mental health professionals assess clients' gender dysphoria in the context of an evaluation of their psychosocial adjustment (Bockting et al., 2006; Lev, 2004, 2009). The evaluation includes, at a minimum, assessment of gender identity and gender dysphoria, history and development of gender dysphoric feelings, the impact of stigma attached to gender nonconformity on mental health, and the availability of support from family, friends, and peers (for example, in person or online contact with other transsexual, transgender, or gender nonconforming individuals or groups). The evaluation may result in no diagnosis, in a formal diagnosis related to gender dysphoria, and/or in other diagnoses that describe aspects of the client's health and psychosocial adjustment. The role

of mental health professionals includes making reasonably sure that the gender dysphoria is not secondary to or better accounted for by other diagnoses.

Mental health professionals with the competencies described above (hereafter called “a qualified mental health professional”) are best prepared to conduct this assessment of gender dysphoria. However, this task may instead be conducted by another type of health professional who has appropriate training in behavioral health and is competent in the assessment of gender dysphoria, particularly when functioning as part of a multidisciplinary specialty team that provides access to feminizing/masculinizing hormone therapy. This professional may be the prescribing hormone therapy provider or a member of that provider’s health care team.

2. Provide information regarding options for gender identity and expression and possible medical interventions

An important task of mental health professionals is to educate clients regarding the diversity of gender identities and expressions and the various options available to alleviate gender dysphoria. Mental health professionals then may facilitate a process (or refer elsewhere) in which clients explore these various options, with the goals of finding a comfortable gender role and expression and becoming prepared to make a fully informed decision about available medical interventions, if needed. This process may include referral for individual, family, and group therapy and/or to community resources and avenues for peer support. The professional and the client discuss the implications, both short- and long-term, of any changes in gender role and use of medical interventions. These implications can be psychological, social, physical, sexual, occupational, financial, and legal (Bockting et al., 2006; Lev, 2004).

This task is also best conducted by a qualified mental health professional, but may be conducted by another health professional with appropriate training in behavioral health and with sufficient knowledge about gender nonconforming identities and expressions and about possible medical interventions for gender dysphoria, particularly when functioning as part of a multidisciplinary specialty team that provides access to feminizing/masculinizing hormone therapy.

3. Assess, diagnose, and discuss treatment options for co-existing mental health concerns

Clients presenting with gender dysphoria may struggle with a range of mental health concerns (Gómez-Gil, Trilla, Salamero, Godás, & Valdés, 2009; Murad et al., 2010) whether related or unrelated to what is often a long history of gender dysphoria and/or chronic minority stress. Possible concerns include anxiety, depression, self-harm, a history of abuse and neglect, compulsivity, substance abuse, sexual concerns, personality disorders, eating disorders, psychotic disorders, and autistic spectrum disorders (Bockting et al., 2006; Nuttbrock et al., 2010; Robinow, 2009). Mental health professionals should screen for these and other mental health concerns and incorporate

the identified concerns into the overall treatment plan. These concerns can be significant sources of distress and, if left untreated, can complicate the process of gender identity exploration and resolution of gender dysphoria (Bockting et al., 2006; Fraser, 2009a; Lev, 2009). Addressing these concerns can greatly facilitate the resolution of gender dysphoria, possible changes in gender role, the making of informed decisions about medical interventions, and improvements in quality of life.

Some clients may benefit from psychotropic medications to alleviate symptoms or treat co-existing mental health concerns. Mental health professionals are expected to recognize this and either provide pharmacotherapy or refer to a colleague who is qualified to do so. The presence of co-existing mental health concerns does not necessarily preclude possible changes in gender role or access to feminizing/masculinizing hormones or surgery; rather, these concerns need to be optimally managed prior to or concurrent with treatment of gender dysphoria. In addition, clients should be assessed for their ability to provide educated and informed consent for medical treatments.

Qualified mental health professionals are specifically trained to assess, diagnose, and treat (or refer to treatment for) these co-existing mental health concerns. Other health professionals with appropriate training in behavioral health, particularly when functioning as part of a multidisciplinary specialty team providing access to feminizing/masculinizing hormone therapy, may also screen for mental health concerns and, if indicated, provide referral for comprehensive assessment and treatment by a qualified mental health professional.

4. If applicable, assess eligibility, prepare, and refer for hormone therapy

The SOC provide criteria to guide decisions regarding feminizing/masculinizing hormone therapy (outlined in section VIII and Appendix C). Mental health professionals can help clients who are considering hormone therapy to be both psychologically prepared (for example, has made a fully informed decision with clear and realistic expectations; is ready to receive the service in line with the overall treatment plan; has included family and community as appropriate) and practically prepared (for example, has been evaluated by a physician to rule out or address medical contraindications to hormone use; has considered the psychosocial implications). If clients are of childbearing age, reproductive options (section IX) should be explored before initiating hormone therapy.

It is important for mental health professionals to recognize that decisions about hormones are first and foremost the client's decisions – as are all decisions regarding healthcare. However, mental health professionals have a responsibility to encourage, guide, and assist clients with making fully informed decisions and becoming adequately prepared. To best support their clients' decisions, mental health professionals need to have functioning working relationships with their clients and sufficient information about them. Clients should receive prompt and attentive evaluation, with the goal of alleviating their gender dysphoria and providing them with appropriate medical services.

Referral for feminizing/masculinizing hormone therapy

People may approach a specialized provider in any discipline to pursue feminizing/masculinizing hormone therapy. However, transgender health care is an interdisciplinary field, and coordination of care and referral among a client's overall care team is recommended.

Hormone therapy can be initiated with a referral from a qualified mental health professional. Alternatively, a health professional who is appropriately trained in behavioral health and competent in the assessment of gender dysphoria may assess eligibility, prepare, and refer the patient for hormone therapy, particularly in the absence of significant co-existing mental health concerns and when working in the context of a multidisciplinary specialty team. The referring health professional provides documentation – in the chart and/or referral letter – of the patient's personal and treatment history, progress, and eligibility. Health professionals who recommend hormone therapy share the ethical and legal responsibility for that decision with the physician who provides the service.

The recommended content of the referral letter for feminizing/masculinizing hormone therapy is as follows:

1. The client's general identifying characteristics;
2. Results of the client's psychosocial assessment, including any diagnoses;
3. The duration of the referring health professional's relationship with the client, including the type of evaluation and therapy or counseling to date;
4. An explanation that the criteria for hormone therapy have been met, and a brief description of the clinical rationale for supporting the client's request for hormone therapy;
5. A statement about the fact that informed consent has been obtained from the patient;
6. A statement that the referring health professional is available for coordination of care and welcomes a phone call to establish this.

For providers working within a multidisciplinary specialty team, a letter may not be necessary, rather, the assessment and recommendation can be documented in the patient's chart.

5. If applicable, assess eligibility, prepare, and refer for surgery

The SOC also provide criteria to guide decisions regarding breast/chest surgery and genital surgery (outlined in section XI and Appendix C). Mental health professionals can help clients who are considering surgery to be both psychologically prepared (for example, has made a fully informed

decision with clear and realistic expectations; is ready to receive the service in line with the overall treatment plan; has included family and community as appropriate) and practically prepared (for example, has made an informed choice about a surgeon to perform the procedure; has arranged aftercare). If clients are of childbearing age, reproductive options (section IX) should be explored before undergoing genital surgery.

The SOC do not state criteria for other surgical procedures, such as feminizing or masculinizing facial surgery; however, mental health professionals can play an important role in helping their clients to make fully informed decisions about the timing and implications of such procedures in the context of the overall coming out or transition process.

It is important for mental health professionals to recognize that decisions about surgery are first and foremost a client's decisions – as are all decisions regarding healthcare. However, mental health professionals have a responsibility to encourage, guide, and assist clients with making fully informed decisions and becoming adequately prepared. To best support their clients' decisions, mental health professionals need to have functioning working relationships with their clients and sufficient information about them. Clients should receive prompt and attentive evaluation, with the goal of alleviating their gender dysphoria and providing them with appropriate medical services.

Referral for surgery

Surgical treatments for gender dysphoria can be initiated with a referral (one or two, depending on the type of surgery) from a qualified mental health professional. The mental health professional provides documentation – in the chart and/or referral letter – of the patient's personal and treatment history, progress, and eligibility. Mental health professionals who recommend surgery share the ethical and legal responsibility for that decision with the surgeon.

- One referral from a qualified mental health professional is needed for breast/chest surgery (e.g., mastectomy, chest reconstruction, or augmentation mammoplasty).
- Two referrals – from qualified mental health professionals who have independently assessed the patient – are needed for genital surgery (i.e., hysterectomy/salpingo-oophorectomy, orchiectomy, genital reconstructive surgeries). If the first referral is from the patient's psychotherapist, the second referral should be from a person who has only had an evaluative role with the patient. Two separate letters, or one letter signed by both (e.g., if practicing within the same clinic) may be sent. Each referral letter, however, is expected to cover the same topics in the areas outlined below.

The recommended content of the referral letters for surgery is as follows:

1. The client's general identifying characteristics;

2. Results of the client's psychosocial assessment, including any diagnoses;
3. The duration of the mental health professional's relationship with the client, including the type of evaluation and therapy or counseling to date;
4. An explanation that the criteria for surgery have been met, and a brief description of the clinical rationale for supporting the patient's request for surgery;
5. A statement about the fact that informed consent has been obtained from the patient;
6. A statement that the mental health professional is available for coordination of care and welcomes a phone call to establish this.

For providers working within a multidisciplinary specialty team, a letter may not be necessary, rather, the assessment and recommendation can be documented in the patient's chart.

Relationship of Mental Health Professionals with Hormone-Prescribing Physicians, Surgeons, and other Health Professionals

It is ideal for mental health professionals to perform their work and periodically discuss progress and obtain peer consultation from other professionals (both in mental health care and other health disciplines) who are competent in the assessment and treatment of gender dysphoria. The relationship among professionals involved in a client's health care should remain collaborative, with coordination and clinical dialogue taking place as needed. Open and consistent communication may be necessary for consultation, referral, and management of postoperative concerns.

Tasks Related to Psychotherapy

1. Psychotherapy is not an absolute requirement for hormone therapy and surgery

A mental health screening and/or assessment as outlined above is needed for referral to hormonal and surgical treatments for gender dysphoria. In contrast, psychotherapy – although highly recommended – is not a requirement.

The SOC do not recommend a minimum number of psychotherapy sessions prior to hormone therapy or surgery. The reasons for this are multifaceted (Lev, 2009). First, a minimum number of sessions tends to be construed as a hurdle, which discourages the genuine opportunity for personal growth. Second, mental health professionals can offer important support to clients throughout all

phases of exploration of gender identity, gender expression, and possible transition – not just prior to any possible medical interventions. Third, clients differ in their abilities to attain similar goals in a specified time period.

2. Goals of psychotherapy for adults with gender concerns

The general goal of psychotherapy is to find ways to maximize a person’s overall psychological well-being, quality of life, and self-fulfillment. Psychotherapy is not intended to alter a person’s gender identity; rather, psychotherapy can help an individual to explore gender concerns and find ways to alleviate gender dysphoria, if present (Bockting et al., 2006; Bockting & Coleman, 2007; Fraser, 2009a; Lev, 2004). Typically, the overarching treatment goal is to help transsexual, transgender, and gender nonconforming individuals achieve long-term comfort in their gender identity expression, with realistic chances for success in their relationships, education, and work. For additional details, see Fraser (Fraser, 2009c).

Therapy may consist of individual, couple, family, or group psychotherapy, the latter being particularly important to foster peer support.

3. Psychotherapy for transsexual, transgender, and gender nonconforming clients, including counseling and support for changes in gender role

Finding a comfortable gender role is, first and foremost, a psychosocial process. Psychotherapy can be invaluable in assisting transsexual, transgender, and gender nonconforming individuals with all of the following: (i) clarifying and exploring gender identity and role, (ii) addressing the impact of stigma and minority stress on one’s mental health and human development, and (iii) facilitating a coming out process (Bockting & Coleman, 2007; Devor, 2004; Lev, 2004), which for some individuals may include changes in gender role expression and the use of feminizing/masculinizing medical interventions.

Mental health professionals can provide support and promote interpersonal skills and resilience in individuals and their families as they navigate a world that often is ill prepared to accommodate and respect transgender, transsexual, and gender nonconforming people. Psychotherapy can also aid in alleviating any co-existing mental health concerns (e.g., anxiety, depression) identified during screening and assessment.

For transsexual, transgender, and gender nonconforming individuals who plan to change gender roles permanently and make a social gender role transition, mental health professionals can facilitate the development of an individualized plan with specific goals and timelines. While the experience of changing one’s gender role differs from person to person, the social aspects of the experience are usually challenging – often more so than the physical aspects. Because changing

gender role can have profound personal and social consequences, the decision to do so should include an awareness of what the familial, interpersonal, educational, vocational, economic, and legal challenges are likely to be, so that people can function successfully in their gender role.

Many transsexual, transgender, and gender nonconforming people will present for care without ever having been related to or accepted in the gender role that is most congruent with their gender identity. Mental health professionals can help these clients to explore and anticipate the implications of changes in gender role, and to pace the process of implementing these changes. Psychotherapy can provide a space for clients to begin to express themselves in ways that are congruent with their gender identity and, for some clients, overcome fear about changes in gender expression. Calculated risks can be taken outside of therapy to gain experience and build confidence in the new role. Assistance with coming out to family and community (friends, school, workplace) can be provided.

Other transsexual, transgender, and gender nonconforming individuals will present for care already having acquired experience (minimal, moderate, or extensive) living in a gender role that differs from that associated with their birth-assigned sex. Mental health professionals can help these clients to identify and work through potential challenges and foster optimal adjustment as they continue to express changes in their gender role.

4. Family therapy or support for family members

Decisions about changes in gender role and medical interventions for gender dysphoria have implications for not only clients, but also their families (Emerson & Rosenfeld, 1996; Fraser, 2009a; Lev, 2004). Mental health professionals can assist clients with making thoughtful decisions about communicating with family members and others about their gender identity and treatment decisions. Family therapy may include work with spouses or partners, as well as with children and other members of a client's extended family.

Clients may also request assistance with their relationships and sexual health. For example, they may want to explore their sexuality and intimacy related concerns.

Family therapy might be offered as part of the client's individual therapy and, if clinically appropriate, by the same provider. Alternatively, referrals can be made to other therapists with relevant expertise to work with family members, or to sources of peer support (e.g., online or offline support networks of partners or families).

5. Follow-up care throughout life

Mental health professionals may work with clients and their families at many stages of their lives. Psychotherapy may be helpful at different times and for various issues throughout the life cycle.

6. Etherapy, online counseling, or distance counseling

Online or etherapy has been shown to be particularly useful for people who have difficulty accessing competent psychotherapeutic treatment and who may experience isolation and stigma (Derrig-Palumbo & Zeine, 2005; Fenichel et al., 2004; Fraser, 2009b). By extrapolation, etherapy may be a useful modality for psychotherapy with transsexual, transgender, and gender nonconforming people. Etherapy offers opportunities for potentially enhanced, expanded, creative, and tailored delivery of services; however, as a developing modality it may also carry unexpected risk. Telemedicine guidelines are clear in some disciplines in some parts of the United States (Fraser, 2009b; Maheu, Pulier, Wilhelm, McMenamin, & Brown-Connolly, 2005) but not all; the international situation is even less defined (Maheu et al., 2005). Until sufficient evidence-based data on this use of etherapy is available, caution in its use is advised.

Mental health professionals engaging in etherapy are advised to stay current with their particular licensing board, professional association, and country's regulations, as well as the most recent literature pertaining to this rapidly evolving medium. A more thorough description of the potential uses, processes, and ethical concerns related to etherapy has been published (Fraser, 2009b).

Other Tasks of the Mental Health Professional

1. Educate and advocate on behalf of clients within their community (schools, workplaces, other organizations) and assist clients with making changes in identity documents

Transsexual, transgender, and gender nonconforming people may face challenges in their professional, educational, and other types of settings as they actualize their gender identity and expression (Lev, 2004, 2009). Mental health professionals can play an important role by educating people in these settings regarding gender nonconformity and by advocating on behalf of their clients (Currah, Juang, & Minter, 2006) (Currah & Minter, 2000). This role may involve consultation with school counselors, teachers, and administrators, human resources staff, personnel managers and employers, and representatives from other organizations and institutions. In addition, health providers may be called upon to support changes in a client's name and/or gender marker on identity documents such as passports, driver's licenses, birth certificates, and diplomas.

2. Provide information and referral for peer support

For some transsexual, transgender, and gender nonconforming people, an experience in peer support groups may be more instructive regarding options for gender expression than anything individual psychotherapy could offer (Rachlin, 2002). Both experiences are potentially valuable, and all people exploring gender issues should be encouraged to participate in community activities, if possible. Resources for peer support and information should be made available.

Culture and its Ramifications for Assessment and Psychotherapy

Health professionals work in enormously different environments across the world. Forms of distress that cause people to seek professional assistance in any culture are understood and classified by people in terms that are products of their own cultures (Frank & Frank, 1993). Cultural settings also largely determine how such conditions are understood by mental health professionals. Cultural differences related to gender identity and expression can affect patients, mental health professionals, and accepted psychotherapy practice. WPATH recognizes that the SOC have grown out of a Western tradition and may need to be adapted depending on the cultural context.

Ethical Guidelines Related to Mental Health Care

Mental health professionals need to be certified or licensed to practice in a given country according to that country's professional regulations (Fraser, 2009b; Pope & Vasquez, 2011). Professionals must adhere to the ethical codes of their professional licensing or certifying organizations in all of their work with transsexual, transgender, and gender nonconforming clients.

Treatment aimed at trying to change a person's gender identity and lived gender expression to become more congruent with sex assigned at birth has been attempted in the past (Gelder & Marks, 1969; Greenson, 1964), yet without success, particularly in the long term (Cohen-Kettenis & Kuiper, 1984; Pauly, 1965). Such treatment is no longer considered ethical.

If mental health professionals are uncomfortable with or inexperienced in working with transsexual, transgender, and gender nonconforming individuals and their families, they should refer clients to a competent provider or, at minimum, consult with an expert peer. If no local practitioners are available, consultation may be done via telehealth methods, assuming local requirements for distance consultation are met.

Issues of Access to Care

Qualified mental health professionals are not universally available; thus, access to quality care might be limited. WPATH aims to improve access and provides regular continuing education opportunities to train professionals from various disciplines to provide quality, transgender-specific health care. Providing mental health care from a distance through the use of technology may be one way to improve access (Fraser, 2009b).

In many places around the world, access to health care for transsexual, transgender, and gender nonconforming people is also limited by a lack of health insurance or other means to pay for needed care. WPATH urges health insurance companies and other third-party payers to cover the medically necessary treatment to alleviate gender dysphoria (American Medical Association, 2008; Anton, 2009; The World Professional Association for Transgender Health, 2008).

When faced with a client who is unable to access services, referral to available peer support resources (offline and online) is recommended. Finally, harm reduction approaches might be indicated to assist clients with making healthy decisions to improve their lives.

VIII

Hormone Therapy

Medical Necessity of Hormone Therapy

Feminizing/masculinizing hormone therapy – the administration of exogenous endocrine agents to induce feminizing or masculinizing changes – is a medically necessary intervention for many transsexual, transgender, and gender nonconforming individuals with gender dysphoria (Newfield, Hart, Dibble, & Kohler, 2006; Pfäfflin & Junge, 1998). Some people seek maximum feminization/masculinization, while others experience relief with an androgynous presentation resulting from hormonal minimization of existing secondary sex characteristics (Factor & Rothblum, 2008). Evidence for the psychosocial outcomes of hormone therapy is summarized in Appendix D.

Hormone therapy must be individualized based on a patient's goals, the risk/benefit ratio of medications, the presence of other medical conditions, and consideration of social and economic issues. Hormone therapy can provide significant comfort to patients who do not wish to make a social gender role transition or undergo surgery, or who are unable to do so (Meyer III, 2009).

Hormone therapy is a recommended criterion for some, but not all, surgical treatments for gender dysphoria (see section XI and Appendix C).

Criteria for Hormone Therapy

Initiation of hormone therapy may be undertaken after a psychosocial assessment has been conducted and informed consent has been obtained by a qualified health professional, as outlined in section VII of the SOC. A referral is required from the mental health professional who performed the assessment, unless the assessment was done by a hormone provider who is also qualified in this area.

The criteria for hormone therapy are as follows:

1. Persistent, well-documented gender dysphoria;
2. Capacity to make a fully informed decision and to consent for treatment;
3. Age of majority in a given country (if younger, follow the *Standards of Care* outlined in section VI);
4. If significant medical or mental health concerns are present, they must be reasonably well-controlled.

As noted in section VII of the SOC, the presence of co-existing mental health concerns does not necessarily preclude access to feminizing/masculinizing hormones; rather, these concerns need to be managed prior to or concurrent with treatment of gender dysphoria.

In selected circumstances, it can be acceptable practice to provide hormones to patients who have not fulfilled these criteria. Examples include facilitating the provision of monitored therapy using hormones of known quality as an alternative to illicit or unsupervised hormone use or to patients who have already established themselves in their affirmed gender and who have a history of prior hormone use. It is unethical to deny availability or eligibility for hormone therapy solely on the basis of blood seropositivity for blood-borne infections such as HIV or hepatitis B or C.

In rare cases, hormone therapy may be contraindicated due to serious individual health conditions. Health professionals should assist these patients with accessing non-hormonal interventions for gender dysphoria. A qualified mental health professional familiar with the patient is an excellent resource in these circumstances.

Informed Consent

Feminizing/masculinizing hormone therapy may lead to irreversible physical changes. Thus, hormone therapy should be provided only to those who are legally able to provide informed consent. This includes people who have been declared by a court to be emancipated minors, incarcerated people, and cognitively impaired people who are considered competent to participate in their medical decisions (see also Bockting et al., 2006). Providers should document in the medical record that comprehensive information has been provided and understood about all relevant aspects of the hormone therapy, including both possible benefits and risks and the impact on reproductive capacity.

Relationship between the Standards of Care and Informed Consent Model Protocols

A number of community health centers in the United States have developed protocols for providing hormone therapy based on an approach that has become known as the Informed Consent Model (Callen Lorde Community Health Center, 2000, 2011; Fenway Community Health Transgender Health Program, 2007; Tom Waddell Health Center, 2006). These protocols are consistent with the guidelines presented in the WPATH *Standards of Care, Version 7*. The SOC are flexible clinical guidelines; they allow for tailoring of interventions to the needs of the individual receiving services and for tailoring of protocols to the approach and setting in which these services are provided (Ehrbar & Gorton, 2010).

Obtaining informed consent for hormone therapy is an important task of providers to ensure that patients understand the psychological and physical benefits and risks of hormone therapy, as well as its psychosocial implications. Providers prescribing the hormones or health professionals recommending the hormones should have the knowledge and experience to assess gender dysphoria. They should inform individuals of the particular benefits, limitations, and risks of hormones, given the patient's age, previous experience with hormones, and concurrent physical or mental health concerns.

Screening for and addressing acute or current mental health concerns is an important part of the informed consent process. This may be done by a mental health professional or by an appropriately trained prescribing provider (see section VII of the SOC). The same provider or another appropriately trained member of the health care team (e.g., a nurse) can address the psychosocial implications of taking hormones when necessary (e.g., the impact of masculinization/feminization on how one is perceived and its potential impact on relationships with family, friends, and coworkers). If indicated, these providers will make referrals for psychotherapy and for the assessment and treatment of co-existing mental health concerns such as anxiety or depression.

The difference between the Informed Consent Model and *SOC, Version 7* is that the *SOC* puts greater emphasis on the important role that mental health professionals can play in alleviating gender dysphoria and facilitating changes in gender role and psychosocial adjustment. This may include a comprehensive mental health assessment and psychotherapy, when indicated. In the Informed Consent Model, the focus is on obtaining informed consent as the threshold for the initiation of hormone therapy in a multidisciplinary, harm-reduction environment. Less emphasis is placed on the provision of mental health care until the patient requests it, unless significant mental health concerns are identified that would need to be addressed before hormone prescription.

Physical Effects of Hormone Therapy

Feminizing/masculinizing hormone therapy will induce physical changes that are more congruent with a patient's gender identity.

- In FtM patients, the following physical changes are expected to occur: deepened voice, clitoral enlargement (variable), growth in facial and body hair, cessation of menses, atrophy of breast tissue, increased libido, and decreased percentage of body fat compared to muscle mass.
- In MtF patients, the following physical changes are expected to occur: breast growth (variable), decreased libido and erections, decreased testicular size, and increased percentage of body fat compared to muscle mass.

Most physical changes, whether feminizing or masculinizing, occur over the course of two years. The amount of physical change and the exact timeline of effects can be highly variable. Tables 1a and 1b outline the approximate time course of these physical changes.

TABLE 1A: EFFECTS AND EXPECTED TIME COURSE OF MASCULINIZING HORMONES ^A

Effect	Expected Onset ^B	Expected Maximum Effect ^B
Skin oiliness/acne	1-6 months	1-2 years
Facial/body hair growth	3-6 months	3-5 years
Scalp hair loss	>12 months ^C	variable
Increased muscle mass/strength	6-12 months	2-5 years ^D
Body fat redistribution	3-6 months	2-5 years
Cessation of menses	2-6 months	n/a
Clitoral enlargement	3-6 months	1-2 years
Vaginal atrophy	3-6 months	1-2 years
Deepened voice	3-12 months	1-2 years

^A Adapted with permission from Hembree et al.(2009). Copyright 2009, The Endocrine Society.

^B Estimates represent published and unpublished clinical observations.

^C Highly dependent on age and inheritance; may be minimal.

^D Significantly dependent on amount of exercise.

TABLE 1B: EFFECTS AND EXPECTED TIME COURSE OF FEMINIZING HORMONES ^A

Effect	Expected Onset ^B	Expected Maximum Effect ^B
Body fat redistribution	3-6 months	2-5 years
Decreased muscle mass/ strength	3-6 months	1-2 years ^C
Softening of skin/decreased oiliness	3-6 months	unknown
Decreased libido	1-3 months	1-2 years
Decreased spontaneous erections	1-3 months	3-6 months
Male sexual dysfunction	variable	variable
Breast growth	3-6 months	2-3 years
Decreased testicular volume	3-6 months	2-3 years
Decreased sperm production	variable	variable
Thinning and slowed growth of body and facial hair	6-12 months	> 3 years ^D
Male pattern baldness	No regrowth, loss stops 1-3 months	1-2 years

^A Adapted with permission from Hembree et al. (2009). Copyright 2009, The Endocrine Society.

^B Estimates represent published and unpublished clinical observations.

^C Significantly dependent on amount of exercise.

^D Complete removal of male facial and body hair requires electrolysis, laser treatment, or both.

The degree and rate of physical effects depends in part on the dose, route of administration, and medications used, which are selected in accordance with a patient's specific medical goals (e.g., changes in gender role expression, plans for sex reassignment) and medical risk profile. There is no current evidence that response to hormone therapy – with the possible exception of voice deepening in FtM persons – can be reliably predicted based on age, body habitus, ethnicity, or family appearance. All other factors being equal, there is no evidence to suggest that any medically approved type or method of administering hormones is more effective than any other in producing the desired physical changes.

Risks of Hormone Therapy

All medical interventions carry risks. The likelihood of a serious adverse event is dependent on numerous factors: the medication itself, dose, route of administration, and a patient's clinical characteristics (age, co-morbidities, family history, health habits). It is thus impossible to predict whether a given adverse effect will happen in an individual patient.

The risks associated with feminizing/masculinizing hormone therapy for the transsexual, transgender, and gender nonconforming population as a whole are summarized in Table 2. Based on the level of evidence, risks are categorized as follows: (i) likely increased risk with hormone therapy, (ii) possibly increased risk with hormone therapy, or (iii) inconclusive or no increased risk. Items in the last category include those that may present risk, but for which the evidence is so minimal that no clear conclusion can be reached.

Additional detail about these risks can be found in Appendix B, which is based on two comprehensive, evidence-based literature reviews of masculinizing/feminizing hormone therapy (Feldman & Safer, 2009; Hembree et al., 2009), along with a large cohort study (Asscheman et al., 2011). These reviews can serve as detailed references for providers, along with other widely recognized, published clinical materials (Dahl, Feldman, Goldberg, & Jaber, 2006; Ettner, Monstrey, & Eyler, 2007).

TABLE 2: RISKS ASSOCIATED WITH HORMONE THERAPY. BOLDED ITEMS ARE CLINICALLY SIGNIFICANT

Risk Level	Feminizing hormones	Masculinizing hormones
Likely increased risk	Venous thromboembolic disease^A Gallstones Elevated liver enzymes Weight gain Hypertriglyceridemia	Polycythemia Weight gain Acne Androgenic alopecia (balding) Sleep apnea
Likely increased risk with presence of additional risk factors ^B	Cardiovascular disease	
Possible increased risk	Hypertension Hyperprolactinemia or prolactinoma ^A	Elevated liver enzymes Hyperlipidemia
Possible increased risk with presence of additional risk factors ^B	Type 2 diabetes^A	Destabilization of certain psychiatric disorders^C Cardiovascular disease Hypertension Type 2 diabetes
No increased risk or inconclusive	Breast cancer	Loss of bone density Breast cancer Cervical cancer Ovarian cancer Uterine cancer

^A Risk is greater with oral estrogen administration than with transdermal estrogen administration.

^B Additional risk factors include age.

^C Includes bipolar, schizoaffective, and other disorders that may include manic or psychotic symptoms. This adverse event appears to be associated with higher doses or supraphysiologic blood levels of testosterone.

Competency of Hormone-Prescribing Physicians, Relationship with Other Health Professionals

Feminizing/masculinizing hormone therapy is best undertaken in the context of a complete approach to health care that includes comprehensive primary care and a coordinated approach to psychosocial issues (Feldman & Safer, 2009). While psychotherapy or ongoing counseling is not required for the initiation of hormone therapy, if a therapist is involved, then regular communication among health professionals is advised (with the patient's consent) to ensure that the transition process is going well, both physically and psychosocially.

With appropriate training, feminizing/masculinizing hormone therapy can be managed by a variety of providers, including nurse practitioners and primary care physicians (Dahl et al., 2006). Medical visits relating to hormone maintenance provide an opportunity to deliver broader care to a population that is often medically underserved (Clements, Wilkinson, Kitano, & Marx, 1999; Feldman, 2007; Xavier, 2000). Many of the screening tasks and management of co-morbidities associated with long-term hormone use, such as cardiovascular risk factors and cancer screening, fall more uniformly within the scope of primary care rather than specialist care (American Academy of Family Physicians, 2005; Eyler, 2007; World Health Organization, 2008), particularly in locations where dedicated gender teams or specialized physicians are not available.

Given the multidisciplinary needs of transsexual, transgender, and gender nonconforming people seeking hormone therapy, as well as the difficulties associated with fragmentation of care in general (World Health Organization, 2008), WPATH strongly encourages the increased training and involvement of primary care providers in the area of feminizing/masculinizing hormone therapy. If hormones are prescribed by a specialist, there should be close communication with the patient's primary care provider. Conversely, an experienced hormone provider or endocrinologist should be involved if the primary care physician has no experience with this type of hormone therapy, or if the patient has a pre-existing metabolic or endocrine disorder that could be affected by endocrine therapy.

While formal training programs in transgender medicine do not yet exist, hormone providers have a responsibility to obtain appropriate knowledge and experience in this field. Clinicians can increase their experience and comfort in providing feminizing/masculinizing hormone therapy by co-managing care or consulting with a more experienced provider, or by providing more limited types of hormone therapy before progressing to initiation of hormone therapy. Because this field of medicine is evolving, clinicians should become familiar and keep current with the medical literature, and discuss emerging issues with colleagues. Such discussions might occur through networks established by WPATH and other national/local organizations.

Responsibilities of Hormone-Prescribing Physicians

In general, clinicians who prescribe hormone therapy should engage in the following tasks:

1. Perform an initial evaluation that includes discussion of a patient's physical transition goals, health history, physical examination, risk assessment, and relevant laboratory tests.
2. Discuss with patients the expected effects of feminizing/masculinizing medications and the possible adverse health effects. These effects can include a reduction in fertility (Feldman & Safer, 2009; Hembree et al., 2009). Therefore, reproductive options should be discussed with patients before starting hormone therapy (see section IX).
3. Confirm that patients have the capacity to understand the risks and benefits of treatment and are capable of making an informed decision about medical care.
4. Provide ongoing medical monitoring, including regular physical and laboratory examination to monitor hormone effectiveness and side effects.
5. Communicate as needed with a patient's primary care provider, mental health professional, and surgeon.
6. If needed, provide patients with a brief written statement indicating that they are under medical supervision and care that includes feminizing/masculinizing hormone therapy. Particularly during the early phases of hormone treatment, a patient may wish to carry this statement at all times to help prevent difficulties with the police and other authorities.

Depending on the clinical situation for providing hormones (see below), some of these responsibilities are less relevant. Thus, the degree of counseling, physical examinations, and laboratory evaluations should be individualized to a patient's needs.

Clinical Situations for Hormone Therapy

There are circumstances in which clinicians may be called upon to provide hormones without necessarily initiating or maintaining long-term feminizing/masculinizing hormone therapy. By acknowledging these different clinical situations (see below, from least to highest level of complexity), it may be possible to involve clinicians in feminizing/masculinizing hormone therapy who might not otherwise feel able to offer this treatment.

1. Bridging

Whether prescribed by another clinician or obtained through other means (e.g., purchased over the internet), patients may present for care already on hormone therapy. Clinicians can provide a limited (1-6 month) prescription for hormones while helping patients find a provider who can prescribe long-term hormone therapy. Providers should assess a patient's current regimen for safety and drug interactions and substitute safer medications or doses when indicated (Dahl et al., 2006; Feldman & Safer, 2009). If hormones were previously prescribed, medical records should be requested (with the patient's permission) to obtain the results of baseline examinations and laboratory tests and any adverse events. Hormone providers should also communicate with any mental health professional who is currently involved in a patient's care. If a patient has never had a psychosocial assessment as recommended by the SOC (see section VII), clinicians should refer the patient to a qualified mental health professional if appropriate and feasible (Feldman & Safer, 2009). Providers who prescribe bridging hormones need to work with patients to establish limits as to the duration of bridging therapy.

2. Hormone therapy following gonad removal

Hormone replacement with estrogen or testosterone is usually continued lifelong after an oophorectomy or orchiectomy, unless medical contraindications arise. Because hormone doses are often decreased after these surgeries (Basson, 2001; Levy, Crown, & Reid, 2003; Moore, Wisniewski, & Dobs, 2003) and only adjusted for age and co-morbid health concerns, hormone management in this situation is quite similar to hormone replacement in any hypogonadal patient.

3. Hormone maintenance prior to gonad removal

Once patients have achieved maximal feminizing/masculinizing benefits from hormones (typically two or more years), they remain on a maintenance dose. The maintenance dose is then adjusted for changes in health conditions, aging, or other considerations such as lifestyle changes (Dahl et al., 2006). When a patient on maintenance hormones presents for care, the provider should assess the patient's current regimen for safety and drug interactions and substitute safer medications or doses when indicated. The patient should continue to be monitored by physical examinations and laboratory testing on a regular basis, as outlined in the literature (Feldman & Safer, 2009; Hembree et al., 2009). The dose and form of hormones should be revisited regularly with any changes in the patient's health status and available evidence on the potential long-term risks of hormones (See *Hormone Regimens*, below).

4. Initiating hormonal feminization/masculinization

This clinical situation requires the greatest commitment in terms of provider time and expertise. Hormone therapy must be individualized based on a patient's goals, the risk/benefit ratio of medications, the presence of other medical conditions, and consideration of social and economic issues. Although a wide variety of hormone regimens have been published (Dahl et al., 2006; Hembree et al., 2009; Moore et al., 2003), there are no published reports of randomized clinical trials comparing safety and efficacy. Despite this variation, a reasonable framework for initial risk assessment and ongoing monitoring of hormone therapy can be constructed, based on the efficacy and safety evidence presented above.

Risk Assessment and Modification for Initiating Hormone Therapy

The initial evaluation for hormone therapy assesses a patient's clinical goals and risk factors for hormone-related adverse events. During the risk assessment, the patient and clinician should develop a plan for reducing risks wherever possible, either prior to initiating therapy or as part of ongoing harm reduction.

All assessments should include a thorough physical exam, including weight, height, and blood pressure. The need for breast, genital, and rectal exams, which are sensitive issues for most transsexual, transgender, and gender nonconforming patients, should be based on individual risks and preventive health care needs (Feldman & Goldberg, 2006; Feldman, 2007).

Preventive care

Hormone providers should address preventive health care with patients, particularly if a patient does not have a primary care provider. Depending on a patient's age and risk profile, there may be appropriate screening tests or exams for conditions affected by hormone therapy. Ideally, these screening tests should be carried out prior to the start of hormone therapy.

Risk assessment and modification for feminizing hormone therapy (MtF)

There are no absolute contraindications to feminizing therapy *per se*, but absolute contraindications exist for the different feminizing agents, particularly estrogen. These include previous venous thrombotic events related to an underlying hypercoagulable condition, history of estrogen-sensitive neoplasm, and end-stage chronic liver disease (Gharib et al., 2005).

Other medical conditions, as noted in Table 2 and Appendix B, can be exacerbated by estrogen or androgen blockade, and therefore should be evaluated and reasonably well controlled prior to starting hormone therapy (Feldman & Safer, 2009; Hembree et al., 2009). Clinicians should particularly attend to tobacco use, as it is associated with increased risk of venous thrombosis, which is further increased with estrogen use. Consultation with a cardiologist may be advisable for patients with known cardio- or cerebrovascular disease.

Baseline laboratory values are important to both assess initial risk and evaluate possible future adverse events. Initial labs should be based on the risks of feminizing hormone therapy outlined in Table 2, as well as individual patient risk factors, including family history. Suggested initial lab panels have been published (Feldman & Safer, 2009; Hembree et al., 2009). These can be modified for patients or health care systems with limited resources, and in otherwise healthy patients.

Risk assessment and modification for masculinizing hormone therapy (FtM)

Absolute contraindications to testosterone therapy include pregnancy, unstable coronary artery disease, and untreated polycythemia with a hematocrit of 55% or higher (Carnegie, 2004). Because the aromatization of testosterone to estrogen may increase risk in patients with a history of breast or other estrogen dependent cancers (Moore et al., 2003), consultation with an oncologist may be indicated prior to hormone use. Co-morbid conditions likely to be exacerbated by testosterone use should be evaluated and treated, ideally prior to starting hormone therapy (Feldman & Safer, 2009; Hembree et al., 2009). Consultation with a cardiologist may be advisable for patients with known cardio- or cerebrovascular disease.

An increased prevalence of polycystic ovarian syndrome (PCOS) has been noted among FtM patients even in the absence of testosterone use (Baba et al., 2007; Balen, Schachter, Montgomery, Reid, & Jacobs, 1993; Bosinski et al., 1997). While there is no evidence that PCOS is related to the development of a transsexual, transgender, or gender nonconforming identity, PCOS is associated with increased risk of diabetes, cardiac disease, high blood pressure, and ovarian and endometrial cancers (Catrall & Healy, 2004). Signs and symptoms of PCOS should be evaluated prior to initiating testosterone therapy, as testosterone may affect many of these conditions. Testosterone can affect the developing fetus (Physicians' Desk Reference, 2011), and patients at risk of becoming pregnant require highly effective birth control.

Baseline laboratory values are important to both assess initial risk and evaluate possible future adverse events. Initial labs should be based on the risks of masculinizing hormone therapy outlined in Table 2, as well as individual patient risk factors, including family history. Suggested initial lab panels have been published (Feldman & Safer, 2009; Hembree et al., 2009). These can be modified for patients or health care systems with limited resources, and in otherwise healthy patients.

Clinical Monitoring during Hormone Therapy for Efficacy and Adverse Events

The purpose of clinical monitoring during hormone use is to assess the degree of feminization/masculinization and the possible presence of adverse effects of medication. However, as with the monitoring of any long-term medication, monitoring should take place in the context of comprehensive health care. Suggested clinical monitoring protocols have been published (Feldman & Safer, 2009; Hembree et al., 2009). Patients with co-morbid medical conditions may need to be monitored more frequently. Healthy patients in geographically remote or resource-poor areas may be able to use alternative strategies, such as telehealth, or cooperation with local providers such as nurses and physician assistants. In the absence of other indications, health professionals may prioritize monitoring for those risks that are either likely to be increased by hormone therapy or possibly increased by hormone therapy but clinically serious in nature.

Efficacy and risk monitoring during feminizing hormone therapy (MtF)

The best assessment of hormone efficacy is clinical response: Is a patient developing a feminized body while minimizing masculine characteristics, consistent with that patient's gender goals? In order to more rapidly predict the hormone dosages that will achieve clinical response, one can measure testosterone levels for suppression below the upper limit of the normal female range, and estradiol levels within a premenopausal female range but well below supraphysiologic levels (Feldman & Safer, 2009; Hembree et al., 2009).

Monitoring for adverse events should include both clinical and laboratory evaluation. Follow-up should include careful assessment for signs of cardiovascular impairment and venous thromboembolism (VTE) through measurement of blood pressure, weight, and pulse; heart and lung exams; and examination of the extremities for peripheral edema, localized swelling, or pain (Feldman & Safer, 2009). Laboratory monitoring should be based on the risks of hormone therapy described above, a patient's individual co-morbidities and risk factors, and the specific hormone regimen itself. Specific lab monitoring protocols have been published (Feldman & Safer, 2009; Hembree et al., 2009).

Efficacy and risk monitoring during masculinizing hormone therapy (FtM)

The best assessment of hormone efficacy is clinical response: Is a patient developing a masculinized body while minimizing feminine characteristics, consistent with that patient's gender goals? Clinicians can achieve a good clinical response with the least likelihood of adverse events by maintaining testosterone levels within the normal male range while avoiding supraphysiological

levels (Dahl et al., 2006; Hembree et al., 2009). For patients using intramuscular (IM) testosterone cypionate or enanthate, some clinicians check trough levels while others prefer midcycle levels (Dahl et al., 2006; Hembree et al., 2009; Tangpricha, Turner, Malabanan, & Holick, 2001; Tangpricha, Ducharme, Barber, & Chipkin, 2003).

Monitoring for adverse events should include both clinical and laboratory evaluation. Follow-up should include careful assessment for signs and symptoms of excessive weight gain, acne, uterine break-through bleeding, and cardiovascular impairment, as well as psychiatric symptoms in at-risk patients. Physical examinations should include measurement of pressure, weight, pulse, and skin; and heart and lung exams (Feldman & Safer, 2009). Laboratory monitoring should be based on the risks of hormone therapy described above, a patient's individual co-morbidities and risk factors, and the specific hormone regimen itself. Specific lab monitoring protocols have been published (Feldman & Safer, 2009; Hembree et al., 2009).

Hormone Regimens

To date, no controlled clinical trials of any feminizing/masculinizing hormone regimen have been conducted to evaluate safety or efficacy in producing physical transition. As a result, wide variation in doses and types of hormones have been published in the medical literature (Moore et al., 2003; Tangpricha et al., 2003; van Kesteren, Asscheman, Megens, & Gooren, 1997). In addition, access to particular medications may be limited by a patient's geographical location and/or social or economic situations. For these reasons, WPATH does not describe or endorse a particular feminizing/masculinizing hormone regimen. Rather, the medication classes and routes of administration used in most published regimens are broadly reviewed.

As outlined above, there are demonstrated safety differences in individual elements of various regimens. The Endocrine Society Guidelines (Hembree et al., 2009) and Feldman and Safer (2009) provide specific guidance regarding the types of hormones and suggested dosing to maintain levels within physiologic ranges for a patient's desired gender expression (based on goals of full feminization/masculinization). It is strongly recommend that hormone providers regularly review the literature for new information and use those medications that safely meet individual patient needs with available local resources.

Regimens for feminizing hormone therapy (MtF)

Estrogen

Use of oral estrogen, and specifically ethinyl estradiol, appears to increase the risk of VTE. Because of this safety concern, ethinyl estradiol is not recommended for feminizing hormone therapy. Transdermal estrogen is recommended for those patients with risks factors for VTE. The risk of adverse events increases with higher doses, particular those resulting in supraphysiologic levels (Hembree et al., 2009). Patients with co-morbid conditions that can be affected by estrogen should avoid oral estrogen if possible and be started at lower levels. Some patients may not be able to safely use the levels of estrogen needed to get the desired results. This possibility needs to be discussed with patients well in advance of starting hormone therapy.

Androgen reducing medications (“anti-androgens”)

A combination of estrogen and “anti-androgens” is the most commonly studied regimen for feminization. Androgen reducing medications, from a variety of classes of drugs, have the effect of reducing either endogenous testosterone levels or testosterone activity, and thus diminishing masculine characteristics such as body hair. They minimize the dosage of estrogen needed to suppress testosterone, thereby reducing the risks associated with high-dose exogenous estrogen (Prior, Vigna, Watson, Diewold, & Robinow, 1986; Prior, Vigna, & Watson, 1989).

Common anti-androgens include the following:

- Spironolactone, an antihypertensive agent, directly inhibits testosterone secretion and androgen binding to the androgen receptor. Blood pressure and electrolytes need to be monitored because of the potential for hyperkalemia.
- Cyproterone acetate is a progestational compound with anti-androgenic properties. This medication is not approved in the United States because of concerns over potential hepatotoxicity, but it is widely used elsewhere (De Cuypere et al., 2005).
- GnRH agonists (e.g., goserelin, buserelin, triptorelin) are neurohormones that block the gonadotropin releasing hormone receptor, thus blocking the release of follicle stimulating hormone and luteinizing hormone. This leads to highly effective gonadal blockade. However, these medications are expensive and only available as injectables or implants.
- 5-alpha reductase inhibitors (finasteride and dutasteride) block the conversion of testosterone to the more active agent, 5-alpha-dihydrotestosterone. These medications have beneficial effects on scalp hair loss, body hair growth, sebaceous glands, and skin consistency.

Cyproterone and spironolactone are the most commonly used anti-androgens and are likely the most cost-effective.

Progestins

With the exception of cyproterone, the inclusion of progestins in feminizing hormone therapy is controversial (Oriel, 2000). Because progestins play a role in mammary development on a cellular level, some clinicians believe that these agents are necessary for full breast development (Basson & Prior, 1998; Oriel, 2000). However, a clinical comparison of feminization regimens with and without progestins found that the addition of progestins neither enhanced breast growth nor lowered serum levels of free testosterone (Meyer III et al., 1986). There are concerns regarding potential adverse effects of progestins, including depression, weight gain, and lipid changes (Meyer III et al., 1986; Tangpricha et al., 2003). Progestins (especially medroxyprogesterone) are also suspected to increase breast cancer risk and cardiovascular risk in women (Rossouw et al., 2002). Micronized progesterone may be better tolerated and have a more favorable impact on the lipid profile than medroxyprogesterone does (de Lignières, 1999; Fitzpatrick, Pace, & Wiita, 2000).

Regimens for masculinizing hormone therapy (FtM)

Testosterone

Testosterone generally can be given orally, transdermally, or parenterally (IM), although buccal and implantable preparations are also available. Oral testosterone undecenoate, available outside the United States, results in lower serum testosterone levels than non-oral preparations and has limited efficacy in suppressing menses (Feldman, 2005, April; Moore et al., 2003). Because intramuscular testosterone cypionate or enanthate are often administered every 2-4 weeks, some patients may notice cyclic variation in effects (e.g., fatigue and irritability at the end of the injection cycle, aggression or expansive mood at the beginning of the injection cycle), as well as more time outside the normal physiologic levels (Jockenhövel, 2004). This may be mitigated by using a lower but more frequent dosage schedule or by using a daily transdermal preparation (Dobs et al., 1999; Jockenhövel, 2004; Nieschlag et al., 2004). Intramuscular testosterone undecenoate (not currently available in the United States) maintains stable, physiologic testosterone levels over approximately 12 weeks and has been effective in both the setting of hypogonadism and in FtM individuals (Mueller, Kiesewetter, Binder, Beckmann, & Dittrich, 2007; Zitzmann, Saad, & Nieschlag, 2006). There is evidence that transdermal and intramuscular testosterone achieve similar masculinizing results, although the timeframe may be somewhat slower with transdermal preparations (Feldman, 2005, April). Especially as patients age, the goal is to use the lowest dose needed to maintain the desired clinical result, with appropriate precautions being made to maintain bone density.

Other agents

Progestins, most commonly medroxyprogesterone, can be used for a short period of time to assist with menstrual cessation early in hormone therapy. GnRH agonists can be used similarly, as well as for refractory uterine bleeding in patients without an underlying gynecological abnormality.

Bioidentical and compounded hormones

As discussion surrounding the use of bioidentical hormones in postmenopausal hormone replacement has heightened, interest has also increased in the use of similar compounds in feminizing/masculinizing hormone therapy. There is no evidence that custom compounded bioidentical hormones are safer or more effective than government agency-approved bioidentical hormones (Sood, Shuster, Smith, Vincent, & Jatoi, 2011). Therefore, it has been advised by the North American Menopause Society (2010) and others to assume that, whether the hormone is from a compounding pharmacy or not, if the active ingredients are similar, it should have a similar side-effect profile. WPATH concurs with this assessment.

IX

Reproductive Health

Many transgender, transsexual, and gender nonconforming people will want to have children. Because feminizing/masculinizing hormone therapy limits fertility (Darney, 2008; Zhang, Gu, Wang, Cui, & Bremner, 1999), it is desirable for patients to make decisions concerning fertility before starting hormone therapy or undergoing surgery to remove/alter their reproductive organs. Cases are known of people who received hormone therapy and genital surgery and later regretted their inability to parent genetically related children (De Sutter, Kira, Verschoor, & Hotimsky, 2002).

Health care professionals – including mental health professionals recommending hormone therapy or surgery, hormone-prescribing physicians, and surgeons – should discuss reproductive options with patients prior to initiation of these medical treatments for gender dysphoria. These discussions should occur even if patients are not interested in these issues at the time of treatment, which may be more common for younger patients (De Sutter, 2009). Early discussions are desirable, but not always possible. If an individual has not had complete sex reassignment surgery, it may be possible to stop hormones long enough for natal hormones to recover, allowing the production of mature

gametes (Payer, Meyer III, & Walker, 1979; Van den Broecke, Van der Elst, Liu, Hovatta, & Dhont, 2001).

Besides debate and opinion papers, very few research papers have been published on the reproductive health issues of individuals receiving different medical treatments for gender dysphoria. Another group who faces the need to preserve reproductive function in light of loss or damage to their gonads are people with malignancies that require removal of reproductive organs or use of damaging radiation or chemotherapy. Lessons learned from that group can be applied to people treated for gender dysphoria.

MtF patients, especially those who have not already reproduced, should be informed about sperm preservation options and encouraged to consider banking their sperm prior to hormone therapy. In a study examining testes that were exposed to high-dose estrogen (Payer et al., 1979), findings suggest that stopping estrogen may allow the testes to recover. In an article reporting on the opinions of MtF individuals towards sperm freezing (De Sutter et al., 2002), the vast majority of 121 survey respondents felt that the availability of freezing sperm should be discussed and offered by the medical world. Sperm should be collected before hormone therapy or after stopping the therapy until the sperm count rises again. Cryopreservation should be discussed even if there is poor semen quality. In adults with azoospermia, a testicular biopsy with subsequent cryopreservation of biopsied material for sperm is possible, but may not be successful.

Reproductive options for FtM patients might include oocyte (egg) or embryo freezing. The frozen gametes and embryo could later be used with a surrogate woman to carry to pregnancy. Studies of women with polycystic ovarian disease suggest that the ovary can recover in part from the effects of high testosterone levels (Hunter & Sterrett, 2000). Stopping the testosterone briefly might allow for ovaries to recover enough to make eggs; success likely depends on the patient's age and duration of testosterone treatment. While not systematically studied, some FtM individuals are doing exactly that, and some have been able to become pregnant and deliver children (More, 1998).

Patients should be advised that these techniques are not available everywhere and can be very costly. Transsexual, transgender, and gender nonconforming people should not be refused reproductive options for any reason.

A special group of individuals are prepubertal or pubertal adolescents who will never develop reproductive function in their natal sex due to blockers or cross gender hormones. At this time there is no technique for preserving function from the gonads of these individuals.



Voice and Communication Therapy

Communication, both verbal and nonverbal, is an important aspect of human behavior and gender expression. Transsexual, transgender, and gender nonconforming people might seek the assistance of a voice and communication specialist to develop vocal characteristics (e.g., pitch, intonation, resonance, speech rate, phrasing patterns) and non-verbal communication patterns (e.g., gestures, posture/movement, facial expressions) that facilitate comfort with their gender identity. Voice and communication therapy may help to alleviate gender dysphoria and be a positive and motivating step towards achieving one's goals for gender role expression.

Competency of Voice and Communication Specialists Working with Transsexual, Transgender, and Gender Nonconforming Clients

Specialists may include speech-language pathologists, speech therapists, and speech-voice clinicians. In most countries the professional association for speech-language pathologists requires specific qualifications and credentials for membership. In some countries the government regulates practice through licensing, certification, or registration processes (American Speech-Language-Hearing Association, 2011; Canadian Association of Speech-Language Pathologists and Audiologists; Royal College of Speech Therapists, United Kingdom; Speech Pathology Australia; Vancouver Coastal Health, Vancouver, British Columbia, Canada).

The following are recommended minimum credentials for voice and communication specialists working with transsexual, transgender, and gender nonconforming clients:

1. Specialized training and competence in the assessment and development of communication skills in transsexual, transgender, and gender nonconforming clients.
2. A basic understanding of transgender health, including hormonal and surgical treatments for feminization/masculinization and trans-specific psychosocial issues as outlined in the SOC; and familiarity with basic sensitivity protocols such as the use of preferred gender pronoun and name (Canadian Association of Speech-Language Pathologists and Audiologists; Royal College of Speech Therapists, United Kingdom; Speech Pathology Australia).

3. Continuing education in the assessment and development of communication skills in transsexual, transgender, and gender nonconforming clients. This may include attendance at professional meetings, workshops, or seminars; participation in research related to gender identity issues; independent study; or mentoring from an experienced, certified clinician.

Other professionals such as vocal coaches, theatre professionals, singing teachers, and movement experts may play a valuable adjunct role. Such professionals will ideally have experience working with, or be actively collaborating with, speech-language pathologists.

Assessment and Treatment Considerations

The overall purpose of voice and communication therapy is to help clients adapt their voice and communication in a way that is both safe and authentic, resulting in communication patterns that clients feel are congruent with their gender identity and that reflect their sense of self (Adler, Hirsch, & Mordaunt, 2006). It is essential that voice and communication specialists be sensitive to individual communication preferences. Communication – style, voice, choice of language, etc. – is personal. Individuals should not be counseled to adopt behaviors with which they are not comfortable or which do not feel authentic. Specialists can best serve their clients by taking the time to understand a person's gender concerns and goals for gender role expression (American Speech-Language-Hearing Association, 2011; Canadian Association of Speech-Language Pathologists and Audiologists; Royal College of Speech Therapists, United Kingdom; Speech Pathology Australia).

Individuals may choose the communication behaviors that they wish to acquire in accordance with their gender identity. These decisions are also informed and supported by the knowledge of the voice and communication specialist and by the assessment data for a specific client (Hancock, Krissinger, & Owen, 2010). Assessment includes a client's self-evaluation and a specialist's evaluation of voice, resonance, articulation, spoken language, and non-verbal communication (Adler et al., 2006; Hancock et al., 2010).

Voice and communication treatment plans are developed by considering the available research evidence, the clinical knowledge and experience of the specialist, and the client's own goals and values (American Speech-Language-Hearing Association, 2011; Canadian Association of Speech-Language Pathologists and Audiologists; Royal College of Speech Therapists, United Kingdom; Speech Pathology Australia; Vancouver Coastal Health, Vancouver, British Columbia, Canada). Targets of treatment typically include pitch, intonation, loudness and stress patterns, voice quality, resonance, articulation, speech rate and phrasing, language, and non-verbal communication (Adler et al., 2006; Davies & Goldberg, 2006; de Bruin, Coerts, & Greven, 2000; Gelfer, 1999; McNeill, 2006; Oates & Dacakis, 1983). Treatment may involve individual and/or group sessions. The frequency and duration of treatment will vary according to a client's needs. Existing protocols for voice and

communication treatment can be considered in developing an individualized therapy plan (Carew, Dacakis, & Oates, 2007; Dacakis, 2000; Davies & Goldberg, 2006; Gelfer, 1999; McNeill, Wilson, Clark, & Deakin, 2008; Mount & Salmon, 1988).

Feminizing or masculinizing the voice involves non-habitual use of the voice production mechanism. Prevention measures are necessary to avoid the possibility of vocal misuse and long-term vocal damage. All voice and communication therapy services should therefore include a vocal health component (Adler et al., 2006).

Vocal Health Considerations after Voice Feminization Surgery

As noted in section XI, some transsexual, transgender, and gender nonconforming people will undergo voice feminization surgery. (Voice deepening can be achieved through masculinizing hormone therapy, but feminizing hormones do not have an impact on the adult MtF voice.) There are varying degrees of satisfaction, safety, and long-term improvement in patients who have had such surgery. It is recommended that individuals undergoing voice feminization surgery also consult a voice and communication specialist to maximize the surgical outcome, help protect vocal health, and learn non-pitch related aspects of communication. Voice surgery procedures should include follow-up sessions with a voice and communication specialist who is licensed and/or credentialed by the board responsible for speech therapists/speech-language pathologists in that country (Kanagalingam et al., 2005; Neumann & Welzel, 2004).

XI

Surgery_

Sex Reassignment Surgery Is Effective and Medically Necessary

Surgery – particularly genital surgery – is often the last and the most considered step in the treatment process for gender dysphoria. While many transsexual, transgender, and gender nonconforming individuals find comfort with their gender identity, role, and expression without surgery, for many others surgery is essential and medically necessary to alleviate their gender dysphoria (Hage

& Karim, 2000). For the latter group, relief from gender dysphoria cannot be achieved without modification of their primary and/or secondary sex characteristics to establish greater congruence with their gender identity. Moreover, surgery can help patients feel more at ease in the presence of sex partners or in venues such as physicians' offices, swimming pools, or health clubs. In some settings, surgery might reduce risk of harm in the event of arrest or search by police or other authorities.

Follow-up studies have shown an undeniable beneficial effect of sex reassignment surgery on postoperative outcomes such as subjective well being, cosmesis, and sexual function (De Cuypere et al., 2005; Gijs & Brewaeys, 2007; Klein & Gorzalka, 2009; Pfäfflin & Junge, 1998). Additional information on the outcomes of surgical treatments are summarized in Appendix D.

Ethical Questions Regarding Sex Reassignment Surgery

In ordinary surgical practice, pathological tissues are removed to restore disturbed functions, or alterations are made to body features to improve a patient's self image. Some people, including some health professionals, object on ethical grounds to surgery as a treatment for gender dysphoria, because these conditions are thought not to apply.

It is important that health professionals caring for patients with gender dysphoria feel comfortable about altering anatomically normal structures. In order to understand how surgery can alleviate the psychological discomfort and distress of individuals with gender dysphoria, professionals need to listen to these patients discuss their symptoms, dilemmas, and life histories. The resistance against performing surgery on the ethical basis of "above all do no harm" should be respected, discussed, and met with the opportunity to learn from patients themselves about the psychological distress of having gender dysphoria and the potential for harm caused by denying access to appropriate treatments.

Genital and breast/chest surgical treatments for gender dysphoria are not merely another set of elective procedures. Typical elective procedures involve only a private mutually consenting contract between a patient and a surgeon. Genital and breast/chest surgeries as medically necessary treatments for gender dysphoria are to be undertaken only after assessment of the patient by qualified mental health professionals, as outlined in section VII of the SOC. These surgeries may be performed once there is written documentation that this assessment has occurred and that the person has met the criteria for a specific surgical treatment. By following this procedure, mental health professionals, surgeons, and of course patients, share responsibility for the decision to make irreversible changes to the body.

It is unethical to deny availability or eligibility for sex reassignment surgeries solely on the basis of blood seropositivity for blood-borne infections such as HIV or hepatitis C or B.

Relationship of Surgeons with Mental Health Professionals, Hormone-Prescribing Physicians (if Applicable), and Patients (Informed Consent)

The role of a surgeon in the treatment of gender dysphoria is not that of a mere technician. Rather, conscientious surgeons will have insight into each patient's history and the rationale that led to the referral for surgery. To that end, surgeons must talk at length with their patients and have close working relationships with other health professionals who have been actively involved in their clinical care.

Consultation is readily accomplished when a surgeon practices as part of an interdisciplinary health care team. In the absence of this, a surgeon must be confident that the referring mental health professional(s), and if applicable the physician who prescribes hormones, are competent in the assessment and treatment of gender dysphoria, because the surgeon is relying heavily on their expertise.

Once a surgeon is satisfied that the criteria for specific surgeries have been met (as outlined below), surgical treatment should be considered and a preoperative surgical consultation should take place. During this consultation, the procedure and postoperative course should be extensively discussed with the patient. Surgeons are responsible for discussing all of the following with patients seeking surgical treatments for gender dysphoria:

- The different surgical techniques available (with referral to colleagues who provide alternative options);
- The advantages and disadvantages of each technique;
- The limitations of a procedure to achieve “ideal” results; surgeons should provide a full range of before-and-after photographs of their own patients, including both successful and unsuccessful outcomes;
- The inherent risks and possible complications of the various techniques; surgeons should inform patients of their own complication rates with each procedure.

These discussions are the core of the informed consent process, which is both an ethical and legal requirement for any surgical procedure. Ensuring that patients have a realistic expectation of outcomes is important in achieving a result that will alleviate their gender dysphoria.

All of this information should be provided to patients in writing, in a language in which they are fluent, and in graphic illustrations. Patients should receive the information in advance (possibly via the internet) and given ample time to review it carefully. The elements of informed consent should always be discussed face-to-face prior to the surgical intervention. Questions can then be answered and written informed consent can be provided by the patient. Because these surgeries are irreversible, care should be taken to ensure that patients have sufficient time to absorb information fully before they are asked to provide informed consent. A minimum of 24 hours is suggested.

Surgeons should provide immediate aftercare and consultation with other physicians serving the patient in the future. Patients should work with their surgeon to develop an adequate aftercare plan for the surgery.

Overview of Surgical Procedures for the Treatment of Patients with Gender Dysphoria

For the male-to-female (MtF) patient, surgical procedures may include the following:

1. Breast/chest surgery: augmentation mammoplasty (implants/lipofilling);
2. Genital surgery: penectomy, orchiectomy, vaginoplasty, clitoroplasty, vulvoplasty;
3. Non-genital, non-breast surgical interventions: facial feminization surgery, liposuction, lipofilling, voice surgery, thyroid cartilage reduction, gluteal augmentation (implants/lipofilling), hair reconstruction, and various aesthetic procedures.

For the female-to-male (FtM) patient, surgical procedures may include the following:

1. Breast/chest surgery: subcutaneous mastectomy, creation of a male chest;
2. Genital surgery: hysterectomy/ovariectomy, reconstruction of the fixed part of the urethra, which can be combined with a metoidioplasty or with a phalloplasty (employing a pedicled or free vascularized flap), vaginectomy, scrotoplasty, and implantation of erection and/or testicular prostheses;

3. Non-genital, non-breast surgical interventions: voice surgery (rare), liposuction, lipofilling, pectoral implants, and various aesthetic procedures.

Reconstructive Versus Aesthetic Surgery

The question of whether sex reassignment surgery should be considered “aesthetic” surgery or “reconstructive” surgery is pertinent not only from a philosophical point of view, but also from a financial point of view. Aesthetic or cosmetic surgery is mostly regarded as not medically necessary and therefore is typically paid for entirely by the patient. In contrast, reconstructive procedures are considered medically necessary – with unquestionable therapeutic results – and thus paid for partially or entirely by national health systems or insurance companies.

Unfortunately, in the field of plastic and reconstructive surgery (both in general and specifically for gender-related surgeries), there is no clear distinction between what is purely reconstructive and what is purely cosmetic. Most plastic surgery procedures actually are a mixture of both reconstructive and cosmetic components.

While most professionals agree that genital surgery and mastectomy cannot be considered purely cosmetic, opinions diverge as to what degree other surgical procedures (e.g., breast augmentation, facial feminization surgery) can be considered purely reconstructive. Although it may be much easier to see a phalloplasty or a vaginoplasty as an intervention to end lifelong suffering, for certain patients an intervention like a reduction rhinoplasty can have a radical and permanent effect on their quality of life, and therefore is much more medically necessary than for somebody without gender dysphoria.

Criteria for Surgeries

As for all of the SOC, the criteria for initiation of surgical treatments for gender dysphoria were developed to promote optimal patient care. While the SOC allow for an individualized approach to best meet a patient’s health care needs, a criterion for all breast/chest and genital surgeries is documentation of persistent gender dysphoria by a qualified mental health professional. For some surgeries, additional criteria include preparation and treatment consisting of feminizing/masculinizing hormone therapy and one year of continuous living in a gender role that is congruent with one’s gender identity.

These criteria are outlined below. Based on the available evidence and expert clinical consensus, different recommendations are made for different surgeries.

The SOC do not specify an order in which different surgeries should occur. The number and sequence of surgical procedures may vary from patient to patient, according to their clinical needs.

Criteria for breast/chest surgery (one referral)

Criteria for mastectomy and creation of a male chest in FtM patients:

1. Persistent, well-documented gender dysphoria;
2. Capacity to make a fully informed decision and to consent for treatment;
3. Age of majority in a given country (if younger, follow the SOC for children and adolescents);
4. If significant medical or mental health concerns are present, they must be reasonably well controlled.

Hormone therapy is not a pre-requisite.

Criteria for breast augmentation (implants/lipofilling) in MtF patients:

1. Persistent, well-documented gender dysphoria;
2. Capacity to make a fully informed decision and to consent for treatment;
3. Age of majority in a given country (if younger, follow the SOC for children and adolescents);
4. If significant medical or mental health concerns are present, they must be reasonably well controlled.

Although not an explicit criterion, it is recommended that MtF patients undergo feminizing hormone therapy (minimum 12 months) prior to breast augmentation surgery. The purpose is to maximize breast growth in order to obtain better surgical (aesthetic) results.

Criteria for genital surgery (two referrals)

The criteria for genital surgery are specific to the type of surgery being requested.

Criteria for hysterectomy and ovariectomy in FtM patients and for orchiectomy in MtF patients:

1. Persistent, well documented gender dysphoria;
2. Capacity to make a fully informed decision and to consent for treatment;
3. Age of majority in a given country;
4. If significant medical or mental health concerns are present, they must be well controlled.
5. 12 continuous months of hormone therapy as appropriate to the patient's gender goals (unless the patient has a medical contraindication or is otherwise unable or unwilling to take hormones).

The aim of hormone therapy prior to gonadectomy is primarily to introduce a period of reversible estrogen or testosterone suppression, before the patient undergoes irreversible surgical intervention.

These criteria do not apply to patients who are having these procedures for medical indications other than gender dysphoria.

Criteria for metoidioplasty or phalloplasty in FtM patients and for vaginoplasty in MtF patients:

1. Persistent, well documented gender dysphoria;
2. Capacity to make a fully informed decision and to consent for treatment;
3. Age of majority in a given country;
4. If significant medical or mental health concerns are present, they must be well controlled;
5. 12 continuous months of hormone therapy as appropriate to the patient's gender goals (unless the patient has a medical contraindication or is otherwise unable or unwilling to take hormones).
6. 12 continuous months of living in a gender role that is congruent with their gender identity;

Although not an explicit criterion, it is recommended that these patients also have regular visits with a mental health or other medical professional.

Rationale for a preoperative, 12-month experience of living in an identity-congruent gender role:

The criterion noted above for some types of genital surgeries – i.e., that patients engage in 12 continuous months of living in a gender role that is congruent with their gender identity – is based on expert clinical consensus that this experience provides ample opportunity for patients to experience and socially adjust in their desired gender role, before undergoing irreversible surgery. As noted in section VII, the social aspects of changing one's gender role are usually challenging – often more so than the physical aspects. Changing gender role can have profound personal and social consequences, and the decision to do so should include an awareness of what the familial, interpersonal, educational, vocational, economic, and legal challenges are likely to be, so that people can function successfully in their gender role. Support from a qualified mental health professional and from peers can be invaluable in ensuring a successful gender role adaptation (Bockting, 2008).

The duration of 12 months allows for a range of different life experiences and events that may occur throughout the year (e.g., family events, holidays, vacations, season-specific work or school experiences). During this time, patients should present consistently, on a day-to-day basis and across all settings of life, in their desired gender role. This includes coming out to partners, family, friends, and community members (e.g., at school, work, other settings).

Health professionals should clearly document a patient's experience in the gender role in the medical chart, including the start date of living full time for those who are preparing for genital surgery. In some situations, if needed, health professionals may request verification that this criterion has been fulfilled: They may communicate with individuals who have related to the patient in an identity-congruent gender role, or request documentation of a legal name and/or gender marker change, if applicable.

Surgery for Persons with Psychotic Conditions and Other Serious Mental Illnesses

When patients with gender dysphoria are also diagnosed with severe psychiatric disorders and impaired reality testing (e.g., psychotic episodes, bipolar disorder, dissociative identity disorder, borderline personality disorder), an effort must be made to improve these conditions with psychotropic medications and/or psychotherapy before surgery is contemplated. Reevaluation by a mental health professional qualified to assess and manage psychotic conditions should be

conducted prior to surgery, describing the patient's mental status and readiness for surgery. It is preferable that this mental health professional be familiar with the patient. No surgery should be performed while a patient is actively psychotic (De Cuypere & Vercruysse, 2009).

Competency of Surgeons Performing Breast/Chest or Genital Surgery

Physicians who perform surgical treatments for gender dysphoria should be urologists, gynecologists, plastic surgeons, or general surgeons, and board-certified as such by the relevant national and/or regional association. Surgeons should have specialized competence in genital reconstructive techniques as indicated by documented supervised training with a more experienced surgeon. Even experienced surgeons must be willing to have their surgical skills reviewed by their peers. An official audit of surgical outcomes and publication of these results would be greatly reassuring to both referring health professionals and patients. Surgeons should regularly attend professional meetings where new techniques are presented. The internet is often effectively used by patients to share information on their experience with surgeons and their teams.

Ideally, surgeons should be knowledgeable about more than one surgical technique for genital reconstruction so that they, in consultation with patients, can choose the ideal technique for each individual. Alternatively, if a surgeon is skilled in a single technique and this procedure is either not suitable for or desired by a patient, the surgeon should inform the patient about other procedures and offer referral to another appropriately skilled surgeon.

Breast/Chest Surgery Techniques and Complications

Although breast/chest appearance is an important secondary sex characteristic, breast presence or size is not involved in the legal definitions of sex and gender and is not necessary for reproduction. The performance of breast/chest operations for treatment of gender dysphoria should be considered with the same care as beginning hormone therapy, as both produce relatively irreversible changes to the body.

For the MtF patient, a breast augmentation (sometimes called “chest reconstruction”) is not different from the procedure in a natal female patient. It is usually performed through implantation of breast prostheses and occasionally with the lipofilling technique. Infections and capsular fibrosis are rare complications of augmentation mammoplasty in MtF patients (Kanhai, Hage, Karim, & Mulder, 1999).

For the FtM patient, a mastectomy or “male chest contouring” procedure is available. For many FtM patients, this is the only surgery undertaken. When the amount of breast tissue removed requires skin removal, a scar will result and the patient should be so informed. Complications of subcutaneous mastectomy can include nipple necrosis, contour irregularities, and unsightly scarring (Monstrey et al., 2008).

Genital Surgery Techniques and Complications

Genital surgical procedures for the MtF patient may include orchiectomy, penectomy, vaginoplasty, clitoroplasty, and labiaplasty. Techniques include penile skin inversion, pedicled colosigmoid transplant, and free skin grafts to line the neovagina. Sexual sensation is an important objective in vaginoplasty, along with creation of a functional vagina and acceptable cosmesis.

Surgical complications of MtF genital surgery may include complete or partial necrosis of the vagina and labia, fistulas from the bladder or bowel into the vagina, stenosis of the urethra, and vaginas that are either too short or too small for coitus. While the surgical techniques for creating a neovagina are functionally and aesthetically excellent, anorgasmia following the procedure has been reported, and a second stage labiaplasty may be needed for cosmesis (Klein & Gorzalka, 2009; Lawrence, 2006).

Genital surgical procedures for FtM patients may include hysterectomy, ovariectomy (salpingo-oophorectomy), vaginectomy, metoidioplasty, scrotoplasty, urethroplasty, placement of testicular prostheses, and phalloplasty. For patients without former abdominal surgery, the laparoscopic technique for hysterectomy and salpingo-oophorectomy is recommended to avoid a lower-abdominal scar. Vaginal access may be difficult as most patients are nulliparous and have often not experienced penetrative intercourse. Current operative techniques for phalloplasty are varied. The choice of techniques may be restricted by anatomical or surgical considerations and by a client's financial considerations. If the objectives of phalloplasty are a neophallus of good appearance, standing micturition, sexual sensation, and/or coital ability, patients should be clearly informed that there are several separate stages of surgery and frequent technical difficulties, which may require additional operations. Even metoidioplasty, which in theory is a one-stage procedure for construction of a microphallus, often requires more than one operation. The objective of standing micturition with this technique can not always be ensured (Monstrey et al., 2009).

Complications of phalloplasty in FtMs may include frequent urinary tract stenoses and fistulas, and occasionally necrosis of the neophallus. Metoidioplasty results in a micropenis, without the capacity for standing urination. Phalloplasty, using a pedicled or a free vascularized flap, is a lengthy, multi-stage procedure with significant morbidity that includes frequent urinary complications and

unavoidable donor site scarring. For this reason, many FtM patients never undergo genital surgery other than hysterectomy and salpingo-oophorectomy (Hage & De Graaf, 1993).

Even patients who develop severe surgical complications seldom regret having undergone surgery. The importance of surgery can be appreciated by the repeated finding that quality of surgical results is one of the best predictors of the overall outcome of sex reassignment (Lawrence, 2006).

Other Surgeries

Other surgeries for assisting in body feminization include reduction thyroid chondroplasty (reduction of the Adam's apple), voice modification surgery, suction-assisted lipoplasty (contour modeling) of the waist, rhinoplasty (nose correction), facial bone reduction, face-lift, and blepharoplasty (rejuvenation of the eyelid). Other surgeries for assisting in body masculinization include liposuction, lipofilling, and pectoral implants. Voice surgery to obtain a deeper voice is rare but may be recommended in some cases, such as when hormone therapy has been ineffective.

Although these surgeries do not require referral by mental health professionals, such professionals can play an important role in assisting clients in making a fully informed decision about the timing and implications of such procedures in the context of the social transition.

Although most of these procedures are generally labeled “purely aesthetic,” these same operations in an individual with severe gender dysphoria can be considered medically necessary, depending on the unique clinical situation of a given patient's condition and life situation. This ambiguity reflects reality in clinical situations, and allows for individual decisions as to the need and desirability of these procedures.

XII

Postoperative Care and Follow-up

Long-term postoperative care and follow-up after surgical treatments for gender dysphoria are associated with good surgical and psychosocial outcomes (Monstrey et al., 2009). Follow-up is important to a patient's subsequent physical and mental health and to a surgeon's knowledge about the benefits and limitations of surgery. Surgeons who operate on patients coming from long

distances should include personal follow-up in their care plan and attempt to ensure affordable local long-term aftercare in their patients' geographic region.

Postoperative patients may sometimes exclude themselves from follow-up by specialty providers, including the hormone-prescribing physician (for patients receiving hormones), not recognizing that these providers are often best able to prevent, diagnose, and treat medical conditions that are unique to hormonally and surgically treated patients. The need for follow-up equally extends to mental health professionals, who may have spent a longer period of time with the patient than any other professional and therefore are in an excellent position to assist in any postoperative adjustment difficulties. Health professionals should stress the importance of postoperative follow-up care with their patients and offer continuity of care.

Postoperative patients should undergo regular medical screening according to recommended guidelines for their age. This is discussed more in the next section.

XIII

Lifelong Preventive and Primary Care

Transsexual, transgender, and gender nonconforming people need health care throughout their lives. For example, to avoid the negative secondary effects of having a gonadectomy at a relatively young age and/or receiving long-term, high-dose hormone therapy, patients need thorough medical care by providers experienced in primary care and transgender health. If one provider is not able to provide all services, ongoing communication among providers is essential.

Primary care and health maintenance issues should be addressed before, during, and after any possible changes in gender role and medical interventions to alleviate gender dysphoria. While hormone providers and surgeons play important roles in preventive care, every transsexual, transgender, and gender nonconforming person should partner with a primary care provider for overall health care needs (Feldman, 2007).

General Preventive Health Care

Screening guidelines developed for the general population are appropriate for organ systems that are unlikely to be affected by feminizing/masculinizing hormone therapy. However, in areas such

as cardiovascular risk factors, osteoporosis, and some cancers (breast, cervical, ovarian, uterine, and prostate), such general guidelines may either over- or underestimate the cost-effectiveness of screening individuals who are receiving hormone therapy.

Several resources provide detailed protocols for the primary care of patients undergoing feminizing/masculinizing hormone therapy, including therapy that is provided after sex reassignment surgeries (Center of Excellence for Transgender Health, UCSF, 2011; Feldman & Goldberg, 2006; Feldman, 2007; Gorton, Buth, & Spade, 2005). Clinicians should consult their national evidence-based guidelines and discuss screening with their patients in light of the effects of hormone therapy on their baseline risk.

Cancer Screening

Cancer screening of organ systems that are associated with sex can present particular medical and psychosocial challenges for transsexual, transgender, and gender nonconforming patients and their health care providers. In the absence of large-scale prospective studies, providers are unlikely to have enough evidence to determine the appropriate type and frequency of cancer screenings for this population. Over-screening results in higher health care costs, high false positive rates, and often unnecessary exposure to radiation and/or diagnostic interventions such as biopsies. Under-screening results in diagnostic delay for potentially treatable cancers. Patients may find cancer screening gender affirming (such as mammograms for MtF patients) or both physically and emotionally painful (such as Pap smears offer continuity of care for FtM patients).

Urogenital Care

Gynecologic care may be necessary for transsexual, transgender, and gender nonconforming people of both sexes. For FtM patients, such care is needed predominantly for individuals who have not had genital surgery. For MtF patients, such care is needed after genital surgery. While many surgeons counsel patients regarding postoperative urogenital care, primary care clinicians and gynecologists should also be familiar with the special genital concerns of this population.

All MtF patients should receive counseling regarding genital hygiene, sexuality, and prevention of sexually transmitted infections; those who have had genital surgery should also be counseled on the need for regular vaginal dilation or penetrative intercourse in order to maintain vaginal depth and width (van Trotsenburg, 2009). Due to the anatomy of the male pelvis, the axis and the dimensions

of the neovagina differ substantially from those of a biologic vagina. This anatomic difference can affect intercourse if not understood by MtF patients and their partners (van Trotsenburg, 2009).

Lower urinary tract infections occur frequently in MtF patients who have had surgery because of the reconstructive requirements of the shortened urethra. In addition, these patients may suffer from functional disorders of the lower urinary tract; such disorders may be caused by damage of the autonomous nerve supply of the bladder floor during dissection between the rectum and the bladder, and by a change of the position of the bladder itself. A dysfunctional bladder (e.g., overactive bladder, stress or urge urinary incontinence) may occur after sex reassignment surgery (Hoebeke et al., 2005; Kuhn, Hildebrand, & Birkhauser, 2007).

Most FtM patients do not undergo vaginectomy (colpectomy). For patients who take masculinizing hormones, despite considerable conversion of testosterone to estrogens, atrophic changes of the vaginal lining can be observed regularly and may lead to pruritus or burning. Examination can be both physically and emotionally painful, but lack of treatment can seriously aggravate the situation. Gynecologists treating the genital complaints of FtM patients should be aware of the sensitivity that patients with a male gender identity and masculine gender expression might have around having genitals typically associated with the female sex.

XIV

Applicability of the Standards of Care to People Living in Institutional Environments

The SOC in their entirety apply to all transsexual, transgender, and gender nonconforming people, irrespective of their housing situation. People should not be discriminated against in their access to appropriate health care based on where they live, including institutional environments such as prisons or long-/intermediate-term health care facilities (Brown, 2009). Health care for transsexual, transgender, and gender nonconforming people living in an institutional environment should mirror that which would be available to them if they were living in a non-institutional setting within the same community.

All elements of assessment and treatment as described in the SOC can be provided to people living in institutions (Brown, 2009). Access to these medically necessary treatments should not be denied on the basis of institutionalization or housing arrangements. If the in-house expertise of health professionals in the direct or indirect employ of the institution does not exist to assess

and/or treat people with gender dysphoria, it is appropriate to obtain outside consultation from professionals who are knowledgeable about this specialized area of health care.

People with gender dysphoria in institutions may also have co-existing mental health conditions (Cole et al., 1997). These conditions should be evaluated and treated appropriately.

People who enter an institution on an appropriate regimen of hormone therapy should be continued on the same, or similar, therapies and monitored according to the SOC. A “freeze frame” approach is not considered appropriate care in most situations (Kosilek v. Massachusetts Department of Corrections/Maloney, C.A. No. 92-12820-MLW, 2002). People with gender dysphoria who are deemed appropriate for hormone therapy (following the SOC) should be started on such therapy. The consequences of abrupt withdrawal of hormones or lack of initiation of hormone therapy when medically necessary include a high likelihood of negative outcomes such as surgical self-treatment by autocastration, depressed mood, dysphoria, and/or suicidality (Brown, 2010).

Reasonable accommodations to the institutional environment can be made in the delivery of care consistent with the SOC, if such accommodations do not jeopardize the delivery of medically necessary care to people with gender dysphoria. An example of a reasonable accommodation is the use of injectable hormones, if not medically contraindicated, in an environment where diversion of oral preparations is highly likely (Brown, 2009). Denial of needed changes in gender role or access to treatments, including sex reassignment surgery, on the basis of residence in an institution are not reasonable accommodations under the SOC (Brown, 2010).

Housing and shower/bathroom facilities for transsexual, transgender, and gender nonconforming people living in institutions should take into account their gender identity and role, physical status, dignity, and personal safety. Placement in a single-sex housing unit, ward, or pod on the sole basis of the appearance of the external genitalia may not be appropriate and may place the individual at risk for victimization (Brown, 2009).

Institutions where transsexual, transgender, and gender nonconforming people reside and receive health care should monitor for a tolerant and positive climate to ensure that residents are not under attack by staff or other residents.

XV

Applicability of the Standards of Care to People With Disorders of Sex Development

Terminology

The term *disorder of sex development* (DSD) refers to a somatic condition of atypical development of the reproductive tract (Hughes, Houk, Ahmed, Lee, & LWPE1/ESPE2 Consensus Group, 2006). DSDs include the condition that used to be called *intersexuality*. Although the terminology was changed to *DSD* during an international consensus conference in 2005 (Hughes et al., 2006), disagreement about language use remains. Some people object strongly to the “disorder” label, preferring instead to view these congenital conditions as a matter of diversity (Diamond, 2009) and to continue using the terms *intersex* or *intersexuality*. In the SOC, WPATH uses the term *DSD* in an objective and value-free manner, with the goal of ensuring that health professionals recognize this medical term and use it to access relevant literature as the field progresses. WPATH remains open to new terminology that will further illuminate the experience of members of this diverse population and lead to improvements in health care access and delivery.

Rationale for Addition to the SOC

Previously, individuals with a DSD who also met the *DSM-IV-TR*’s behavioral criteria for Gender Identity Disorder (American Psychiatric Association, 2000) were excluded from that general diagnosis. Instead, they were categorized as having a “Gender Identity Disorder - Not Otherwise Specified.” They were also excluded from the WPATH *Standards of Care*.

The current proposal for *DSM-5* (www.dsm5.org) is to replace the term *gender identity disorder* with *gender dysphoria*. Moreover, the proposed changes to the *DSM* consider gender dysphoric people with a DSD to have a subtype of gender dysphoria. This proposed categorization – which explicitly differentiates between gender dysphoric individuals with and without a DSD – is justified: In people with a DSD, gender dysphoria differs in its phenomenological presentation, epidemiology, life trajectories, and etiology (Meyer-Bahlburg, 2009).

Adults with a DSD and gender dysphoria have increasingly come to the attention of health professionals. Accordingly, a brief discussion of their care is included in this version of the SOC.

Health History Considerations

Health professionals assisting patients with both a DSD and gender dysphoria need to be aware that the medical context in which such patients have grown up is typically very different from that of people without a DSD.

Some people are recognized as having a DSD through the observation of gender-atypical genitals at birth. (Increasingly this observation is made during the prenatal period by way of imaging procedures such as ultrasound.) These infants then undergo extensive medical diagnostic procedures. After consultation among the family and health professionals – during which the specific diagnosis, physical and hormonal findings, and feedback from long-term outcome studies (Cohen-Kettenis, 2005; Dessens, Slijper, & Drop, 2005; Jurgensen, Hiort, Holterhus, & Thyen, 2007; Mazur, 2005; Meyer-Bahlburg, 2005; Stikkelbroeck et al., 2003; Wisniewski, Migeon, Malouf, & Gearhart, 2004) are considered – the newborn is assigned a sex, either male or female.

Other individuals with a DSD come to the attention of health professionals around the age of puberty through the observation of atypical development of secondary sex characteristics. This observation also leads to a specific medical evaluation.

The type of DSD and severity of the condition has significant implications for decisions about a patient's initial sex assignment, subsequent genital surgery, and other medical and psychosocial care (Meyer-Bahlburg, 2009). For instance, the degree of prenatal androgen exposure in individuals with a DSD has been correlated with the degree of masculinization of gender-related *behavior* (that is, *gender role and expression*); however, the correlation is only moderate, and considerable behavioral variability remains unaccounted for by prenatal androgen exposure (Jurgensen et al., 2007; Meyer-Bahlburg, Dolezal, Baker, Ehrhardt, & New, 2006). Notably, a similar correlation of prenatal hormone exposure with gender *identity* has not been demonstrated (e.g., Meyer-Bahlburg et al., 2004). This is underlined by the fact that people with the same (core) gender identity can vary widely in the degree of masculinization of their gender-related behavior.

Assessment and Treatment of Gender Dysphoria in People with Disorders of Sex Development

Very rarely are individuals with a DSD identified as having gender dysphoria *before* a DSD diagnosis has been made. Even so, a DSD diagnosis is typically apparent with an appropriate history and basic physical exam – both of which are part of a medical evaluation for the appropriateness of hormone therapy or surgical interventions for gender dysphoria. Mental health professionals should ask their clients presenting with gender dysphoria to have a physical exam, particularly if they are not currently seeing a primary care (or other health care) provider.

Most people with a DSD who are born with genital ambiguity do not develop gender dysphoria (e.g., Meyer-Bahlburg et al., 2004; Wisniewski et al., 2004). However, some people with a DSD will develop chronic gender dysphoria and even undergo a change in their birth-assigned sex and/or their gender role (Meyer-Bahlburg, 2005; Wilson, 1999; Zucker, 1999). If there are persistent and strong indications that gender dysphoria is present, a comprehensive evaluation by clinicians skilled in the assessment and treatment of gender dysphoria is essential, irrespective of the patient's age. Detailed recommendations have been published for conducting such an assessment and for making treatment decisions to address gender dysphoria in the context of a DSD (Meyer-Bahlburg, in press). Only after thorough assessment should steps be taken in the direction of changing a patient's birth-assigned sex or gender role.

Clinicians assisting these patients with treatment options to alleviate gender dysphoria may profit from the insights gained from providing care to patients without a DSD (Cohen-Kettenis, 2010). However, certain criteria for treatment (e.g., age, duration of experience with living in the desired gender role) are usually not routinely applied to people with a DSD; rather, the criteria are interpreted in light of a patient's specific situation (Meyer-Bahlburg, in press). In the context of a DSD, changes in birth-assigned sex and gender role have been made at any age between early elementary-school age and middle adulthood. Even genital surgery may be performed much earlier in these patients than in gender dysphoric individuals without a DSD if the surgery is well justified by the diagnosis, by the evidence-based gender-identity prognosis for the given syndrome and syndrome severity, and by the patient's wishes.

One reason for these treatment differences is that genital surgery in individuals with a DSD is quite common in infancy and adolescence. Infertility may already be present due to either early gonadal failure or to gonadectomy because of a malignancy risk. Even so, it is advisable for patients with a DSD to undergo a full social transition to another gender role only if there is a long-standing history of gender-atypical behavior, and if gender dysphoria and/or the desire to change one's gender role has been strong and persistent for a considerable period of time. Six months is the time period of full symptom expression required for the application of the gender dysphoria diagnosis proposed for *DSM-5* (Meyer-Bahlburg, in press).

Additional Resources

The gender-relevant medical histories of people with a DSD are often complex. Their histories may include a great variety of inborn genetic, endocrine, and somatic atypicalities, as well as various hormonal, surgical, and other medical treatments. For this reason, many additional issues need to be considered in the psychosocial and medical care of such patients, regardless of the presence of gender dysphoria. Consideration of these issues is beyond what can be covered in the SOC. The interested reader is referred to existing publications (e.g., Cohen-Kettenis & Pfäfflin, 2003; Meyer-Bahlburg, 2002, 2008). Some families and patients also find it useful to consult or work with community support groups.

There is a very substantial medical literature on the medical management of patients with a DSD. Much of this literature has been produced by high-level specialists in pediatric endocrinology and urology, with input from specialized mental health professionals, especially in the area of gender. Recent international consensus conferences have addressed evidence-based care guidelines (including issues of gender and of genital surgery) for DSD in general (Hughes et al., 2006) and specifically for Congenital Adrenal Hyperplasia (Joint LWPES/ESPE CAH Working Group et al., 2002; Speiser et al., 2010). Others have addressed the research needs for DSD in general (Meyer-Bahlburg & Blizzard, 2004) and for selected syndromes such as 46,XXY (Simpson et al., 2003).

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APPENDIX A

GLOSSARY

Terminology in the area of health care for transsexual, transgender, and gender nonconforming people is rapidly evolving; new terms are being introduced, and the definitions of existing terms are changing. Thus, there is often misunderstanding, debate, or disagreement about language in this field. Terms that may be unfamiliar or that have specific meanings in the SOC are defined below for the purpose of this document only. Others may adopt these definitions, but WPATH acknowledges that these terms may be defined differently in different cultures, communities, and contexts.

WPATH also acknowledges that many terms used in relation to this population are not ideal. For example, the terms *transsexual* and *transvestite* – and, some would argue, the more recent term *transgender* – have been applied to people in an objectifying fashion. Yet such terms have been more or less adopted by many people who are making their best effort to make themselves understood. By continuing to use these terms, WPATH intends only to ensure that concepts and processes are comprehensible, in order to facilitate the delivery of quality health care to transsexual, transgender, and gender nonconforming people. WPATH remains open to new terminology that will further illuminate the experience of members of this diverse population and lead to improvements in health care access and delivery.

Bioidentical hormones: Hormones that are *structurally* identical to those found in the human body (ACOG Committee of Gynecologic Practice, 2005). The hormones used in bioidentical hormone therapy (BHT) are generally derived from plant sources and are structurally similar to endogenous human hormones, but they need to be commercially processed to become bioidentical.

Bioidentical compounded hormone therapy (BCHT): Use of hormones that are prepared, mixed, assembled, packaged, or labeled as a drug by a pharmacist and custom-made for a patient according to a physician’s specifications. Government drug agency approval is not possible for each compounded product made for an individual consumer.

Crossdressing (transvestism): Wearing clothing and adopting a gender role presentation that, in a given culture, is more typical of the other sex.

Disorders of sex development (DSD): Congenital conditions in which the development of chromosomal, gonadal, or anatomic sex is atypical. Some people strongly object to the “disorder” label and instead view these conditions as a matter of diversity (Diamond, 2009), preferring the terms *intersex* and *intersexuality*.

Female-to-Male (FtM): Adjective to describe individuals assigned female at birth who are changing or who have changed their body and/or gender role from birth-assigned female to a more masculine body or role.

Gender dysphoria: Distress that is caused by a discrepancy between a person's gender identity and that person's sex assigned at birth (and the associated gender role and/or primary and secondary sex characteristics) (Fisk, 1974; Knudson, De Cuypere, & Bockting, 2010b).

Gender identity: A person's intrinsic sense of being male (a boy or a man), female (a girl or woman), or an alternative gender (e.g., boygirl, girlboy, transgender, genderqueer, eunuch) (Bockting, 1999; Stoller, 1964).

Gender identity disorder: Formal diagnosis set forth by the *Diagnostic Statistical Manual of Mental Disorders, 4th Edition, Text Rev (DSM IV-TR)* (American Psychiatric Association, 2000). Gender identity disorder is characterized by a strong and persistent cross-gender identification and a persistent discomfort with one's sex or sense of inappropriateness in the gender role of that sex, causing clinically significant distress or impairment in social, occupational, or other important areas of functioning.

Gender nonconforming: Adjective to describe individuals whose gender identity, role, or expression differs from what is normative for their assigned sex in a given culture and historical period.

Gender role or expression: Characteristics in personality, appearance, and behavior that in a given culture and historical period are designated as masculine or feminine (that is, more typical of the male or female social role) (Ruble, Martin, & Berenbaum, 2006). While most individuals present socially in clearly male or female gender roles, some people present in an alternative gender role such as genderqueer or specifically transgender. All people tend to incorporate both masculine and feminine characteristics in their gender expression in varying ways and to varying degrees (Bockting, 2008).

Genderqueer: Identity label that may be used by individuals whose gender identity and/or role does not conform to a binary understanding of gender as limited to the categories of man or woman, male or female (Bockting, 2008).

Male-to-Female (MtF): Adjective to describe individuals assigned male at birth who are changing or who have changed their body and/or gender role from birth-assigned male to a more feminine body or role.

Natural hormones: Hormones that are derived from natural *sources* such as plants or animals. Natural hormones may or may not be bioidentical.

Sex: Sex is assigned at birth as male or female, usually based on the appearance of the external genitalia. When the external genitalia are ambiguous, other components of sex (internal genitalia, chromosomal and hormonal sex) are considered in order to assign sex (Grumbach, Hughes, & Conte,

2003; MacLaughlin & Donahoe, 2004; Money & Ehrhardt, 1972; Vilain, 2000). For most people, gender identity and expression are consistent with their sex assigned at birth; for transsexual, transgender, and gender nonconforming individuals, gender identity or expression differ from their sex assigned at birth.

Sex reassignment surgery (gender affirmation surgery): Surgery to change primary and/or secondary sex characteristics to affirm a person's gender identity. Sex reassignment surgery can be an important part of medically necessary treatment to alleviate gender dysphoria.

Transgender: Adjective to describe a diverse group of individuals who cross or transcend culturally-defined categories of gender. The gender identity of transgender people differs to varying degrees from the sex they were assigned at birth (Bockting, 1999).

Transition: Period of time when individuals change from the gender role associated with their sex assigned at birth to a different gender role. For many people, this involves learning how to live socially in "the other" gender role; for others this means finding a gender role and expression that is most comfortable for them. Transition may or may not include feminization or masculinization of the body through hormones or other medical procedures. The nature and duration of transition is variable and individualized.

Transphobia, internalized: Discomfort with one's own transgender feelings or identity as a result of internalizing society's normative gender expectations.

Transsexual: Adjective (often applied by the medical profession) to describe individuals who seek to change or who have changed their primary and/or secondary sex characteristics through feminizing or masculinizing medical interventions (hormones and/or surgery), typically accompanied by a permanent change in gender role.

APPENDIX B

OVERVIEW OF MEDICAL RISKS OF HORMONE THERAPY

The risks outlined below are based on two comprehensive, evidence-based literature reviews of masculinizing/feminizing hormone therapy (Feldman & Safer, 2009; Hembree et al., 2009), along with a large cohort study (Asscheman et al., 2011). These reviews can serve as detailed references for providers, along with other widely recognized, published clinical materials (e.g., Dahl et al., 2006; Ettner et al., 2007).

Risks of Feminizing Hormone Therapy (MtF)

Likely increased risk:

Venous thromboembolic disease

- Estrogen use increases the risk of venous thromboembolic events (VTE), particularly in patients who are over age 40, smokers, highly sedentary, obese, and who have underlying thrombophilic disorders.
- This risk is increased with the additional use of third generation progestins.
- This risk is decreased with use of the transdermal route of estradiol administration, which is recommended for patients at higher risk of VTE.

Cardiovascular, cerebrovascular disease

- Estrogen use increases the risk of cardiovascular events in patients over age 50 with underlying cardiovascular risk factors. Additional progestin use may increase this risk.

Lipids

- Oral estrogen use may markedly increase triglycerides in patients, increasing the risk of pancreatitis and cardiovascular events.
- Different routes of administration will have different metabolic effects on levels of HDL cholesterol, LDL cholesterol and lipoprotein(a).
- In general, clinical evidence suggests that MtF patients with pre-existing lipid disorders may benefit from the use of transdermal rather than oral estrogen.

Liver/gallbladder

- Estrogen and cyproterone acetate use may be associated with transient liver enzyme elevations and, rarely, clinical hepatotoxicity.
- Estrogen use increases the risk of cholelithiasis (gall stones) and subsequent cholecystectomy.

Possible increased risk:

Type 2 diabetes mellitus

- Feminizing hormone therapy, particularly estrogen, may increase the risk of type 2 diabetes, particularly among patients with a family history of diabetes or other risk factors for this disease.

Hypertension

- Estrogen use may increase blood pressure, but the effect on incidence of overt hypertension is unknown.
- Spironolactone reduces blood pressure and is recommended for at-risk or hypertensive patients desiring feminization.

Prolactinoma

- Estrogen use increases the risk of hyperprolactinemia among MtF patients in the first year of treatment, but this risk unlikely thereafter.
- High-dose estrogen use may promote the clinical appearance of preexisting but clinically unapparent prolactinoma.

Inconclusive or no increased risk: Items in this category include those that may present risk, but for which the evidence is so minimal that no clear conclusion can be reached.

Breast cancer

- MtF persons who have taken feminizing hormones do experience breast cancer, but it is unknown how their degree of risk compares to that of persons born with female genitalia.
- Longer duration of feminizing hormone exposure (i.e., number of years taking estrogen preparations), family history of breast cancer, obesity (BMI >35), and the use of progestins likely influence the level of risk.

Other side effects of feminizing therapy:

The following effects may be considered minor or even desired, depending on the patient, but are clearly associated with feminizing hormone therapy.

Fertility and sexual function

- Feminizing hormone therapy may impair fertility.
- Feminizing hormone therapy may decrease libido.
- Feminizing hormone therapy reduces nocturnal erections, with variable impact on sexually stimulated erections.

Risks of anti-androgen medications:

Feminizing hormone regimens often include a variety of agents that affect testosterone production or action. These include GnRH agonists, progestins (including cyproterone acetate), spironolactone, and 5-alpha reductase inhibitors. An extensive discussion of the specific risks of these agents is beyond the scope of the SOC. However, both spironolactone and cyproterone acetate are widely used and deserve some comment.

Cyproterone acetate is a progestational compound with anti-androgenic properties (Gooren, 2005; Levy et al., 2003). Although widely used in Europe, it is not approved for use in the United States because of concerns about hepatotoxicity (Thole, Manso, Salgueiro, Revuelta, & Hidalgo, 2004). Spironolactone is commonly used as an anti-androgen in feminizing hormone therapy, particularly in regions where cyproterone is not approved for use (Dahl et al., 2006; Moore et al., 2003; Tangpricha et al., 2003). Spironolactone has a long history of use in treating hypertension and congestive heart failure. Its common side effects include hyperkalemia, dizziness, and gastrointestinal symptoms (*Physicians' Desk Reference*, 2007).

Risks of Masculinizing Hormone Therapy (FtM)

Likely increased risk:

Polycythemia

- Masculinizing hormone therapy involving testosterone or other androgenic steroids increases the risk of polycythemia (hematocrit > 50%), particularly in patients with other risk factors.
- Transdermal administration and adaptation of dosage may reduce this risk

Weight gain/visceral fat

- Masculinizing hormone therapy can result in modest weight gain, with an increase in visceral fat.

Possible increased risk:

Lipids

- Testosterone therapy decreases HDL, but variably affects LDL and triglycerides.
- Supraphysiologic (beyond normal male range) serum levels of testosterone, often found with extended intramuscular dosing, may worsen lipid profiles, whereas transdermal administration appears to be more lipid neutral.
- Patients with underlying polycystic ovarian syndrome or dyslipidemia may be at increased risk of worsening dyslipidemia with testosterone therapy.

Liver

- Transient elevations in liver enzymes may occur with testosterone therapy.
- Hepatic dysfunction and malignancies have been noted with oral methyltestosterone. However, methyltestosterone is no longer available in most countries and should no longer be used.

Psychiatric

Masculinizing therapy involving testosterone or other androgenic steroids may increase the risk of hypomanic, manic, or psychotic symptoms in patients with underlying psychiatric disorders that include such symptoms. This adverse event appears to be associated with higher doses or supraphysiologic blood levels of testosterone

Inconclusive or no increased risk: Items in this category include those that may present risk, but for which the evidence is so minimal that no clear conclusion can be reached.

Osteoporosis

- Testosterone therapy maintains or increases bone mineral density among FtM patients prior to oophorectomy, at least in the first three years of treatment.
- There is an increased risk of bone density loss after oophorectomy, particularly if testosterone therapy is interrupted or insufficient. This includes patients utilizing solely oral testosterone.

Cardiovascular

- Masculinizing hormone therapy at normal physiologic doses does not appear to increase the risk of cardiovascular events among healthy patients.
- Masculinizing hormone therapy may increase the risk of cardiovascular disease in patients with underlying risks factors.

Hypertension

- Masculinizing hormone therapy at normal physiologic doses may increase blood pressure but does not appear to increase the risk of hypertension.
- Patients with risk factors for hypertension, such as weight gain, family history, or polycystic ovarian syndrome, may be at increased risk.

Type 2 diabetes mellitus

- Testosterone therapy does not appear to increase the risk of type 2 diabetes among FtM patients overall.

- Testosterone therapy may further increase the risk of type 2 diabetes in patients with other risk factors, such as significant weight gain, family history, and polycystic ovarian syndrome. There are no data that suggest or show an increase in risk in those with risk factors for dyslipidemia.

Breast cancer

- Testosterone therapy in FtM patients does not increase the risk of breast cancer.

Cervical cancer

- Testosterone therapy in FtM patients does not increase the risk of cervical cancer, although it may increase the risk of minimally abnormal Pap smears due to atrophic changes.

Ovarian cancer

- Analogous to persons born with female genitalia with elevated androgen levels, testosterone therapy in FtM patients may increase the risk of ovarian cancer, although evidence is limited.

Endometrial (uterine) cancer

- Testosterone therapy in FtM patients may increase the risk of endometrial cancer, although evidence is limited.

Other side effects of masculinizing therapy:

The following effects may be considered minor or even desired, depending on the patient, but are clearly associated with masculinization.

Fertility and sexual function

- Testosterone therapy in FtM patients reduces fertility, although the degree and reversibility are unknown.
- Testosterone therapy can induce permanent anatomic changes in the developing embryo or fetus.
- Testosterone therapy induces clitoral enlargement and increases libido.

Acne, androgenic alopecia

Acne and varying degrees of male pattern hair loss (androgenic alopecia) are common side effects of masculinizing hormone therapy.

APPENDIX C

SUMMARY OF CRITERIA FOR HORMONE THERAPY AND SURGERIES

As for all previous versions of the SOC, the criteria put forth in the SOC for hormone therapy and surgical treatments for gender dysphoria are clinical guidelines; individual health professionals and programs may modify them. Clinical departures from the SOC may come about because of a patient's unique anatomic, social, or psychological situation; an experienced health professional's evolving method of handling a common situation; a research protocol; lack of resources in various parts of the world; or the need for specific harm reduction strategies. These departures should be recognized as such, explained to the patient, and documented through informed consent for quality patient care and legal protection. This documentation is also valuable to accumulate new data, which can be retrospectively examined to allow for health care – and the SOC – to evolve.

Criteria for Feminizing/Masculinizing Hormone Therapy (one referral or chart documentation of psychosocial assessment)

1. Persistent, well-documented gender dysphoria;
2. Capacity to make a fully informed decision and to consent for treatment;
3. Age of majority in a given country (if younger, follow the SOC for children and adolescents);
4. If significant medical or mental concerns are present, they must be reasonably well-controlled.

Criteria for Breast/Chest Surgery (one referral)

Mastectomy and creation of a male chest in FtM patients:

1. Persistent, well-documented gender dysphoria;
2. Capacity to make a fully informed decision and to consent for treatment;
3. Age of majority in a given country (if younger, follow the SOC for children and adolescents);
4. If significant medical or mental health concerns are present, they must be reasonably well controlled.

Hormone therapy is not a pre-requisite.

Breast augmentation (implants/lipofilling) in MtF patients:

1. Persistent, well-documented gender dysphoria;
2. Capacity to make a fully informed decision and to consent for treatment;
3. Age of majority in a given country (if younger, follow the SOC for children and adolescents);
4. If significant medical or mental health concerns are present, they must be reasonably well controlled.

Although not an explicit criterion, it is recommended that MtF patients undergo feminizing hormone therapy (minimum 12 months) prior to breast augmentation surgery. The purpose is to maximize breast growth in order to obtain better surgical (aesthetic) results.

Criteria for genital surgery (two referrals)

Hysterectomy and ovariectomy in FtM patients and orchiectomy in MtF patients:

1. Persistent, well documented gender dysphoria;

2. Capacity to make a fully informed decision and to consent for treatment;
3. Age of majority in a given country;
4. If significant medical or mental health concerns are present, they must be well controlled;
5. 12 continuous months of hormone therapy as appropriate to the patient's gender goals (unless the patient has a medical contraindication or is otherwise unable or unwilling to take hormones).

The aim of hormone therapy prior to gonadectomy is primarily to introduce a period of reversible estrogen or testosterone suppression, before a patient undergoes irreversible surgical intervention.

These criteria do not apply to patients who are having these surgical procedures for medical indications other than gender dysphoria.

Metoidioplasty or phalloplasty in FtM patients and vaginoplasty in MtF patients:

1. Persistent, well documented gender dysphoria;
2. Capacity to make a fully informed decision and to consent for treatment;
3. Age of majority in a given country;
4. If significant medical or mental health concerns are present, they must be well controlled;
5. 12 continuous months of hormone therapy as appropriate to the patient's gender goals (unless the patient has a medical contraindication or is otherwise unable or unwilling to take hormones);
6. 12 continuous months of living in a gender role that is congruent with their gender identity.

Although not an explicit criterion, it is recommended that these patients also have regular visits with a mental health or other medical professional.

The criterion noted above for some types of genital surgeries – i.e., that patients engage in 12 continuous months of living in a gender role that is congruent with their gender identity – is based on expert clinical consensus that this experience provides ample opportunity for patients to experience and socially adjust in their desired gender role, before undergoing irreversible surgery.

APPENDIX D

EVIDENCE FOR CLINICAL OUTCOMES OF THERAPEUTIC APPROACHES

One of the real supports for any new therapy is an outcome analysis. Because of the controversial nature of sex reassignment surgery, this type of analysis has been very important. Almost all of the outcome studies in this area have been retrospective.

One of the first studies to examine the post-treatment psychosocial outcomes of transsexual patients was done in 1979 at Johns Hopkins University School of Medicine and Hospital (USA) (J. K. Meyer & Reter, 1979). This study focused on patients' occupational, educational, marital, and domiciliary stability. The results revealed several significant changes with treatment. These changes were not seen as positive; rather, they showed that many individuals who had entered the treatment program were no better off or were worse off in many measures after participation in the program. These findings resulted in closure of the treatment program at that hospital/medical school (Abramowitz, 1986).

Subsequently, a significant number of health professionals called for a standard for eligibility for sex reassignment surgery. This led to the formulation of the original *Standards of Care* of the Harry Benjamin International Gender Dysphoria Association (now WPATH) in 1979.

In 1981, Pauly published results from a large retrospective study of people who underwent sex reassignment surgery. Participants in that study had much better outcomes: Among 83 FtM patients, 80.7% had a satisfactory outcome (i.e., patient self report of "improved social and emotional adjustment"), 6.0% unsatisfactory. Among 283 MtF patients, 71.4% had a satisfactory outcome, 8.1% unsatisfactory. This study included patients who were treated before the publication and use of the *Standards of Care*.

Since the *Standards of Care* have been in place, there has been a steady increase in patient satisfaction and decrease in dissatisfaction with the outcome of sex reassignment surgery. Studies conducted after 1996 focused on patients who were treated according to the *Standards of Care*. The findings of Rehman and colleagues (1999) and Krege and colleagues (2001) are typical of this body of work; none of the patients in these studies regretted having had surgery, and most reported being satisfied with the cosmetic and functional results of the surgery. Even patients who develop severe surgical complications seldom regret having undergone surgery. Quality of surgical results is one of the best predictors of the overall outcome of sex reassignment (Lawrence, 2003). The vast majority of follow-up studies have shown an undeniable beneficial effect of sex reassignment surgery on postoperative outcomes such as subjective well being, cosmesis, and sexual function (De Cuypere et al., 2005; Garaffa, Christopher, & Ralph, 2010; Klein & Gorzalka, 2009), although the specific magnitude of benefit is uncertain from

the currently available evidence. One study (Emory, Cole, Avery, Meyer, & Meyer III, 2003) even showed improvement in patient income.

One troubling report (Newfield et al., 2006) documented lower scores on quality of life (measured with the SF-36) for FtM patients than for the general population. A weakness of that study is that it recruited its 384 participants by a general email rather than a systematic approach, and the degree and type of treatment was not recorded. Study participants who were taking testosterone had typically been doing so for less than 5 years. Reported quality of life was higher for patients who had undergone breast/chest surgery than for those who had not ($p < .001$). (A similar analysis was not done for genital surgery). In other work, Kuhn and colleagues (2009) used the King's Health Questionnaire to assess the quality of life of 55 transsexual patients at 15 years after surgery. Scores were compared to those of 20 healthy female control patients who had undergone abdominal/pelvic surgery in the past. Quality of life scores for transsexual patients were the same or better than those of control patients for some subscales (emotions, sleep, incontinence, symptom severity, and role limitation), but worse in other domains (general health, physical limitation, and personal limitation).

It is difficult to determine the effectiveness of hormones alone in the relief of gender dysphoria. Most studies evaluating the effectiveness of masculinizing/feminizing hormone therapy on gender dysphoria have been conducted with patients who have also undergone sex reassignment surgery. Favorable effects of therapies that included both hormones and surgery were reported in a comprehensive review of over 2000 patients in 79 studies (mostly observational) conducted between 1961 and 1991 (Eldh, Berg, & Gustafsson, 1997; Gijs & Brewaeys, 2007; Murad et al., 2010; Pfäfflin & Junge, 1998). Patients operated on after 1986 did better than those before 1986; this reflects significant improvement in surgical complications (Eldh et al., 1997). Most patients have reported improved psychosocial outcomes, ranging between 87% for MtF patients and 97% for FtM patients (Green & Fleming, 1990). Similar improvements were found in a Swedish study in which “almost all patients were satisfied with sex reassignment at 5 years, and 86% were assessed by clinicians at follow-up as stable or improved in global functioning” (Johansson, Sundbom, Höjerback, & Bodlund, 2010). Weaknesses of these earlier studies are their retrospective design and use of different criteria to evaluate outcomes.

A prospective study conducted in the Netherlands evaluated 325 consecutive adult and adolescent subjects seeking sex reassignment (Smith, Van Goozen, Kuiper, & Cohen-Kettenis, 2005). Patients who underwent sex reassignment therapy (both hormonal and surgical intervention) showed improvements in their mean gender dysphoria scores, measured by the Utrecht Gender Dysphoria Scale. Scores for body dissatisfaction and psychological function also improved in most categories. Fewer than 2% of patients expressed regret after therapy. This is the largest prospective study to affirm the results from retrospective studies that a combination of hormone therapy and surgery improves gender dysphoria and other areas of psychosocial functioning. There is a need for further research on the effects of hormone therapy without surgery, and without the goal of maximum physical feminization or masculinization.

Overall, studies have been reporting a steady improvement in outcomes as the field becomes more advanced. Outcome research has mainly focused on the outcome of sex reassignment surgery. In current practice there is a range of identity, role, and physical adaptations that could use additional follow-up or outcome research (Institute of Medicine, 2011).

APPENDIX E

DEVELOPMENT PROCESS FOR THE STANDARDS OF CARE, VERSION 7

The process of developing *Standards of Care, Version 7* began when an initial SOC “work group” was established in 2006. Members were invited to examine specific sections of SOC, *Version 6*. For each section, they were asked to review the relevant literature, identify where research was lacking and needed, and recommend potential revisions to the SOC as warranted by new evidence. Invited papers were submitted by the following authors: Aaron Devor, Walter Bockting, George Brown, Michael Brownstein, Peggy Cohen-Kettenis, Griet DeCuypere, Petra DeSutter, Jamie Feldman, Lin Fraser, Arlene Istar Lev, Stephen Levine, Walter Meyer, Heino Meyer-Bahlburg, Stan Monstrey, Loren Schechter, Mick van Trotsenburg, Sam Winter, and Ken Zucker. Some of these authors chose to add co-authors to assist them in their task.

Initial drafts of these papers were due June 1, 2007. Most were completed by September 2007, with the rest completed by the end of 2007. These manuscripts were then submitted to the *International Journal of Transgenderism (IJT)*. Each underwent the regular *IJT* peer review process. The final papers were published in Volume 11 (1-4) in 2009, making them available for discussion and debate.

After these articles were published, a *Standards of Care* Revision Committee was established by the WPATH Board of Directors in 2010. The Revision Committee was first charged with debating and discussing the *IJT* background papers through a Google website. A subgroup of the Revision Committee was appointed by the Board of Directors to serve as the Writing Group. This group was charged with preparing the first draft of SOC, *Version 7* and continuing to work on revisions for consideration by the broader Revision Committee. The Board also appointed an International Advisory Group of transsexual, transgender, and gender nonconforming individuals to give input on the revision.

A technical writer was hired to (1) review all of the recommendations for revision – both the original recommendations as outlined in the *IJT* articles and additional recommendations that emanated from the online discussion – and (2) create a survey to solicit further input on these potential revisions. From the survey results, the Writing Group was able to discern where these experts stood in terms of areas of agreement and areas in need of more discussion and debate. The technical writer then (3) created a very rough first draft of SOC, *Version 7* for the Writing Group to consider and build on.

The Writing Group met on March 4 and 5, 2011 in a face-to-face expert consultation meeting. They reviewed all recommended changes and debated and came to consensus on various controversial areas. Decisions were made based on the best available science and expert consensus. These decisions were incorporated into the draft, and additional sections were written by the Writing Group with the assistance of the technical writer.

The draft that emerged from the consultation meeting was then circulated among the Writing Group and finalized with the help of the technical writer. Once this initial draft was finalized it was circulated among the broader SOC Revision Committee and the International Advisory Group. Discussion was opened up on the Google website and a conference call was held to resolve issues. Feedback from these groups was considered by the Writing Group, who then made further revision. Two additional drafts were created and posted on the Google website for consideration by the broader SOC Revision Committee and the International Advisory Group. Upon completion of these three iterations of review and revision, the final document was presented to the WPATH Board of Directors for approval. The Board of Directors approved this version on September 14, 2011.

The plans are to disseminate this version of the SOC and invite feedback for further revisions. The WPATH Board of Directors decides the timing of any revision of the SOC.

Funding

The *Standards of Care* revision process was made possible through a generous grant from the Tawani Foundation and a gift from an anonymous donor. These funds supported the following:

1. Costs of a professional technical writer;
2. Process of soliciting international input on proposed changes from gender identity professionals and the transgender community;
3. Working meeting of the Writing Group;
4. Process of gathering additional feedback and arriving at final expert consensus from the professional and transgender communities, the *Standards of Care, Version 7* Revision Committee, and WPATH Board of Directors;
5. Costs of printing and distributing *Standards of Care, Version 7* and posting a free downloadable copy on the WPATH website;

6. Plenary session to launch the *Standards of Care, Version 7* at the 2011 WPATH Biennial Symposium in Atlanta, Georgia, USA.

Members of the Standards of Care Revision Committee¹

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All members of the *Standards of Care, Version 7 Revision Committee* donated their time to work on this revision.

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Dear Colleague Letter on Transgender Students Notice of Language Assistance

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U.S. Department of Justice
Civil Rights Division



U.S. Department of Education
Office for Civil Rights

May 13, 2016

Dear Colleague:

Schools across the country strive to create and sustain inclusive, supportive, safe, and nondiscriminatory communities for all students. In recent years, we have received an increasing number of questions from parents, teachers, principals, and school superintendents about civil rights protections for transgender students. Title IX of the Education Amendments of 1972 (Title IX) and its implementing regulations prohibit sex discrimination in educational programs and activities operated by recipients of Federal financial assistance.¹ This prohibition encompasses discrimination based on a student's gender identity, including discrimination based on a student's transgender status. This letter summarizes a school's Title IX obligations regarding transgender students and explains how the U.S. Department of Education (ED) and the U.S. Department of Justice (DOJ) evaluate a school's compliance with these obligations.

ED and DOJ (the Departments) have determined that this letter is *significant guidance*.² This guidance does not add requirements to applicable law, but provides information and examples to inform recipients about how the Departments evaluate whether covered entities are complying with their legal obligations. If you have questions or are interested in commenting on this guidance, please contact ED at ocr@ed.gov or 800-421-3481 (TDD 800-877-8339); or DOJ at education@usdoj.gov or 877-292-3804 (TTY: 800-514-0383).

Accompanying this letter is a separate document from ED's Office of Elementary and Secondary Education, *Examples of Policies and Emerging Practices for Supporting Transgender Students*. The examples in that document are taken from policies that school districts, state education agencies, and high school athletics associations around the country have adopted to help ensure that transgender students enjoy a supportive and nondiscriminatory school environment. Schools are encouraged to consult that document for practical ways to meet Title IX's requirements.³

Terminology

- ☐ *Gender identity* refers to an individual's internal sense of gender. A person's gender identity may be different from or the same as the person's sex assigned at birth.
- ☐ *Sex assigned at birth* refers to the sex designation recorded on an infant's birth certificate should such a record be provided at birth.
- ☐ *Transgender* describes those individuals whose gender identity is different from the sex they were assigned at birth. A *transgender male* is someone who identifies as male but was assigned the sex of female at birth; a *transgender female* is someone who identifies as female but was assigned the sex of male at birth.

- *Gender transition* refers to the process in which transgender individuals begin asserting the sex that corresponds to their gender identity instead of the sex they were assigned at birth. During gender transition, individuals begin to live and identify as the sex consistent with their gender identity and may dress differently, adopt a new name, and use pronouns consistent with their gender identity. Transgender individuals may undergo gender transition at any stage of their lives, and gender transition can happen swiftly or over a long duration of time.

Compliance with Title IX

As a condition of receiving Federal funds, a school agrees that it will not exclude, separate, deny benefits to, or otherwise treat differently on the basis of sex any person in its educational programs or activities unless expressly authorized to do so under Title IX or its implementing regulations.⁴ The Departments treat a student's gender identity as the student's sex for purposes of Title IX and its implementing regulations. This means that a school must not treat a transgender student differently from the way it treats other students of the same gender identity. The Departments' interpretation is consistent with courts' and other agencies' interpretations of Federal laws prohibiting sex discrimination.⁵

The Departments interpret Title IX to require that when a student or the student's parent or guardian, as appropriate, notifies the school administration that the student will assert a gender identity that differs from previous representations or records, the school will begin treating the student consistent with the student's gender identity. Under Title IX, there is no medical diagnosis or treatment requirement that students must meet as a prerequisite to being treated consistent with their gender identity.⁶ Because transgender students often are unable to obtain identification documents that reflect their gender identity (e.g., due to restrictions imposed by state or local law in their place of birth or residence),⁷ requiring students to produce such identification documents in order to treat them consistent with their gender identity may violate Title IX when doing so has the practical effect of limiting or denying students equal access to an educational program or activity.

A school's Title IX obligation to ensure nondiscrimination on the basis of sex requires schools to provide transgender students equal access to educational programs and activities even in circumstances in which other students, parents, or community members raise objections or concerns. As is consistently recognized in civil rights cases, the desire to accommodate others' discomfort cannot justify a policy that singles out and disadvantages a particular class of students.⁸

1. Safe and Nondiscriminatory Environment

Schools have a responsibility to provide a safe and nondiscriminatory environment for all students, including transgender students. Harassment that targets a student based on gender identity, transgender status, or gender transition is harassment based on sex, and the Departments enforce Title IX accordingly.⁹ If sex-based harassment creates a hostile environment, the school must take prompt and effective steps to end the harassment, prevent its recurrence, and, as appropriate, remedy its effects. A school's failure to treat students consistent with their gender identity may create or contribute to a hostile environment in violation of Title IX. For a more detailed discussion of Title IX

requirements related to sex-based harassment, see guidance documents from ED's Office for Civil Rights (OCR) that are specific to this topic.¹⁰

2. Identification Documents, Names, and Pronouns

Under Title IX, a school must treat students consistent with their gender identity even if their education records or identification documents indicate a different sex. The Departments have resolved Title IX investigations with agreements committing that school staff and contractors will use pronouns and names consistent with a transgender student's gender identity.¹¹

3. Sex-Segregated Activities and Facilities

Title IX's implementing regulations permit a school to provide sex-segregated restrooms, locker rooms, shower facilities, housing, and athletic teams, as well as single-sex classes under certain circumstances.¹² When a school provides sex-segregated activities and facilities, transgender students must be allowed to participate in such activities and access such facilities consistent with their gender identity.¹³

- ☐ **Restrooms and Locker Rooms.** A school may provide separate facilities on the basis of sex, but must allow transgender students access to such facilities consistent with their gender identity.¹⁴ A school may not require transgender students to use facilities inconsistent with their gender identity or to use individual-user facilities when other students are not required to do so. A school may, however, make individual-user options available to all students who voluntarily seek additional privacy.¹⁵
- ☐ **Athletics.** Title IX regulations permit a school to operate or sponsor sex-segregated athletics teams when selection for such teams is based upon competitive skill or when the activity involved is a contact sport.¹⁶ A school may not, however, adopt or adhere to requirements that rely on overly broad generalizations or stereotypes about the differences between transgender students and other students of the same sex (*i.e.*, the same gender identity) or others' discomfort with transgender students.¹⁷ Title IX does not prohibit age-appropriate, tailored requirements based on sound, current, and research-based medical knowledge about the impact of the students' participation on the competitive fairness or physical safety of the sport.¹⁸
- ☐ **Single-Sex Classes.** Although separating students by sex in classes and activities is generally prohibited, nonvocational elementary and secondary schools may offer nonvocational single-sex classes and extracurricular activities under certain circumstances.¹⁹ When offering such classes and activities, a school must allow transgender students to participate consistent with their gender identity.
- ☐ **Single-Sex Schools.** Title IX does not apply to the admissions policies of certain educational institutions, including nonvocational elementary and secondary schools, and private undergraduate colleges.²⁰ Those schools are therefore permitted under Title IX to set their own

sex-based admissions policies. Nothing in Title IX prohibits a private undergraduate women's college from admitting transgender women if it so chooses.

- **Social Fraternities and Sororities.** Title IX does not apply to the membership practices of social fraternities and sororities.²¹ Those organizations are therefore permitted under Title IX to set their own policies regarding the sex, including gender identity, of their members. Nothing in Title IX prohibits a fraternity from admitting transgender men or a sorority from admitting transgender women if it so chooses.
- **Housing and Overnight Accommodations.** Title IX allows a school to provide separate housing on the basis of sex.²² But a school must allow transgender students to access housing consistent with their gender identity and may not require transgender students to stay in single-occupancy accommodations or to disclose personal information when not required of other students. Nothing in Title IX prohibits a school from honoring a student's voluntary request for single-occupancy accommodations if it so chooses.²³
- **Other Sex-Specific Activities and Rules.** Unless expressly authorized by Title IX or its implementing regulations, a school may not segregate or otherwise distinguish students on the basis of their sex, including gender identity, in any school activities or the application of any school rule. Likewise, a school may not discipline students or exclude them from participating in activities for appearing or behaving in a manner that is consistent with their gender identity or that does not conform to stereotypical notions of masculinity or femininity (e.g., in yearbook photographs, at school dances, or at graduation ceremonies).²⁴

4. Privacy and Education Records

Protecting transgender students' privacy is critical to ensuring they are treated consistent with their gender identity. The Departments may find a Title IX violation when a school limits students' educational rights or opportunities by failing to take reasonable steps to protect students' privacy related to their transgender status, including their birth name or sex assigned at birth.²⁵ Nonconsensual disclosure of personally identifiable information (PII), such as a student's birth name or sex assigned at birth, could be harmful to or invade the privacy of transgender students and may also violate the Family Educational Rights and Privacy Act (FERPA).²⁶ A school may maintain records with this information, but such records should be kept confidential.

- **Disclosure of Personally Identifiable Information from Education Records.** FERPA generally prevents the nonconsensual disclosure of PII from a student's education records; one exception is that records may be disclosed to individual school personnel who have been determined to have a legitimate educational interest in the information.²⁷ Even when a student has disclosed the student's transgender status to some members of the school community, schools may not rely on this FERPA exception to disclose PII from education records to other school personnel who do not have a legitimate educational interest in the information. Inappropriately disclosing (or requiring students or their parents to disclose) PII from education records to the school community may

violate FERPA and interfere with transgender students' right under Title IX to be treated consistent with their gender identity.

- **Disclosure of Directory Information.** Under FERPA's implementing regulations, a school may disclose appropriately designated directory information from a student's education record if disclosure would not generally be considered harmful or an invasion of privacy.²⁸ Directory information may include a student's name, address, telephone number, date and place of birth, honors and awards, and dates of attendance.²⁹ School officials may not designate students' sex, including transgender status, as directory information because doing so could be harmful or an invasion of privacy.³⁰ A school also must allow eligible students (*i.e.*, students who have reached 18 years of age or are attending a postsecondary institution) or parents, as appropriate, a reasonable amount of time to request that the school not disclose a student's directory information.³¹
- **Amendment or Correction of Education Records.** A school may receive requests to correct a student's education records to make them consistent with the student's gender identity. Updating a transgender student's education records to reflect the student's gender identity and new name will help protect privacy and ensure personnel consistently use appropriate names and pronouns.
 - Under FERPA, a school must consider the request of an eligible student or parent to amend information in the student's education records that is inaccurate, misleading, or in violation of the student's privacy rights.³² If the school does not amend the record, it must inform the requestor of its decision and of the right to a hearing. If, after the hearing, the school does not amend the record, it must inform the requestor of the right to insert a statement in the record with the requestor's comments on the contested information, a statement that the requestor disagrees with the hearing decision, or both. That statement must be disclosed whenever the record to which the statement relates is disclosed.³³
 - Under Title IX, a school must respond to a request to amend information related to a student's transgender status consistent with its general practices for amending other students' records.³⁴ If a student or parent complains about the school's handling of such a request, the school must promptly and equitably resolve the complaint under the school's Title IX grievance procedures.³⁵

* * *

We appreciate the work that many schools, state agencies, and other organizations have undertaken to make educational programs and activities welcoming, safe, and inclusive for all students.

Sincerely,

/s/

Catherine E. Lhamon
Assistant Secretary for Civil Rights
U.S. Department of Education

/s/

Vanita Gupta
Principal Deputy Assistant Attorney General for Civil Rights
U.S. Department of Justice

¹ 20 U.S.C. §§ 1681–1688; 34 C.F.R. Pt. 106; 28 C.F.R. Pt. 54. In this letter, the term *schools* refers to recipients of Federal financial assistance at all educational levels, including school districts, colleges, and universities. An educational institution that is controlled by a religious organization is exempt from Title IX to the extent that compliance would not be consistent with the religious tenets of such organization. 20 U.S.C. § 1681(a)(3); 34 C.F.R. § 106.12(a).

² Office of Management and Budget, Final Bulletin for Agency Good Guidance Practices, 72 Fed. Reg. 3432 (Jan. 25, 2007), www.whitehouse.gov/sites/default/files/omb/fedreg/2007/012507_good_guidance.pdf.

³ ED, *Examples of Policies and Emerging Practices for Supporting Transgender Students* (May 13, 2016), www.ed.gov/oese/osh/emergerpractices.pdf. OCR also posts many of its resolution agreements in cases involving transgender students online at www.ed.gov/ocr/lgbt.html. While these agreements address fact-specific cases, and therefore do not state general policy, they identify examples of ways OCR and recipients have resolved some issues addressed in this guidance.

⁴ 34 C.F.R. §§ 106.4, 106.31(a). For simplicity, this letter cites only to ED’s Title IX regulations. DOJ has also promulgated Title IX regulations. See 28 C.F.R. Pt. 54. For purposes of how the Title IX regulations at issue in this guidance apply to transgender individuals, DOJ interprets its regulations similarly to ED. State and local rules cannot limit or override the requirements of Federal laws. See 34 C.F.R. § 106.6(b).

⁵ See, e.g., *Price Waterhouse v. Hopkins*, 490 U.S. 228 (1989); *Oncale v. Sundowner Offshore Servs. Inc.*, 523 U.S. 75, 79 (1998); *G.G. v. Gloucester Cnty. Sch. Bd.*, No. 15-2056, 2016 WL 1567467, at *8 (4th Cir. Apr. 19, 2016); *Glenn v. Brumby*, 663 F.3d 1312, 1317 (11th Cir. 2011); *Smith v. City of Salem*, 378 F.3d 566, 572-75 (6th Cir. 2004); *Rosa v. Park W. Bank & Trust Co.*, 214 F.3d 213, 215–16 (1st Cir. 2000); *Schwenk v. Hartford*, 204 F.3d 1187, 1201–02 (9th Cir. 2000); *Schroer v. Billington*, 577 F. Supp. 2d 293, 306-08 (D.D.C. 2008); *Macy v. Dep’t of Justice*, Appeal No. 012012082 (U.S. Equal Emp’t Opportunity Comm’n Apr. 20, 2012). See also U.S. Dep’t of Labor (USDOL), Training and Employment Guidance Letter No. 37-14, *Update on Complying with Nondiscrimination Requirements: Discrimination Based on Gender Identity, Gender Expression and Sex Stereotyping are Prohibited Forms of Sex Discrimination in the Workforce Development System* (2015), wdr.doleta.gov/directives/attach/TEGL/TEGL_37-14.pdf; USDOL, Job Corps, Directive: Job Corps Program Instruction Notice No. 14-31, *Ensuring Equal Access for Transgender Applicants and Students to the Job Corps Program* (May 1, 2015), https://supportservices.jobcorps.gov/Program%20Instruction%20Notices/pi_14_31.pdf; DOJ, Memorandum from the Attorney General, *Treatment of Transgender Employment Discrimination Claims Under Title VII of the Civil Rights Act of 1964* (2014), www.justice.gov/sites/default/files/opa/press-releases/attachments/2014/12/18/title_vii_memo.pdf; USDOL, Office of Federal Contract Compliance Programs, Directive 2014-02, *Gender Identity and Sex Discrimination* (2014), www.dol.gov/ofccp/regs/compliance/directives/dir2014_02.html.

⁶ See *Lusardi v. Dep’t of the Army*, Appeal No. 0120133395 at 9 (U.S. Equal Emp’t Opportunity Comm’n Apr. 1, 2015) (“An agency may not condition access to facilities—or to other terms, conditions, or privileges of employment—on the completion of certain medical steps that the agency itself has unilaterally determined will somehow prove the bona fides of the individual’s gender identity.”).

⁷ See *G.G.*, 2016 WL 1567467, at *1 n.1 (noting that medical authorities “do not permit sex reassignment surgery for persons who are under the legal age of majority”).

⁸ 34 C.F.R. § 106.31(b)(4); see *G.G.*, 2016 WL 1567467, at *8 & n.10 (affirming that individuals have legitimate and important privacy interests and noting that these interests do not inherently conflict with nondiscrimination principles); *Cruzan v. Special Sch. Dist. No. 1*, 294 F.3d 981, 984 (8th Cir. 2002) (rejecting claim that allowing a transgender woman “merely [to be] present in the women’s faculty restroom” created a hostile environment); *Glenn*, 663 F.3d at 1321 (defendant’s proffered justification that “other women might object to [the plaintiff]’s restroom use” was “wholly irrelevant”). See also *Palmore v. Sidoti*, 466 U.S. 429, 433 (1984) (“Private biases may be outside the reach of the law, but the law cannot, directly or indirectly, give them effect.”); *City of Cleburne v. Cleburne Living Ctr.*, 473 U.S. 432, 448 (1985) (recognizing that “mere negative attitudes, or fear . . . are not permissible bases for” government action).

⁹ See, e.g., Resolution Agreement, *In re Downey Unified Sch. Dist.*, CA, OCR Case No. 09-12-1095, (Oct. 8, 2014), www.ed.gov/documents/press-releases/downey-school-district-agreement.pdf (agreement to address harassment of transgender student, including allegations that peers continued to call her by her former name, shared pictures of her prior to her transition, and frequently asked questions about her anatomy and sexuality); Consent Decree, *Doe v. Anoka-Hennepin Sch. Dist. No. 11*, MN (D. Minn. Mar. 1, 2012), www.ed.gov/ocr/docs/investigations/05115901-d.pdf (consent decree to address sex-based harassment, including based on nonconformity with gender stereotypes); Resolution Agreement, *In re Tehachapi Unified Sch. Dist.*, CA, OCR Case No. 09-11-1031 (June 30, 2011), www.ed.gov/ocr/docs/investigations/09111031-b.pdf (agreement to address sexual and gender-based harassment, including harassment based on nonconformity with gender stereotypes). See also *Lusardi*, Appeal No. 0120133395, at *15 (“Persistent failure to use the employee’s correct name and pronoun may constitute unlawful, sex-based harassment if such conduct is either severe or pervasive enough to create a hostile work environment”).

¹⁰ See, e.g., OCR, *Revised Sexual Harassment Guidance: Harassment of Students by School Employees, Other Students, or Third Parties* (2001), www.ed.gov/ocr/docs/shguide.pdf; OCR, *Dear Colleague Letter: Harassment and Bullying* (Oct. 26, 2010), www.ed.gov/ocr/letters/colleague-201010.pdf; OCR, *Dear Colleague Letter: Sexual Violence* (Apr. 4, 2011), www.ed.gov/ocr/letters/colleague-201104.pdf; OCR, *Questions and Answers on Title IX and Sexual Violence* (Apr. 29, 2014), www.ed.gov/ocr/docs/qa-201404-title-ix.pdf.

¹¹ See, e.g., Resolution Agreement, *In re Cent. Piedmont Cmty. Coll.*, NC, OCR Case No. 11-14-2265 (Aug. 13, 2015), www.ed.gov/ocr/docs/investigations/more/11142265-b.pdf (agreement to use a transgender student’s preferred name and gender and change the student’s official record to reflect a name change).

¹² 34 C.F.R. §§ 106.32, 106.33, 106.34, 106.41(b).

¹³ See 34 C.F.R. § 106.31.

¹⁴ 34 C.F.R. § 106.33.

¹⁵ See, e.g., Resolution Agreement, *In re Township High Sch. Dist. 211*, IL, OCR Case No. 05-14-1055 (Dec. 2, 2015), www.ed.gov/ocr/docs/investigations/more/05141055-b.pdf (agreement to provide any student who requests additional privacy “access to a reasonable alternative, such as assignment of a student locker in near proximity to the office of a teacher or coach; use of another private area (such as a restroom stall) within the public area; use of a nearby private area (such as a single-use facility); or a separate schedule of use.”).

¹⁶ 34 C.F.R. § 106.41(b). Nothing in Title IX prohibits schools from offering coeducational athletic opportunities.

¹⁷ 34 C.F.R. § 106.6(b), (c). An interscholastic athletic association is subject to Title IX if (1) the association receives Federal financial assistance or (2) its members are recipients of Federal financial assistance and have ceded controlling authority over portions of their athletic program to the association. Where an athletic association is covered by Title IX, a school’s obligations regarding transgender athletes apply with equal force to the association.

¹⁸ The National Collegiate Athletic Association (NCAA), for example, reported that in developing its policy for participation by transgender students in college athletics, it consulted with medical experts, athletics officials, affected students, and a consensus report entitled *On the Team: Equal Opportunity for Transgender Student Athletes* (2010) by Dr. Pat Griffin & Helen J. Carroll (*On the Team*), [https://www.ncaa.org/sites/default/files/NCLR_TransStudentAthlete%2B\(2\).pdf](https://www.ncaa.org/sites/default/files/NCLR_TransStudentAthlete%2B(2).pdf). See NCAA Office of Inclusion, *NCAA Inclusion of Transgender Student-Athletes* 2, 30-31 (2011), https://www.ncaa.org/sites/default/files/Transgender_Handbook_2011_Final.pdf (citing *On the Team*). The *On the Team* report noted that policies that may be appropriate at the college level may “be unfair and too complicated for [the high school] level of competition.” *On the Team* at 26. After engaging in similar processes, some state interscholastic athletics associations have adopted policies for participation by transgender students in high school athletics that they determined were age-appropriate.

¹⁹ 34 C.F.R. § 106.34(a), (b). Schools may also separate students by sex in physical education classes during participation in contact sports. *Id.* § 106.34(a)(1).

²⁰ 20 U.S.C. § 1681(a)(1); 34 C.F.R. § 106.15(d); 34 C.F.R. § 106.34(c) (a recipient may offer a single-sex public nonvocational elementary and secondary school so long as it provides students of the excluded sex a “substantially

equal single-sex school or coeducational school”).

²¹ 20 U.S.C. § 1681(a)(6)(A); 34 C.F.R. § 106.14(a).

²² 20 U.S.C. § 1686; 34 C.F.R. § 106.32.

²³ See, e.g., Resolution Agreement, *In re Arcadia Unified Sch. Dist.*, CA, OCR Case No. 09-12-1020, DOJ Case No. 169-12C-70, (July 24, 2013), www.justice.gov/sites/default/files/crt/legacy/2013/07/26/arcadiaagree.pdf (agreement to provide access to single-sex overnight events consistent with students’ gender identity, but allowing students to request access to private facilities).

²⁴ See 34 C.F.R. §§ 106.31(a), 106.31(b)(4). See also, *In re Downey Unified Sch. Dist.*, CA, *supra* n. 9; *In re Cent. Piedmont Cmty. Coll.*, NC, *supra* n. 11.

²⁵ 34 C.F.R. § 106.31(b)(7).

²⁶ 20 U.S.C. § 1232g; 34 C.F.R. Part 99. FERPA is administered by ED’s Family Policy Compliance Office (FPCO). Additional information about FERPA and FPCO is available at www.ed.gov/fpc.

²⁷ 20 U.S.C. § 1232g(b)(1)(A); 34 C.F.R. § 99.31(a)(1).

²⁸ 34 C.F.R. §§ 99.3, 99.31(a)(11), 99.37.

²⁹ 20 U.S.C. § 1232g(a)(5)(A); 34 C.F.R. § 99.3.

³⁰ Letter from FPCO to Institutions of Postsecondary Education 3 (Sept. 2009), www.ed.gov/policy/gen/guid/fpc/doc/censuslettertohighered091609.pdf.

³¹ 20 U.S.C. § 1232g(a)(5)(B); 34 C.F.R. §§ 99.3, 99.37(a)(3).

³² 34 C.F.R. § 99.20.

³³ 34 C.F.R. §§ 99.20-99.22.

³⁴ See 34 C.F.R. § 106.31(b)(4).

³⁵ 34 C.F.R. § 106.8(b).



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Transgender People and the Law ^[1]

Click on the dropdown menu below for the full FAQ.

1.

Question

Are there state and local laws that clearly prohibit discrimination against transgender people?

Answer

Yes. California, Colorado, Connecticut, Delaware, Hawaii, Illinois, Iowa, Maine, Maryland, Massachusetts, Minnesota, Nevada, New Jersey, New Mexico, Oregon, Rhode Island, Vermont, Washington, and the District of Columbia all have such laws. Their protections vary. For example, Nevada's law bans discrimination in employment, housing, and public accommodations like restaurants, hospitals, and retail stores; Maine's law covers those categories plus access to credit and education.

At least 200 cities and counties have banned gender identity discrimination, including Atlanta, Austin, Boise, Buffalo, Cincinnati, Dallas, El Paso, Indianapolis, Kansas City, Louisville, Milwaukee, New Orleans, New York City, Philadelphia, Phoenix, Pittsburgh, and San Antonio, as well as many smaller towns.

The governors of Indiana, Kentucky, Michigan, New York, and Pennsylvania have issued executive orders banning discrimination against transgender state workers. Some cities and counties have also protected their transgender public employees through local ordinances, charter provisions, or other means. People discriminated against by public entities on the basis of gender identity might also be able to argue that the government's action was unconstitutional.

2.

Question

Do laws banning sexual orientation discrimination protect transgender people?

Answer

In some cases, yes. If a law banning discrimination based on sexual orientation defines "sexual orientation" to include gender identity (as, for example, the ones in Colorado, Illinois, and Minnesota do), it protects transgender people as well as lesbian, gay, and bisexual people.

Also, most sexual orientation discrimination bans protect people not only based on their actual sexual orientation, but also on the basis of how people perceive them. This means that in most

Roth Decl. Ex. 1007

places where sexual orientation discrimination is illegal, it's against the law to discriminate against a transgender person because of a belief that the victim is "gay"— even if that perception is wrong!

3.

Question

Do federal laws protect transgender people against housing and employment discrimination?

Answer

So far, Congress has been slow to pass laws that clearly protect people against discrimination based on gender identity. However, in recent years a series of court decisions and other developments have made more and more clear that federal laws against discrimination based on "sex" apply to discrimination based on gender identity.

Employment

Title VII of the 1964 Civil Rights Act prohibits discrimination on the basis of sex (among other characteristics) by an employer with 15 or more employees. Although there are some court decisions, mostly older ones, saying that Title VII does not prohibit gender identity discrimination, several federal appeals courts that have considered the issue recently have found some protections in the Civil Rights Act for transgender people. In addition, a federal district court in Washington, D.C. ruled that employment discrimination for transitioning from one gender to another is illegal sex discrimination under the Civil Rights Act. In 2014, U.S. Attorney General Eric Holder announced that his office agrees with this position and going forward the U.S. Department of Justice will consider discrimination against transgender people to be discrimination "because of sex" in violation of federal employment law.

Transgender people anywhere in the country who feel they have experienced employment discrimination can file complaints with the U.S. Equal Employment Opportunity Commission (EEOC). In a 2012 decision, the EEOC ruled that discriminating against someone because that person is transgender is discrimination based on sex, which violates Title VII. The EEOC investigates the reports of discrimination it receives, and can arrange mediation, broker a settlement between an employer and an employee, sue an employer, or give the person complaining permission to bring her own lawsuit.

Housing

Similarly, the U.S. Department of Housing and Urban Development (HUD) has stated that discrimination against transgender tenants or home buyers based on their gender identity or gender nonconformity may be illegal sex discrimination under the federal Fair Housing Act. More information is available [here](#).^[2] HUD has also told homeless shelters around the country that where shelter housing is segregated by gender, they must allow transgender people access based on their gender identity. In addition, transgender people can't be discriminated against in shelters, or other programs for survivors of violence, that receive federal funding under the Violence Against Women Act.

4.

Question

Do state laws that bar sex or disability discrimination protect transgender people?

Answer

Some state courts and administrative agencies (such as in California, Connecticut, Hawaii, Massachusetts, New Jersey, New York, and Vermont) have ruled that their state sex discrimination laws cover discrimination against transgender people.

Federal laws that prohibit disability discrimination specifically exclude coverage for gender dysphoria, as do some state disability laws (e.g., Indiana, Iowa, Louisiana, Nebraska, Ohio, Oklahoma, Texas, Virginia). California, on the other hand, changed its disability law in 2000 to remove the exclusion and allow claims based on discrimination against someone for having gender dysphoria.

Courts or administrative agencies in a few states (e.g. Florida, Illinois, Massachusetts, New Hampshire, New Jersey, New York, and Washington) have ruled that state disability laws protect people against discrimination based on gender dysphoria.

5.

Question

Does the U.S. Constitution protect transgender people from discrimination?

Answer

Although the Supreme Court has never considered this question, we think the answer is yes. It's important to remember, however, that constitutional protections only cover discrimination or mistreatment by the government, not by private businesses or individuals.

A few federal courts have ruled that the Constitution's guarantee of equal protection under the law bars the government from discriminating against people based on their transgender status or gender transition. For example, a federal appeals court in 2011 ruled in favor of a transgender woman whose boss fired her from her state government job because he was uncomfortable with her gender transition. The court ruled that "discrimination against a transgender individual because of her gender nonconformity is sex discrimination, whether it's described as being on the basis of sex or gender." However, how courts view constitutional equality protections for transgender people is an area of the law that's still evolving.

At the ACLU, we believe that the First Amendment, which bars the government from censoring speech or expression, should also protect individuals' right to wear clothes or groom themselves in ways that express their personal sense of gender. There aren't a lot of court decisions on this yet, but we hope eventually to see courts rule that gender expression is protected by the First Amendment. We also believe that the rights to "liberty," "privacy," and "autonomy" courts have found to be protected under the Due Process Clause of the U.S. Constitution should extend to transgender people's ability to make decisions about self-expression, medical care, and more, but there isn't much law on that issue yet either.

State constitutions are also a source of protection against discrimination by state and local government, although some state constitutions provide exactly the same equality and liberty protections as the U.S. Constitution while others go farther.

6.**Question**

Are there laws that specifically protect transgender students from harassment or discrimination?

Answer

More and more, schools are protecting transgender students from harassment or discrimination. Arkansas, California, Colorado, Connecticut, Delaware, Hawaii, Illinois, Iowa, Maine, Maryland, Minnesota, New Jersey, New York, North Carolina, Oregon, Vermont, Washington, and the District of Columbia have state laws that specifically protect transgender students in public schools from harassment and/or discrimination. Some of these state laws explicitly apply to education, while other states (including Colorado, Delaware, Illinois, Maine, New Jersey, Nevada, Vermont, and Washington) include public schools in their bans on gender identity discrimination in public accommodations. In Colorado, Illinois, Maine, Nevada, New Jersey, and the District of Columbia, gender identity discrimination laws also cover some or all non-religious private schools. Several states also have more general laws that ban bullying and harassment of any sort but don't specifically mention gender identity. California passed a law in 2013 specifically allowing public school students access to gender-specific school activities (e.g., sports teams) and facilities (e.g., locker rooms) that match their gender identity, although we believe this was already required under prior California law. Several of the states where gender identity discrimination is prohibited in public schools (including Connecticut, Colorado, and Massachusetts) have issued rules or instructions explaining what schools must do to accommodate transgender students, in areas like updating educational records, accessing appropriate restrooms, and preventing bullying. Many individual school districts all over the country have also created policies to address these issues.

Title IX of the Education Amendment Acts of 1972 is the federal law that prohibits sex discrimination in educational programs that receive federal money. Title IX covers all public schools and universities, and some private ones. It has been interpreted to ban discrimination based on gender nonconformity, including a school's failure to protect a student from gender-related harassment. This means that Title IX should protect transgender students from harassment and discrimination based on gender identity. The U.S. Department of Education's Office of Civil Rights, which enforces Title IX, agrees, although the issue has not been fully resolved in court yet. Title IX also requires schools to respond appropriately to reports of sexual harassment or sexual violence against any student, including transgender students. A student who believes their rights under Title IX have been violated can file a complaint with the [Office of Civil Rights](#) [3].

7.**Question**

Are there laws that protect transgender students' right to participate in high school and college sports?

Answer

Nondiscrimination laws that cover gender identity should protect student athletes who want to participate in gender-segregated sports consistent with their gender identity.

Several states' education agencies or school sports associations have adopted policies on this issue. For example, California, Connecticut, and Washington allow transgender students to participate in sports consistent with their gender identity regardless of the sex they were assigned at birth. A few states have more complicated procedures for deciding a student's eligibility for gender-specific school activities, including sports, by evaluating things like the students' school records, their medical history, and the "advantages of their participation." Several states have no clear policy on this issue, leaving school districts to establish their own policies to determine which team a transgender athlete will compete on and which locker room they will use.

The National Collegiate Athletic Association, which oversees competitive sports at over 1,000 colleges and universities, allows transgender students to participate in sex-segregated sports consistent with their gender identity as long as they're receiving hormone therapy. Under NCAA rules, a transgender woman must take testosterone suppression medication for at least a year before competing on a female team. For various reasons, this type of policy works better at the college level than it would in a K-12 school context.

8.

Question

Does the law protect a transgender person's right to use the restroom consistent with their gender identity?

Answer

There's no clear answer here because very few courts have considered this question and the results have been mixed. In two recent positive decisions, an administrative agency in Colorado in 2013 and the Maine Supreme Court in 2014 both ruled that under those states' gender identity discrimination laws, transgender girls had the right to use girls' restrooms at their public schools. On the other hand, a 2001 Minnesota Supreme Court decision found that even a law prohibiting gender identity discrimination didn't necessarily protect a transgender woman's right to use the women's restroom at work. And a federal appeals court in 2007 upheld the Utah Transit Authority's decision to fire a transgender bus driver, based on a claim that her employer could be sued for her use of women's public restrooms along her bus route. In a non-workplace context, a New York appeals court ruled in 2005 that it wasn't sex discrimination for a building owner to prevent transgender people from using gender identity-appropriate restrooms in a building where several businesses shared restrooms.

Authorities in some jurisdictions (e.g., Colorado, Iowa, Oregon, Washington State, San Francisco, New York City, and the District of Columbia), however, have specifically said that denying transgender people the right to use a gender identity-appropriate restroom violates their nondiscrimination laws. Some jurisdictions (e.g., Iowa, San Francisco, and D.C.) go farther and make clear that transgender people can't be required to prove their gender to gain access to a public restroom, unless everyone has to show ID to use that restroom. Other jurisdictions (e.g., Chicago) continue to allow businesses to decide whether a transgender patron may access men's or women's restrooms based on the gender on their ID, which may or may not reflect accurately the person's gender identity.

Many businesses, universities, and other public places are installing single stall, gender-neutral restrooms, which alleviate many of the difficulties that transgender people experience when seeking safe restroom access. Some cities (such as Austin, Philadelphia, Washington, D.C., and West

Hollywood) have local laws that require single-stall public restrooms to be labeled as unisex. While this is often a useful step towards addressing the concerns of transgender people and others, the ACLU believes that transgender people should have the right to use restrooms that match their gender identity rather than being restricted to only using gender-neutral ones.

9.

Question

Can a person change their name to reflect their gender identity?

Answer

Yes. In some states, through what is called “common law name change,” people may change their name simply by using the new name in everyday interactions. This is free and easy, and can protect the individual from later claims that using the preferred name constituted “fraud,” but doesn’t create the kind of solid paper trail needed to change identity documents.

The other way to change one’s name is to file a petition in court. Most judges will grant a name change as long as they’re convinced that the petitioner is not trying to evade debts or the police. A number of states require anyone who wants to change their name to publish a legal notice of the change in a local newspaper. Name changes are often harder to obtain for people with past criminal convictions. In rare cases, judges have required a transgender person seeking a name change to prove that they had undergone medical procedures that show they intend to live permanently in the gender associated with the new name, but in most states this isn’t required.

10.

Question

Can a transgender person get the name and gender marker changed on their driver’s license or state ID card?

Answer

Yes. Every state has some kind of procedure for people to make these changes. A court ordered name change is usually necessary to change the name on a driver’s license.

Requirements for changing the gender marker on a driver’s license vary widely from state to state, but a majority of states don’t require proof of gender confirmation surgery. Many states do require the applicant to submit a form or affidavit signed by their health care provider confirming their gender identity. A few states still require proof of surgery and/ or a court order to change the gender marker on a driver’s license. Check with your state’s motor vehicle agency to find out the exact procedure in your state.

11.

Question

Can a person get the name and gender marker changed on their birth certificate?

Answer

A court ordered name change is usually necessary to change the name on one's birth certificate.

In a majority of states, changing the gender marker on one's birth certificate requires proof of surgical treatment to change one's sex. What the law means by "surgical treatment" is often unclear. A growing number of states (e.g. California, New York, Oregon, Vermont, Washington, and the District of Columbia) allow an individual to change the gender marker on their birth certificate by showing proof of appropriate clinical treatment, which is not necessarily surgery.

Some states (e.g., Alabama) will only issue an "amended" birth certificate showing the name and gender marker changes. Other states (e.g., Idaho, Ohio, and Tennessee) simply do not allow gender markers to be changed on birth certificates at all.

12.

Question

Does changing the gender marker on a birth certificate legally change one's sex?

Answer

Although changing the gender marker on one's birth certificate should put to rest all questions about one's legal gender, there have been cases, usually involving marriages, where courts have ignored the corrected birth certificate. For example, when only different-sex marriage was allowed, courts in Kansas and Texas considered only the birth-assigned sex when ruling on a person's sex for the purpose of deciding whether their marriage was valid. These courts ignored the fact that the transgender people in these cases had corrected birth certificates from the other states in which they were born. Similarly, in an Illinois case, a court looked past a transgender man's reissued birth certificate, which had a male gender marker, and ruled that he should be considered female for purposes of state marriage law because there were other surgeries he hadn't undergone that would in the court's view "complete" his transition.

In contrast, a court in New Jersey recognized a transgender woman's gender identity, which was also reflected on her birth certificate, when deciding whether her marriage to a man was valid. Additionally, before the federal government began recognizing the marriages of "same-sex" couples, the Board of Immigration Appeals approved a visa based on marriage to a man for a transgender woman whose North Carolina birth certificate had a female gender marker.

Some people get a court order declaring a legal change of gender for added protection. (To save time and money, some advocates recommend doing this at the same time one requests a court ordered name change.) The good thing about a court order is that, unlike a birth certificate or other identity document, courts and agencies in other states are supposed to follow it. There is still no guarantee, however, that such a court order will cause other institutions and courts to view one's sex as legally changed.

13.

Question

Can a person change the name and gender on their passport?

Answer

Yes. A copy of the court order confirming the name change is required to change the name on one's passport. To change the gender on a passport, or to get a first passport with the correct gender marker, a transgender applicant must submit a letter from their doctor certifying that they have undergone "appropriate clinical treatment" for transition to the new gender. (This "appropriate clinical treatment" doesn't have to include surgery.) This letter can be used to obtain a new passport valid for 10 years. There is also a two-year passport available for applicants who present a letter stating that their clinical transition is "in process," but any transgender person who has begun treatment should be able to qualify for a full 10-year passport. Along with the physician letter, the applicant must submit the other parts of a standard passport application. Detailed instructions for updating the name and gender on a passport are available from the U.S. Department of State [4].

14.

Question

Can a person change their name and gender marker with the Social Security Administration?

Answer

Yes. To change their name with the Social Security Administration (SSA) and get a new Social Security card, a person needs to submit a court order reflecting the name change. To change the gender marker in SSA's records, one can submit any of the following: a passport or state-issued birth certificate with the new gender marker, a court order of gender change, or a doctor's letter identical to that required for changing a passport gender marker (see previous).

15.

Question

Is it beneficial to change one's name and gender with the Social Security Administration?

Answer

Yes. Having an SSA record of one's gender that is consistent with the gender marker on other identity documents could help avoid problems such as when someone checks for a match between a person's SSA records and other identification. For example, many state agencies that issue driver's licenses will only do so if the information used on a driver's license application matches the person's SSA record.

16.

Question

Does gender transition affect the validity of one's marriage?

Answer

Generally, no. A marriage is valid unless and until one or both spouses get a divorce or annulment.

In the past, courts considering the validity of transgender people's post-transition marriages to people of a different gender have reached mixed results. Although it's still possible that an ex-spouse would try to contest the validity of a marriage entered into in a state that didn't at the time recognize the marriages of "same-sex couples," this issue is likely to come up less frequently as more and more jurisdictions recognize marriages regardless of gender.

To help protect against any potential legal problems, we recommend crafting a written relationship agreement that sets out each spouse's rights and responsibilities with respect to property, finances, health, and children. Furthermore, both spouses should have a last will and testament and assign one another durable powers of attorney for financial and medical decisions. Transgender parents with no biological or adoptive tie to their children should adopt the children through a second parent adoption to better protect their parental rights. Information on second parent adoption and other issues for transgender parents can be found in "Protecting the Rights of Transgender Parents and their Children: A Guide for Parents and Lawyers," ^[5] a joint publication of the ACLU and the National Center for Transgender Equality.

17.

Question

Does being transgender affect parental rights?

Answer

Sometimes.

Many parents who come out as transgender are able to maintain a close relationship with their children, including some who divorce but work out an amicable custody arrangement with their ex-spouse.

But other people who transition after having children may see their gender transition used against them by an ex-spouse in child custody fights. There is little custody case law concerning transgender parents and what exists is mixed. In some cases, transgender parents have fared well, with courts appropriately rejecting claims that transgender people can't be good parents and fairly considering what would be in the best interest of the child (e.g., looking at the nature of the child's relationship with each parent and each parent's ability to provide for the child's physical, emotional, and educational needs). In other cases, parents have been denied custody or visitation solely based on the court's conclusion that being in the care of a transgender parent would be harmful to the child. In some of these cases, the courts improperly based their decisions on imagined harm, rather than evidence. In others, the transgender parent didn't (perhaps for financial reasons) present testimony from expert witnesses such as psychologists, and the courts relied on the other side's experts' negative characterization of transgender parents. It is very important in any contested child custody case to submit evidence disproving the negative claims the other side may make about transgender parents. Again, more information is available here ^[6].

There have also been cases where the child's gender nonconforming or transgender identity became an issue in a custody battle. This usually happens when one parent accepts and supports the child's gender identity, but the other parent doesn't and argues that affirming the child's gender identity is harming the child. Here, too, refuting negative claims about the consequences of affirming a child's gender identity, preferably with expert testimony, is very important.

18.**Question**

Do any government health care programs cover gender confirmation surgery or other transition-related medical treatment?

Answer

Medicare covers transition-related hormone therapy. A 2014 administrative ruling struck down the previous blanket Medicare policy of refusing coverage for any form of gender-confirmation surgery, though we're still working to clarify which specific procedures Medicare will cover. Also, many transgender people have had difficulty finding surgeons who are willing to perform gender confirmation surgeries at Medicare's low reimbursement rates.

Historically, Medicaid programs have denied coverage for transition-related treatment. However, this is beginning to change, as several states (e.g., California, Maryland, Massachusetts, New York, Oregon, and Vermont) have updated their Medicaid rules to provide hormone therapy for gender dysphoria, hormone blockers for transgender adolescents, and/or gender-confirmation surgeries.

19.**Question**

Does private health insurance cover gender confirmation surgery or other transition-related medical treatment?

Answer

This partly depends on what the employer's or insured individual's contract with the health insurance company says. Many insurance contracts either definitely exclude transition-related services or are unclear about whether such services are covered. Some transgender people have successfully forced insurance companies to pay for transition-related surgery or other treatments when the contract didn't clearly exclude this coverage.

In several states (e.g., California, Colorado, Illinois, Massachusetts, New York, Oregon, Vermont, Washington State, and the District of Columbia), the state government has said that state laws against gender identity discrimination and/or discrimination based on medical diagnosis mean that insurance policies issued in those states must cover transition-related treatments if they cover the same treatment for other medical conditions. This has helped many transgender people living in those states to get coverage for gender confirmation surgeries.

As awareness grows that treatment for gender dysphoria is medically necessary for many transgender people and the cost of covering it is manageable, more employers are offering health insurance plans that cover transition-related medical treatment. Hundreds of employers are now offering health insurance plans that cover transition-related medical treatment, from Fortune 500 corporations to smaller firms and nonprofits. More and more government entities also cover transition-related care through their employee health plans. Some employers have set up programs to pay for transition-related health care not covered by their health insurance plans, although this approach may pose privacy risks. Additionally, many public and private universities now cover of transition-related medical treatment for students.

We are still working to ensure that health insurance obtained through federal and state exchanges under the Affordable Care Act will cover all medically necessary treatment for transgender people.

20.

Question

What does the law say about insurance companies denying coverage for routine medical treatments because someone is transgender?

Answer

Sometimes insurance companies refuse any coverage once they find out that the policy holder has been diagnosed with gender dysphoria. This is happening less often, in part because it would be improper denial of coverage based on a preexisting condition under the federal Affordable Care Act.

Another issue arises when insurance companies ask people to state their gender and then limit coverage to treatment that the insurer thinks matches that gender (aka “gender congruent” care). This obviously causes problems for transgender people who need screenings or treatment the insurer sees as inconsistent with their gender (e.g., Pap smears for a transgender man). Although some transgender people have tried to avoid this problem by leaving their “old” gender marker on medical records, that approach can also make it harder to receive appropriate care and respect in health care settings. Sometimes, transgender people and their health care providers have been able to fix these problems by simply explaining the situation to an insurer and getting a human to override a computer-based denial.

The ACLU believes that state laws against insurance discrimination based on gender identity and/or sex, as well as nondiscrimination provisions in the federal Affordable Care Act, generally ban denial of coverage for “gender incongruent” health care. There have been few court decisions on this so far.

21.

Question

Are there laws that prohibit hate or bias crimes against transgender people?

Answer

Yes. Since 2009, the federal hate crimes law has covered gender identity, which means that the federal government assists local law enforcement in investigating and prosecuting crimes where the victim was targeted because of their gender identity, and people who commit such crimes may be subject to tougher penalties. Similarly, more than a dozen states have hate crime laws that clearly protect transgender people. In several states, transgender people are also sometimes protected when hate crime laws cover perceived sexual orientation, or under laws covering hate crimes based on “sex.”

22.

Question

Is crossdressing against the law?

Answer

In general, no. Bans on crossdressing have been successfully challenged and many cities have taken steps in recent years to remove even unenforced laws banning crossdressing from their books. However, a few localities around the nation still have such laws in place. Anyone ticketed or arrested under a crossdressing law should think about fighting back in court, because there's a good chance that the law will be ruled unconstitutional.

23.

Question

Can a transgender person run into legal trouble for using a restroom that is consistent with their gender identity?

Answer

It rarely comes up, but in places without strong antidiscrimination protections, transgender people can sometimes face criminal penalties for using a restroom that is consistent with their gender identity. In Dallas, for example, a transgender woman was ticketed for disorderly conduct in 2012 for using the women's restroom at a hospital. An Idaho transgender woman in 2013 was informed by the police that she was unwelcome for the next year at a local supermarket, because she had used the women's restroom there. In contrast, a discrimination complaint filed by a transgender woman who was arrested in a train station for using the women's restroom ultimately resulted in a 2006 settlement securing a more inclusive policy on restroom use in New York's Metropolitan Transit Authority system.

24.

Question

Can a person be stopped and/or interrogated by the police based solely on their gender identity or gender expression?

Answer

This shouldn't happen but has often been a problem. Police often target for suspicion anyone who looks "different" or does not conform to their expectations, which can include visibly transgender people. Transgender women of color, in particular, have often faced extra scrutiny from law enforcement officers who assume that they must be engaging in sex work. Fortunately, in recent years law enforcement officials have begun to acknowledge that such practices are unfair and do not help prevent crime. In 2014, the U.S. Department of Justice advised federal law enforcement agencies, including the FBI and ICE, that they may not profile or target individuals based on their gender identity. Several local police departments have also adopted policies that prohibit profiling of transgender people and/or that instruct officers on things they should do to treat transgender people respectfully, such as using preferred names and pronouns. Examples include Atlanta, Boston, Chicago, New York City, and Washington, D.C.

25.

Question

Do transgender people have the right to be searched by someone of the same gender identity?

Answer

It depends on the type of search and where it is taking place. If police stop someone on the street for questioning and do a quick “frisk” or “pat-down” without arresting the person, that person does not have a legal right to ask that a different officer perform the pat-down. However, if a transgender person has been arrested and/or taken to jail and is being strip-searched, they sometimes do have the right to request a search by an officer of the same gender, depending on state laws, local policies, and whether any sort of “emergency” exists. It is important for people in police custody to stay calm while making such a request and to bear in mind that arranging for an officer of the same gender to do the search may cause the arrest and booking process to take longer.

26.

Question

Are prison officials required to place a transgender inmate in the facility that matches the inmate’s gender identity?

Answer

When considering this question, most courts have supported prison officials’ decisions about where prisoners should be housed. Most prisons still categorically house transgender women (particularly those who haven’t had genital surgery) in male facilities, and transgender men in female facilities. Nevertheless, a growing number of systems are developing more nuanced and respectful housing policies, in part because they fear being held liable in court if they fail to protect transgender inmates from rape and other forms of abuse.

The federal Department of Justice has enacted regulations pursuant to the Prison Rape Elimination Act (PREA) that require determination of appropriate housing for transgender inmates on a case-by-case basis, taking into account factors like personal preference and safety needs, not solely based on their genitals. These regulations also limit the use of “protective custody” (which has sometimes resulted in severe isolation and torture-like experiences for transgender inmates), restrict the use of segregated and potentially stigmatizing LGBTI units, require training for staff on communication with and treatment of transgender inmates, require improved avenues for reporting abuse and ban genital searches of transgender inmates just to determine their gender. These regulations currently apply to all correctional facilities that receive federal funding, including most state prisons and local jails, although some jurisdictions have publicly acknowledged that they are not complying with the PREA regulations.

27. Notes on Words and Phrases Used

Question

Do transgender prisoners have a right to get transition-related health care?

Answer

The Eighth Amendment to the Constitution prohibits cruel and unusual punishment, which courts have said includes “deliberate indifference” to a prisoner’s medical needs. Using this argument, some prisoners have been able to persuade judges to order prison officials to provide hormone therapy and/or evaluate them for surgery. In 2011, a federal appeals court upheld a ruling striking down as unconstitutional a Wisconsin state law that banned hormone therapy and gender confirmation surgery for transgender inmates.

Under a policy enacted in 2011, transgender people detained in federal prisons, federal jails, federal halfway houses, and private prisons that contract with the U.S. Bureau of Prisons have the right to receive an evaluation for gender dysphoria, and gender-confirming medical treatment if the evaluation shows they need it. This is true whether or not a prisoner was prescribed hormone therapy before entering federal custody. Many state prison systems and some local jails now have similar policies. In practice, however, even prisoners in systems with good policies on the books often encounter numerous obstacles to getting the health care they need.

More information can be found in “Know Your Rights - Laws, Court Decisions, and Advocacy Tips to Protect Transgender Prisoners,” ^[7] a joint publication of the ACLU and the National Center for Lesbian Rights.

28.

Question

May a transgender immigrant be granted asylum in the United States because of antitransgender harassment in their country of origin?

Answer

Yes. Transgender immigrants are sometimes granted asylum because they’ve been persecuted at home for not conforming to cultural expectations about gender roles. While many immigration courts have confused sexual orientation with gender identity, it’s clear that transgender people are in many countries a persecuted group, and thus entitled to protection under U.S. asylum laws.

A transgender person, however, must do more than show that he or she is transgender and was persecuted because of it in order to get asylum. The individual also has to prove either that the government persecuted him or her or refused to do anything to stop the abuse.

29. Notes on Words and Phrases Used

When talking about transgender people, we sometimes use words that are unfamiliar or mean different things to different people. Here’s what we mean by these terms:

Gender Identity

Gender identity is a person’s internal sense of being a man or a woman (or both or neither).

Gender Expression

The way a person reveals their gender identity to the rest of the world is gender expression. A person’s clothing, mannerisms, voice, hairstyle, etc. can all be a part of the person’s gender expression.

Transgender

Transgender is frequently used to describe a broad range of identities and experiences that fall outside of the traditional understanding of gender. Some of those identities and experiences include people whose gender identity is different from the sex they were assigned at birth, people who transition from living as one gender to another or wish to do so (often described by the clinical term “transsexual”), people who “cross-dress” part of the time, and people who identify outside the traditional gender binary (meaning they identify as something other than male or female). Some transgender people describe themselves as gender variant or gender nonconforming.

Not everyone who doesn’t conform to gender stereotypes, however, identifies as transgender. Many people don’t conform to gender stereotypes but also continue to identify with the gender assigned to them at birth, like butch women or femme men.

(Gender) Transition

Transition or gender transition describes the social and sometimes medical process a transgender person goes through to bring their lived experience into line with their gender identity. Steps in the transition process can include changing the name and pronouns one goes by, updating formal documents to reflect a different gender marker and name from the ones assigned at birth, changing one’s style of dress and other aspects of gender expression, and, in some but not all cases, pursuing medical treatments such as hormone therapy and/ or gender confirmation surgery that help make one’s body look and feel more feminine or more masculine.

Some transgender people don’t feel that the concept of transition fits their experience, either because they feel they were always transgender and “transition” steps aren’t necessary to validate their true identity, and/or because they identify as neither male nor female and feel that transition doesn’t accurately describe their process of coming out as agender, bigender, gender fluid, or another nonbinary identity.

Gender Dysphoria (Formerly Known as "Gender Identity Disorder")

“Gender Identity Disorder” was for many years the medical diagnosis given to people who experience a disconnect between the sex they were assigned at birth and their gender identity.

However, the American Psychiatric Association replaced the term “Gender Identity Disorder” with “Gender Dysphoria” in the 2013 5th edition of its widely used Diagnostic and Statistical Manual. This change was made in part because labeling a disconnect between one’s gender identity and one’s body a “disorder” stigmatizes transgender people. The criteria for diagnosing this condition have also been updated to clarify that gender nonconformity is not a mental illness, although some transgender people suffer negative mental health consequences from the disconnect between their bodies and identities and/or as a result of widespread discrimination and stereotyping.

Gender Confirmation Surgery

This term can refer to any of the surgical procedures that may be part of gender transition. Depending on a person’s specific needs, gender confirmation surgery might involve several different types of genital reconstruction procedures, breast augmentation or reduction, removal of the uterus and ovaries (for transgender men) or the testes (for transgender women), and/or surgery to change the shape of the face and throat.

This term works better than the commonly used phrase “sex reassignment surgery” because that wording suggests that all transgender people need surgery to “reassign” their sex before their gender

identity can be respected, when in fact individual needs vary and not all transgender people need, want, or are able to access surgery. In addition, people and courts have often used the term “sex reassignment surgery” erroneously thinking that it refers to one specific genital surgery that completes a person’s gender transition or “sex reassignment.”

Public Accommodations

A public accommodation is an establishment that makes its premises, goods, and/or services available to the public. It may be publicly or privately owned. Legal definitions of public accommodations vary from state to state, but typical examples include restaurants, retail stores, hotels, places of entertainment like sports arenas or movie theaters, hospitals and medical offices, public parks, and public transportation. A private club is NOT a public accommodation, nor is a church.

If you feel you’ve been discriminated against on the basis of your gender identity or sexual orientation, we may be able to help. You can [click here](#) [8] to fill out our confidential online form.

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Source URL: <https://www.aclu.org/know-your-rights/transgender-people-and-law>

Links

[1] <https://www.aclu.org/know-your-rights/transgender-people-and-law>

[2] <http://1.usa.gov/Ly5HTl>

[3] <http://1.usa.gov/1KdPjU3>

[4] <http://1.usa.gov/1aK739D>

[5] <http://www.aclu.org/transgender-parent-guide>

[6] <https://www.aclu.org/transgender-parent-guide>

[7] <http://www.aclu.org/transprisonrights>

[8] <https://action.aclu.org/secure/report-lgbthiv-discrimination>



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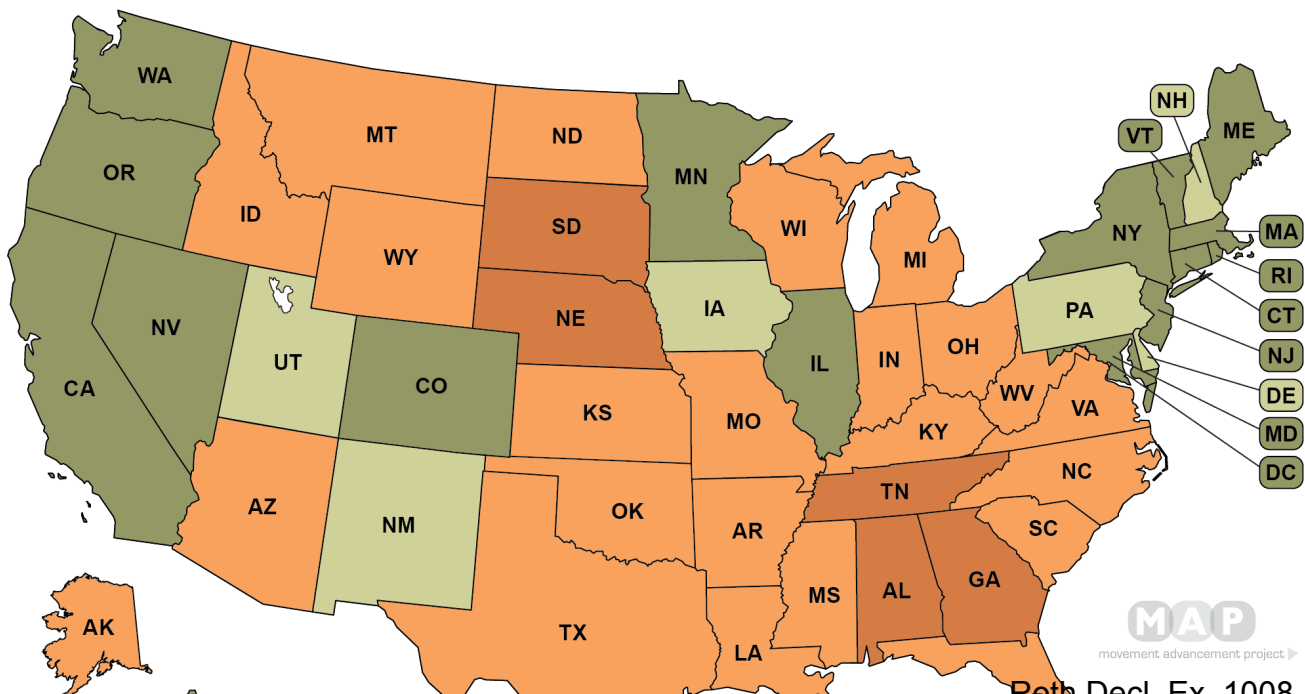
EQUALITY MAPS

OVERALL POLICY TALLY

SEXUAL ORIENTATION

GENDER IDENTITY

STATE DATA TABLE



MAP
movement advancement project



High Overall Policy Tally (16 states + D.C.)

Medium Overall Policy Tally (6 states)

Low Overall Policy Tally (23 states)

Negative Overall Policy Tally (5 states)

Percent of LGBT Population Covered by Laws

45%

45 % of the LGBT population lives in states with high overall policy tallies

7%

7 % of LGBT population lives in states with medium overall policy tallies

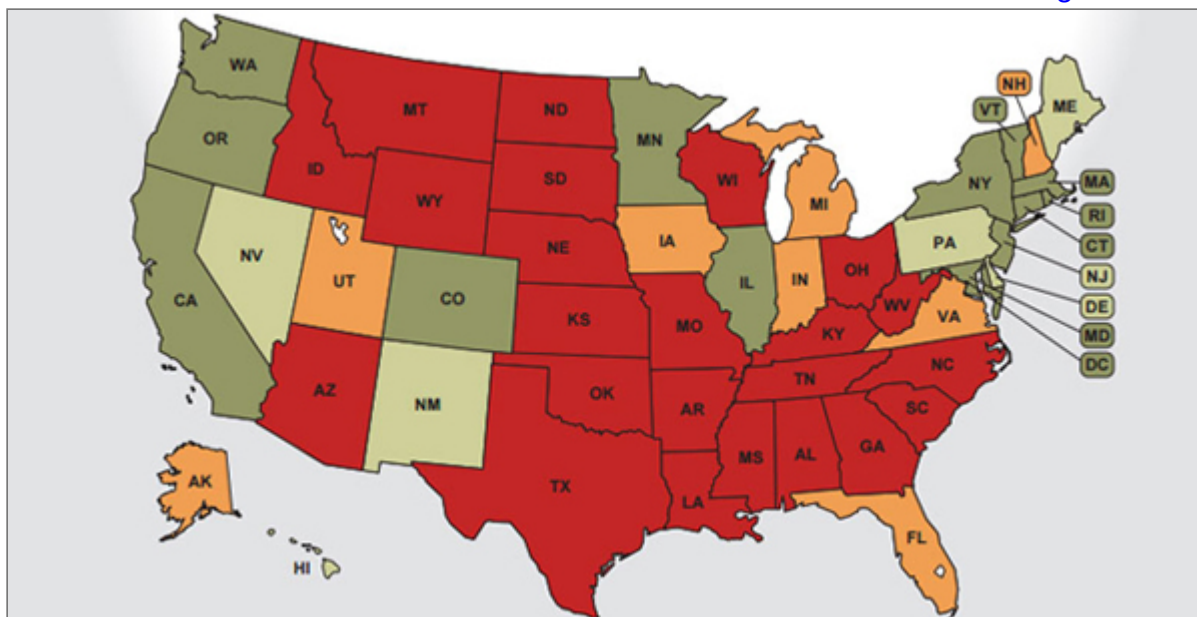
42%

42 % of LGBT population lives in states with low overall policy tallies

7%

7 % of LGBT population lives in states with negative overall policy tallies

RELATED RESOURCES

REPORT

MAPPING TRANSGENDER EQUALITY IN THE UNITED STATES

(/mapping-trans-equality)

To help make sense of the current policy landscape in the states, this report looks at legal equality for transgender people across the country. The gender identity tally is comprised of 25 state laws and policies in five key categories: Non-Discrimination, LGBT Youth, Health and Safety, Ability to Correct the Name and Gender Marker on Identity Documents, and Adoption and Parenting.



Roth DEPT. EX-1008

MAPPING LGBT EQUALITY IN AMERICA

(/file/Mapping%20Equality%20for%20LGBT%20Americans%20Post%20SCOTUS.pdf)

Mapping LGBT Equality in America

(/file/Mapping%20Equality%20for%20LGBT%20Americans%20Post%20SCOTUS.pdf) sets out to identify and explain the key gaps in legal equality for LGBT Americans by introducing the major state and local laws and policies that protect or harm LGBT people, providing a breakdown of those laws and policies by state, and showing how protections for LGBT Americans vary based on sexual orientation and gender identity and expression.



STATE POLICY TALLIES

(/equality-maps/legal_equality_by_state)

Policy Tallies provide an overview of laws and policies that exist in each state. The major categories of laws covered by the policy tally include: Marriage and Relationship Recognition, Adoption and Parenting, Non-Discrimination, Safe Schools, Health and Safety, and the Ability for Transgender People to Correct the Gender Marker on Identity Documents.

Table: Cutoffs for Each Tally

	Sexual Orientation Tally	Gender Identity Tally	Total Tally
High	11 to 19	8 to 15	19 to 34
Medium	1 to 10	0 to 7	7 to 16

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Transgender rights in the United States

Transgender rights in the United States vary considerably by jurisdiction.

Birth certificates are typically issued by the Vital Records Office of the state (or equivalent territory, or capital district) where the birth occurred, and thus the listing of biological sex as male, female or otherwise on the birth certificate (and whether or not this can be changed later) is regulated by state (or equivalent) law. However, federal law regulates sex as listed on a Consular Report of Birth Abroad, and other federal documents that list sex or name, such as the U.S. passport. Laws concerning name changes in U.S. jurisdictions are also a complex mix of federal and state rules. States vary in the extent to which

they recognize transgender people's gender identities, often depending on the steps the person has taken in their transition (including psychological therapy, hormone therapy), with some states making sex reassignment surgery a pre-requisite of recognition.



Transgender Pride Flag map of the Contiguous United States

The federal government does not have laws specifically protecting transgender people from discrimination in employment, housing, healthcare, and adoption, but some lawsuits argue that the Equal Protection Clause of the federal constitution or federal laws prohibiting discrimination based on gender should be interpreted to include transgender people and discrimination based on gender identity. U.S. President Barack Obama issued an executive order prohibiting discrimination against transgender people in employment by the federal government and its contractors.^[1] In 2016, the Departments of Education and Justice issued a letter to schools receiving federal funding that interpreted Title IX protection to apply to gender identity and transgender students, advising schools to use a student's preferred name and pronouns and to allow use of bathrooms and locker rooms of the student's gender identity.^[2] Recognition and protection against discrimination is provided by some state and local jurisdictions to varying degrees.

The Supreme Court decision in *Obergefell v. Hodges* established that equal protection requires all jurisdictions to recognize same-sex marriages, giving transgender people the right to marry regardless of whether their partners are legally considered to be same-sex or opposite-sex. The Matthew Shepard and James Byrd Jr. Hate Crimes Prevention Act added gender identity to the federal definition of a hate crime, but only some states and territories include gender identity in their hate crime laws.

Non-binary or genderqueer people may seek legal recognition of a gender identity other than that indicated by their birth sex; in 2016, Oregon became the first state to legally recognize non-binary people.^[3] When a person's gender is not officially recognized, they may seek associated changes, such as to their legal name, including on their birth certificate.

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Marriage

In *Obergefell v. Hodges*, the Supreme Court of the United States ruled that people have a right to marry without regard to gender. While this is commonly understood as a ruling allowing same-sex marriage, it also meant that a person's sex, whether assigned at birth or recognized following transitioning, can not be used to determine their eligibility to marry. Prior to this ruling, the right of transgender people to marry was often subject to legal challenge — as was the status of their marriages after transitioning, particularly in cases where an individual's birth sex was interpreted to mean a same-sex marriage had taken place.^[4]

Cases

In 1959, Christine Jorgensen, a trans woman, was denied a marriage license by a clerk in New York City, on the basis that her birth certificate listed her as male;^{[5][6]} Jorgensen did not pursue the matter in court. Later that same year, Charlotte McLeod, another trans female who underwent gender reassignment surgery, married her husband Ralph H. Heidel in Miami. She did not mention her birth gender, however, or the fact she was still legally a male. The first case in the United States which found that post-operative trans people could marry in their post-operative sex was the New Jersey case *M.T. v J.T.*, (1976). Here the court expressly considered the English *Corbett v. Corbett* decision, but rejected its reasoning.

In *Littleton v. Prange*, (1999),^[7] Christie Lee Littleton, a post-operative trans woman, argued to the Texas 4th Court of Appeals that her marriage to her genetically male husband (deceased) was legally binding and hence she was entitled to his estate. The court decided that plaintiff's gender is equal to her chromosomes, which were XY (male). The court subsequently invalidated her revision to her birth certificate, as well as her Kentucky marriage license, ruling "We hold, as

a matter of law, that Christie Littleton is a male. As a male, Christie cannot be married to another male. Her marriage to Jonathon was invalid, and she cannot bring a cause of action as his surviving spouse." She appealed to the Supreme Court of the United States but it denied certiorari in 2000.^[4]

The Kansas Appellate Court ruling in *In re Estate of Gardiner* (2001)^[8] considered and rejected *Littleton*, preferring *M.T. v. J.T.* instead. In this case, the Kansas Appellate Court concluded that "[A] trial court must consider and decide whether an individual was male or female at the time the individual's marriage license was issued and the individual was married, not simply what the individual's chromosomes were or were not at the moment of birth. The court may use chromosome makeup as one factor, but not the exclusive factor, in arriving at a decision. Aside from chromosomes, we adopt the criteria set forth by Professor Greenberg. On remand, the trial court is directed to consider factors in addition to chromosome makeup, including: gonadal sex, internal morphologic sex, external morphologic sex, hormonal sex, phenotypic sex, assigned sex and gender of rearing, and sexual identity." In 2002, the Kansas Supreme Court reversed the Appellate court decision in part, following *Littleton*.^[9]

The custody case of Michael Kantaras made national news.^[10] Kantaras met another woman and filed for divorce in 1998, requesting primary custody of the children. Though he won that case in 2002, it was reversed on appeal in 2004 by the Florida Second District Court of Appeal,^[11] upholding Forsythe's claim that the marriage was null and void because her ex-husband was still a woman and same-sex marriages were illegal in Florida.^[12] Review was denied by the Florida Supreme Court.^[13]

In *re Jose Mauricio LOVO-Lara* (2005),^[14] the Board of Immigration Appeals ruled that for purposes of an immigration visa, "A marriage between a postoperative transsexual and a person of the opposite sex may be the basis for benefits under ..., where the State in which the marriage occurred recognizes the change in sex of the postoperative transsexual and considers the marriage a valid heterosexual marriage."^[14]

In *Fields v. Smith* (2006), three transgender women filed a lawsuit against this state of Wisconsin for passing a law banning hormone treatment or sex reassignment surgery for inmates. The courts of appeal struck down the law issuing that transgender people have a right to medical access in prison.^[15]

Parental rights

There is little consistency across courts in the treatment of transgender parent in child custody and visitation cases. In some cases, a parent's transgender status is not weighed in a court decision; in others, rulings are made on the basis of a transgender person being presumed to be an inherently unfit parent.

Courts are generally allowed to base custody or visitation rulings only on factors that directly affect the best interests of the child. According to this principle, if a transgender parent's gender identity cannot be shown to hurt the child, contact should not be limited, and other custody and visitation orders should not be changed for this reason. Many courts have upheld this principle and have treated transgender custody cases like any other child custody determination—by focusing on standard factors such as parental skills. In *Mayfield v. Mayfield*, for instance, the court upheld a transgender parent's shared parenting plan because there was no evidence in the record that the parent would not be a "fit, loving and capable parent."^[16]

Other times, courts claiming to consider a child's interests have ruled against the transgender parent, leading to the parent losing access to their children on the basis of their gender identity. For example, in *Cisek v. Cisek*, the court terminated a transgender parent's visitation rights, holding that there was a risk of both mental and "social harm" to the children. The court asked whether the parent's sex change was "simply an indulgence of some fantasy". An Ohio court imposed an indefinite moratorium on visitation based on the court's belief that it would be emotionally confusing for the children to see "their father as a woman".^[17]

Reproductive rights

Transgender people who haven't undergone sex reassignment surgery are still able to procreate. However, many states mandate sex reassignment surgery in order for a trans person's gender identity to be legally recognized. This has been criticized as forcible sterilization.^[18] Some transgender people wish to retain their ability to procreate. Others do not require hysterectomy, phalloplasty, metoidioplasty, penectomy, orchiectomy, or vaginoplasty to treat their gender dysphoria. In these cases, the sexual reassignment surgery is considered medically unnecessary. Furthermore, sexual reassignment surgery is generally the final medical procedure in a complete sex change, and is a procedure which many trans people find financially prohibitive.^[19]

Others advocate for a right to access assisted reproduction technology services and the preservation of reproductive tissue prior to sex reassignment surgery, which renders them infertile. This would include cryopreservation of semen in a sperm bank in the case of trans women and oocytes or ovum for trans men. For such individuals, access to surrogacy and in-vitro fertilization services is necessary to have children.^[20]

Identity documents

Identity documents are a major area of legal concern for transgender people. Different procedures and requirements for legal name changes and gender marker changes on birth certificates, drivers licenses, social security identification and passports exist and can be inconsistent. Many states require sex reassignment surgery to change their name and gender marker. Also, documents which do not match each other can present difficulties in conducting personal affairs - particularly those which require multiple, matching forms of identification. Furthermore, having documents which do not match a person's gender presentation has been reported to lead to harassment and discrimination.^{[21][22]}

Name change

Transgender people often seek legal recognition for a name change during a gender transition. Laws regarding name changes vary state-by-state. In some states, transgender people can change their name, provided that the change does not perpetrate fraud or enable criminal intent. In other states, the process requires a court order or statute and can be more difficult. An applicant may be required to post legal notices in newspapers to announce the name change - rules that have been criticized on grounds of privacy rights and potentially endangering transgender people to targeted hate crimes.^[23] Some courts require medical or psychiatric documentation to justify a name change, despite having no similar requirement for individuals changing names for reasons other than gender transitioning.^[24]

Birth certificates

U.S. states make their own laws about birth certificates, and state courts have varied in their application of such laws to transgender people.^{[25][26]} A majority of states permit the name and sex to be changed on a birth certificate, either through amending the existing birth certificate or by issuing a new one. Many states, however, require medical proof of sex reassignment surgery in order to warrant a gender marker change. As of April 2015, Idaho, Kansas, Ohio, and Tennessee refuse to change the sex on a birth certificate.^[27] Texas, by opinion of the local clerk's office, will make necessary changes to a birth certificate, including amendment of sex if a court order is presented. As of July 2014, New York State passed legislation easing changing recorded gender, and as of December 2014 New York City followed, completely eliminating the need for gender reassignment surgery when filing for birth gender change in New York.^[28] In November 2016, Nevada changed the requirements for a person to change their gender on their birth certificates, eliminating the surgery requirement and requiring only an affidavit from the person making the change and an affidavit who can attest that the information is accurate.^[29]

Cases

The first case to consider legal gender change in the U.S. was *Mtr. of Anonymous v. Weiner* (1966), in which a post-operative transgender woman wished to change of her name and sex on her birth certificate in New York City. The New York City Health Department denied the request. She took the case to court, but the court ruled that the New York City Health Code didn't permit the request, which only permitted a change of sex on the birth certificate if an error was made recording it at birth.^{[30][31]}

The decision of the court in *Weiner* was again affirmed in *Mtr. of Hartin v. Dir. of Bur. of Recs.* (1973) and *Anonymous v. Mellon* (1977). Despite this, there can be noted as time progressed an increasing support expressed in judgments by New York courts for permitting changes in birth certificates, even though they still held to do so would require legislative action. It should be noted that classification of characteristic sex is a public health matter in New York; and New York City has its own health department which operates separately and autonomously from the New York State health department.

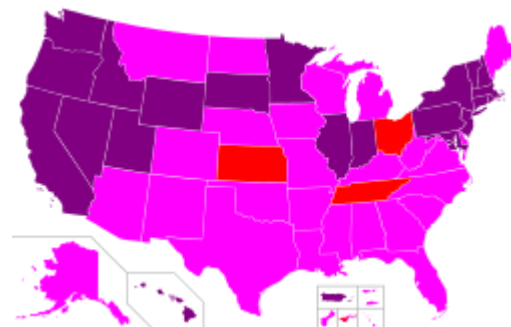
An important case in Connecticut was *Darnell v. Lloyd* (1975),^[32] where the court found that substantial state interest must be demonstrated to justify refusing to grant a change in sex recorded on a birth certificate.^[33]

In *K. v. Health Division* (1977),^[34] the Oregon Supreme Court rejected an application for a change of name or sex on the birth certificate of a post-operative transgender man, on the grounds that there was no legislative authority for such a change to be made.

Drivers' licenses

All U.S. states allow the gender marker to be changed on a driver's license,^[35] although the requirements for doing so vary by state. Often, the requirements for changing one's driver's license are less stringent than those for changing the marker on the birth certificate. For example, the state of Massachusetts requires SRS for a birth certificate change,^[36] but only a form including a sworn statement from a physician that the applicant is in fact the new gender to correct the sex designation on a driver's license.^[37] The state of Virginia has policies similar to those of Massachusetts, requiring SRS for a birth certificate change, but not for a driver's license change.^{[38][39]}

Sometimes, the states' requirements and laws conflict with and are dependent on each other; for example, a transgender woman who was born in Ohio but living in Kentucky will be unable to have the gender

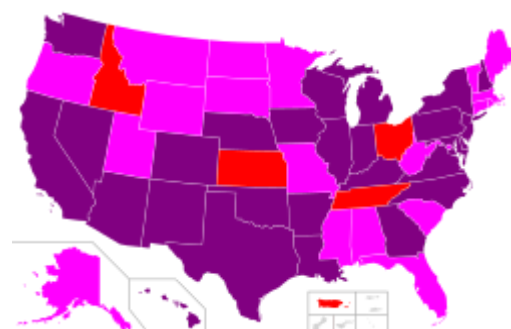


Legal requirements each state has for altering the sex on one's birth certificate.

- ☐ State does not require SRS to alter sex on birth certificate
- ☐ Altering sex on birth certificate requires SRS^{1 2}
- ☐ State does not alter sex on birth certificates for trans people

---- ¹Some Texas officials have refused to amend the sex on birth certificates to reflect a sex change after the ruling *Littleton v. Prange*; however, a judge can order an amendment.

²From May 2013 to March 2017 Missouri allowed, through court order via CASE 13AR-CV00240, a quiet workaround of Mo. Ann. Stat. § 193.215(9). The workaround from the original petitioning case has been reversed by mandate of the several courts and Missouri now requires sexual reassignment surgery to change gender.



The procedure each state uses to alter the sex on one's birth certificate.

- ☐ New birth certificate is issued with correct sex designation
- ☐ Old birth certificate is amended to correct sex designation
- ☐ State does not alter sex on birth certificates for transgender people

marker changed on her Kentucky driver's license. This is due to the fact that Kentucky requires an amended birth certificate reflecting person's accurate gender, but the state of Ohio does not change gender markers on birth certificates.^[40]

Cases

In May 2015, six Michigan transgender people filed *Love v. Johnson* in the United States District Court for the Eastern District of Michigan, challenging the state's policy requiring the information on a person's driver's license match the information on their birth certificate.^{[41][42]} This policy requires transgender people to change the information on their birth certificates in order to change their driver's licenses, which is not possible in Idaho and Ohio, where three of the plaintiffs were born, and requires a court order in South Carolina, where a fourth was born. The remaining two residents were born in Michigan, and would be required to undergo surgery to change their birth certificates.^[41] The plaintiffs in the case are represented by the American Civil Liberties Union.^{[41][42]}

In November 2015, Judge Nancy Edmunds denied the State of Michigan's motion to dismiss the case.^[41]

Passports

The State Department determines what identifying biographical information is placed on passports. On June 10, 2010, the policy on gender changes was amended to allow permanent gender marker changes to be made with the statement of a physician that "the applicant has had appropriate clinical treatment for gender transition to the new gender."^[43] The previous policy required a statement from a surgeon that gender reassignment surgery was completed.^[44]

Third gender option

As of 2017, the U.S. federal government does not recognize a third gender option on passports or other national identity documents, though other countries including Australia, New Zealand, India, Nepal, Pakistan, Bangladesh, Germany, Malta, and Canada have begun recognizing this.^{[45][46][47][48][49]} Third genders have traditionally been acknowledged in a number of Native American cultures as "two spirit" people, in traditional Hawaiian culture as the māhū, and as the fa'afafine in American Samoa.^{[50][51][52][53]} Similarly, immigrants from traditional cultures that acknowledge a third gender would benefit from such a reform, including the muxe gender in southern Mexico and the hijra of south Asian cultures.^{[54][55] [56]}

On June 10, 2016, an Oregon circuit court ruled that a resident, Jamie Shupe, could legally change their gender to non-binary. The Transgender Law Center believes this to be "the first ruling of its kind in the U.S."^[3]

On September 26, 2016, intersex California resident Sara Kelly Keenan became the second person in the United States to legally change her gender to 'non-binary'. Keenan, who uses she/her pronouns cited Shupe's case as inspiration for her petition.^[57] Keenan later obtained a birth certificate with an intersex sex marker. In press reporting of this decision, it became apparent that Ohio had issued an 'hermaphrodite' sex marker in 2012.^[58]

On January 26, 2017, a bill was introduced in the California State Senate that would create a third, nonbinary gender marker on California birth certificates, drivers' licenses, and identity cards. The bill, SB 179, would also remove the requirements for a physician's statement and mandatory court hearing for gender change petitions.^[59] This bill was signed into law on October 15, 2017; the non-binary option will become available on January 1, 2019.^[60]

On June 15, 2017, Oregon became the first state in the U.S. to announce it will allow a non-binary "X" gender marker on state IDs and driver's licenses, beginning July 1. No doctor's note will be required for the change.^[61] The following week, Washington D.C. announced that a non-binary "X" gender marker for district-issued ID cards and driver's licenses would

very shortly be offered with no medical certification required.^[62] The D.C. policy change went into effect on June 27, making the district the first place in the U.S. to offer gender-neutral driver's licenses and ID cards.^[63] In June 2018, Maine began issuing yellow stickers to cover part of the ID card with the statement "Gender has been changed to: X - Non-binary".^[64]

Legislation to offer an "X" gender marker for residents' ID cards was introduced in New York state in June 2017^{[62][65]} (and was expected to be introduced in New York City in June 2018),^[66] and in Massachusetts in May 2018.^[67]

Discrimination

Laws

Federal

There is no federal law designating transgender as a protected class, or specifically requiring equal treatment for transgender people. Some versions of the Employment Non-Discrimination Act introduced in the U.S. Congress have included protections against discrimination for transgender people, but as of 2015 no version of ENDA has passed. Whether or not to include such language has been a controversial part of the debate over the bill. In 2016 and again in 2017, Rep. Pete Olson [R-TX] introduced legislation to strictly interpret gender identity according to biology, which would end federal civil rights protection of gender identity. It remains legal at the federal level for parents to subject transgender children to conversion therapy.

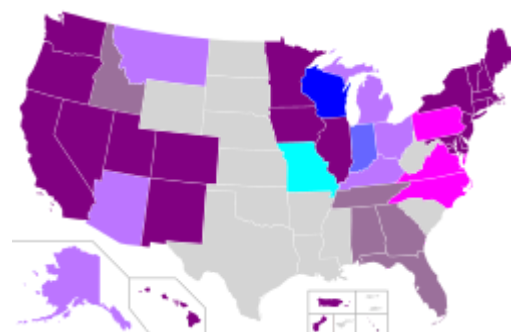
On October 4, 2017, Attorney General Jeff Sessions released a Department of Justice memo stating that Title VII of the 1964 Civil Rights Act prohibits discrimination based on sex, which he stated "is ordinarily defined to mean biologically male or female," but the law "does not prohibit discrimination based on gender identity *per se*."^[68]

On January 30, 2012, HUD Secretary Shaun Donovan announced new regulations that would require all housing providers that receive HUD funding to prevent housing discrimination based on sexual orientation or gender identity.^[69] These regulations went into effect on March 5, 2012.^[70]

State and local

As of 2018, 22 states feature legislation that prohibit discrimination based on gender identity in either employment, housing, and/or public accommodations. None of these state laws has ever been defeated at the ballot box; the first statewide referendum on repealing existing protections for transgender people^[71] is scheduled for November 2018 in Massachusetts.

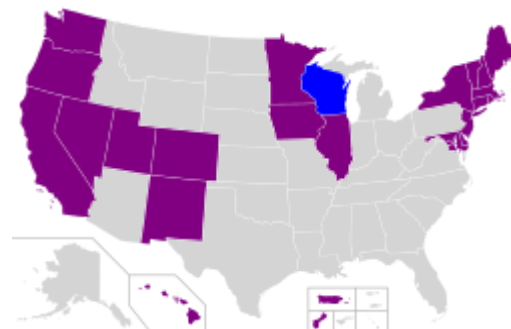
As of 2016, over 225 jurisdictions^[72] including the District of Columbia had similar legislation. The only existing legislation to face repeal at the ballot box was in Anchorage, Alaska, where voters chose in April 2018 to keep the existing protections for transgender people.^[73]



Current U.S. LGBT employment discrimination laws.

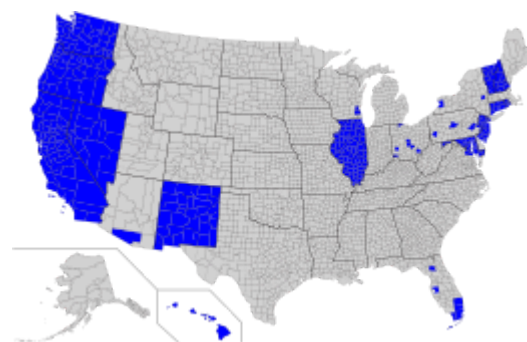
- ☐ Sexual orientation and gender identity: all employment
- ☐ Sexual orientation: all employment, gender identity only in state employment
- ☐ Sexual orientation: all employment
- ☐ Sexual orientation and gender identity: state employment only
- ☐ Sexual orientation: state employment only
- ☐ No state-level protection for LGBT employees

Some states and cities have banned conversion therapy for minors.



States that prohibit housing discrimination based on sexual orientation or gender identity. HUD regulations require all housing providers that receive HUD funding not to discriminate against an individual's sexual orientation or gender identity.

- ☒ Prohibits housing discrimination based on sexual orientation and gender identity
- ☐ Prohibits housing discrimination based on sexual orientation only
- ☐ Does not factor sexual orientation or gender identity/unclear



Map of U.S. cities and counties that have bans on sexual orientation and gender identity change efforts with minors.

- ☒ Ban on conversion therapy for minors on the basis of sexual orientation and gender identity
- ☐ No ban on conversion therapy for minors on the basis of sexual orientation

State	Date effective	Employment	Housing	Public accommodations
Minnesota	1993 ^[74]	✓	✓	✓
Rhode Island	Dec 6, 1995 (public accommodation) July 17, 2001 (employment and housing) ^[75]	✓	✓	✓
New Mexico	July 1, 2003 (employment and housing) 2004 (public accommodation)	✓	✓	✓
California ^[76]	2004 (employment and housing) Oct 9, 2011 (public accommodations)	✓	✓	✓
District of Columbia	2005 (employment and housing) March 8, 2006 (public accommodations)	✓	✓	✓
Maine	December 28, 2005	✓	✓	✓
Illinois	2005 (employment and housing) 2006 (public accommodations)	✓	✓	✓
Hawaii	July 11, 2005 (housing and public accommodations) May 5, 2011 (employment)	✓	✓	✓
Washington	2006	✓	✓	✓
New Jersey	2006	✓	✓	✓
Vermont	2007	✓	✓	✓
Oregon	2007	✓	✓	✓
Iowa	2007	✓	✓	✓
Colorado ^[77]	2007 (employment and housing) 2008 (public accommodations)	✓	✓	✓
Nevada	2011	✓	✓	✓
Connecticut ^[78]	October 1, 2011	✓	✓	✓
Massachusetts ^[79]	2012 (employment and housing) 2016 (public accommodations) ^[79]	✓	✓	✓
Delaware	2013	✓	✓	✓
Maryland	2014	✓	✓	✓
Utah	2015	✓	✓	✗
New York ^[80]	January 20, 2016	✓	✓	✓
New Hampshire ^{[81][82]}	July 8, 2018	✓	✓	✓

Cases

In 2000, a court ruling in Connecticut determined that conventional sex discrimination laws protected transgender persons. However, in 2011, to clarify and codify this ruling, a separate law was passed defining legal anti-discrimination protections on the basis of gender identity.^[83]

On October 16, 1976, a Supreme Court rejected plaintiff's appeal in sex discrimination case involving termination from teaching job after sex-change operation from a New Jersey school system.^[84]

Carroll v. Talman Fed. Savs. & Loan Association, 604 F.2d 1028, 1032 (7th Cir.) 1979, held that dress codes are permissible. "So long as [dress codes] and some justification in commonly accepted social norms and are reasonably related to the employer's business needs, such regulations are not necessarily violations of Title VII even though the standards prescribed differ somewhat for men and women."^[85]

In *Ulane v. Eastern Airlines Inc.* 742 F.2d 1081 (7th Cir. 1984) Karen Ulane, a pilot who was assigned male at birth, underwent sex reassignment surgery to attain typically female characteristics. The Seventh Circuit denied Title VII sex discrimination protection by narrowly interpreting "sex" discrimination as discrimination "against women" [and denying Ulane's womanhood].^[86]

The case of *Price Waterhouse v. Hopkins* 490 U.S. 228 (1989), expanded the protection of Title VII by prohibiting gender discrimination, which includes sex stereotyping. In that case, a woman who was discriminated against by her employer for being too "masculine" was granted Title VII relief.^[87]

Oncale v. Sundowner Offshore Services, Inc. 523 U.S. 75 (1998), found that same-sex sexual harassment is actionable under Title VII.^[88]

A gender stereotype is an assumption about how a person should dress which could encompass a significant range of transgender behavior. This potentially significant change in the law was not tested until *Smith v. City of Salem* 378 F.3d 566, 568 (6th Cir. 2004). Smith, a trans woman, had been employed as a lieutenant in the fire department without incident for seven years. After doctors diagnosed Smith with Gender Identity Disorder ("GID"), she began to experience harassment and retaliation following complaint. She filed Title VII claims of sex discrimination and retaliation, equal protection and due process claims under 42 U.S.C. § 1983, and state law claims of invasion of privacy and civil conspiracy. On appeal, the *Price Waterhouse* precedent was applied at p574: "[i]t follows that employers who discriminate against men because they do wear dresses and makeup, or otherwise act femininely, are also engaging in sex discrimination, because the discrimination would not occur but for the victim's sex."^[89] Chow (2005 at p214) comments that the Sixth Circuit's holding and reasoning represents a significant victory for transgender people. By reiterating that discrimination based on both sex and gender expression is forbidden under Title VII, the court steers transgender jurisprudence in a more expansive direction. But dress codes, which frequently have separate rules based solely on gender, continue. *Carroll v. Talman Fed. Savs. & Loan Association*, 604 F.2d 1028, 1032 (7th Cir.) 1979, has not been overruled.

Harrah's implemented a policy named "Personal Best", in which it dictated a general dress code for its male and female employees. Females were required to wear makeup, and there were similar rules for males. One female employee, Darlene Jespersen, objected and sued under Title VII. In *Jespersen v. Harrah's Operating Co.*, No. 03-15045 (9th Cir. April 14, 2006), plaintiff conceded that dress codes could be legitimate but that certain aspects could nevertheless be demeaning; plaintiff also cited *Price Waterhouse*. The Ninth Circuit disagreed, upholding the practice of business-related gender-specific dress codes. When such a dress code is in force, an employee amid transition could find it impossible to obey the rules.

In *Glenn v. Brumby*, the 11th Circuit Court of Appeals held that the Equal Protection Clause prevented the state of Georgia from discriminating against an employee for being transgender.^{[90][91]}

In education

The Obama administration took the position that Title IX's prohibition on discrimination on the basis of "sex" encompasses discrimination on the basis of gender identity and gender expression. In 2016, the Fourth Circuit became the first^[92] Court of Appeals to agree with the administration on the scope of Title IX as applied to transgender students, in the case of Virginia high school student Gavin Grimm (*G.G. v. Gloucester County School Board*).^[93] The validity of the

executive's position is being tested further in the federal courts. In 2017 the ACLU, representing Grimm, stated that they had stopped Grimm's "request for an immediate halt to the Gloucester County School Board's policy prohibiting him and other transgender students from using the common restrooms at school" but were "moving forward with his claim for damages and his demand to end the anti-trans policy permanently."^[94]

In 2014, Maryland Senate passed a bill that "bans discrimination based on sexual orientation and sexual identity but includes an exemption for religious organizations, private clubs and educational institutions."^[95]

In 2016, guidance was issued by the Departments of Justice and Education stating that schools which receive federal money must treat a student's gender identity as their sex (for example, in regard to bathrooms).^[96] However, this policy was revoked in 2017.^[96]

Restroom access

An area of legal concern for transgender people is access to restrooms which are segregated by gender. Transgender people have, in the past, been asked for legal identification while entering or using a gendered restroom.^{[97][98][99]} Recent legislation has moved in contradictory directions. On one hand, non-discrimination laws have included restrooms as public accommodations, indicating a right to use gendered facilities which conform with a person's gender identity.^[100] On the other, some efforts have been made to insist that individuals use restrooms that match their biological sex, regardless of an individual's gender identity or expression.^[101]

Comprehensive legislation

Numerous jurisdictions and states have passed or considered so-called "bathroom bills" which restrict the use of bathrooms by transgender people, forcing them to choose facilities in accordance with their biological sex. This includes Florida, Arizona, Kentucky and Texas.^{[102][103][104][105]}

North Carolina passed a comprehensive bathroom restriction bill (also known as "HB2" or the *Public Facilities Privacy & Security Act*) on March 23, 2016, which was quickly signed into law by Governor Pat McCrory. The new law overrides a prior Charlotte, North Carolina non-discrimination ordinance on the same subject.^[106]

In September 2016, California governor Jerry Brown signed a bill requiring all single-occupancy bathrooms to be gender-neutral, effective since March 1, 2017.^[107] California is the first U.S. state to adopt such legislation.^[108]

Schools

In *Doe v. Regional School Unit*, the Maine Supreme Court held that a transgender girl had a right to use the women's bathroom at school because her psychological well-being and educational success depended on her transition. The school, in denying her access, had "treated [her] differently from other students solely because of her status as a transgender girl." The court determined that this was a form of discrimination.^[109]

In *Mathis v. Fountain-Fort Carson School District 8* (2013), Colorado's Division of Civil Rights found that denying a transgender girl access to the women's restroom at school was discrimination. They reasoned, "By not permitting the [student] to use the restroom with which she identifies, as non-transgender students are permitted to do, the [school] treated the [student] less favorably than other students seeking the same service." Furthermore, the court rejected the school's defense—that the discriminatory policy was implemented to protect the transgender student from harassment—

and observed that transgender students are in fact safest when a school does not single them out as different. Based on this finding, it is no longer acceptable to institute different kinds of bathroom rules for transgender and cisgender people.^[109]

In May 2016, guidance was issued by the Departments of Justice and Education stating that schools which receive federal money must treat a student's gender identity as their sex (for example, in regard to bathrooms).^[96] However, this policy was revoked in 2017.^[96]

In October 2016, the U.S. Supreme Court agreed to take on the case of whether a transgender boy, Gavin Grimm, could use the boys' bathroom in his Virginia high school. Gavin was assigned female at birth but is a transgender male. For a while, he was permitted access to the boys' bathroom but was later denied access after a new policy was adopted by the local school board. The ACLU took on the case, stating that girls objected when he tried to use the girls' bathroom in accordance with the new policy and that he was humiliated when the school directed him to use a private bathroom, unlike other boys. After challenging the policy, he won his case in the Court of Appeals in 2015 in a tie vote.^{[110][111]} This marked the first ruling by an appeals court to find that transgender students are protected under federal laws that ban sex-based discrimination.^[112] However, later in 2016 the U.S. Supreme Court agreed to put that ruling on hold.^[113] Then in 2017 the U.S. Supreme Court vacated the decision of the 4th U.S. Circuit Court of Appeals and refused to hear the case.^[114] Later in 2017, it was announced that the 4th Circuit would send the case back to the district court for the judge to determine whether the case was moot because Grimm graduated.^[115]

Workplace

Rights to restrooms that match one's gender identity have also been recognized in the workplace and are actively being asserted in public accommodations. In Iowa, for example, discrimination in public accommodations on the basis of sexual orientation and gender identity has been prohibited by law since 2007 through the Iowa Civil Rights Act.^[109]

In *Cruzan v. Special School District #1*, decided in 2002, a Minnesota federal appeals court ruled that it isn't the job of the transgender person to accommodate the concerns of cisgender people who express discomfort with sharing a facility with a transgender person. Employers need to offer an alternative to the complaining employee in these situations, such as an individual restroom.^[109]

Hate crimes legislation

Federal hate crimes legislation include limited protections for gender identity. The Matthew Shepard and James Byrd, Jr. Hate Crimes Prevention Act of 2009 criminalized "willfully causing bodily injury (or attempting to do so with fire, firearm, or other dangerous weapon)" on the basis of an "actual or perceived" identity. However, protections for hate crimes motivated on the basis of a victim's gender identity or sexual orientation is limited to "crime affect[ing] interstate or foreign commerce or occur[ring] within federal special maritime and territorial jurisdiction." This limitation only applies to gender identity and sexual orientation, and not to race, color, religion or national origin.^[117] Therefore, hate crimes which occur outside these jurisdictions are not protected by federal law.

Seventeen states have hate crimes legislation which include gender identity or expression as a protected group. They are Vermont, Massachusetts, Connecticut, New Jersey, Delaware, Illinois, Maryland, Missouri, Minnesota, Colorado, New Mexico, Nevada, Rhode Island, Washington, Oregon, California, and Hawaii. The District of Columbia also has a trans-inclusive hate crimes law. Twenty-seven states have hate-crimes legislation which exclude transgender people. Six states have no hate-crimes legislation at all.^[118]

Numerous municipalities have passed hate-crime legislation, some of which include transgender people. However, Arkansas recently passed laws which ban municipalities from enacting such protections for sexual orientation, gender identity or expression.^[119]

Healthcare

Transgender people confront two major legal issues within the healthcare system: access to health care for gender transitioning and discrimination by health care workers.

Even though there is medical consensus that hormone therapy and sex reassignment surgery (SRS) are medically necessary for many transgender people, the kinds of health care associated with gender transition are sometimes misunderstood as cosmetic, experimental or simply unnecessary. This has led to public and private insurance companies denying coverage for such treatment.^[120] Courts have repeatedly ruled that these treatments may be medically necessary and have recognized gender dysphoria as a legitimate medical condition constituting a "serious medical need"^[121]

The idea that transition-related care is cosmetic or experimental has been ruled as discriminatory and out of touch with current medical thinking. The AMA and WPATH have specifically rejected these arguments, and courts have affirmed their conclusion.^{[122][123]} In a case brought by Gay and Lesbian Advocates and Defenders (GLAD), O'Donnabhain v. Commissioner, for instance, the Internal Revenue Service lost its claim that such treatments were cosmetic and experimental when a transgender woman deducted her SRS procedures as a medical expense. Courts have also found that psychotherapy alone is insufficient treatment for gender dysphoria, and that for some people, SRS may be the only effective treatment.^[121]

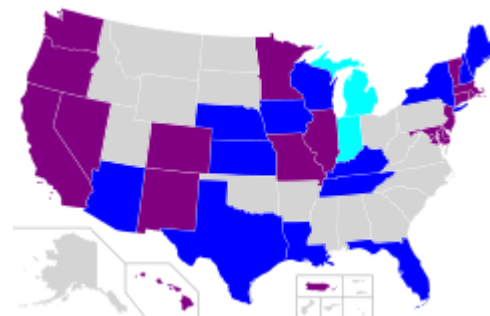
Transgender people also sometimes experience discrimination by healthcare professionals, who have refused to treat them for conditions both related and unrelated to their gender identity.^{[124][125][126]}

The Affordable Care Act (ACA) of 2010 prohibits sex discrimination in federally funded health care facilities, and in 2012 the federal Department of Health and Human Services clarified that this includes discrimination based on transgender status. The relevant anti-discrimination part of ACA is Section 1557. A 2016 rule made it clear that discrimination based on gender identity is forbidden.^[127] The ACA also forbids insurance providers from refusing to cover a person based on a pre-existing condition, including being transgender. Further protections are provided in jurisdictions that have laws prohibiting discrimination on the basis of sex, gender identity or gender expression in public accommodations - and under medical malpractice and misconduct law.^[128]

Prisoners' rights

In September 2011, a California state court denied the request of a California inmate, Lyrilisa Stevens, for sex reassignment surgery at the state's expense.^[129]

On January 17, 2014, in Kosilek v. Spencer a three-judge panel of the First Circuit Court of Appeals ordered the Massachusetts Department of Corrections to provide Michelle Kosilek, a Massachusetts inmate, with sex reassignment surgery. It said denying the surgery violated Kosilek's Eighth Amendment rights, which included "receiving medically



US state hate crime laws as they pertain to sexual orientation and gender identity.

- ☒ Sexual orientation and gender identity recognized in state hate crimes law
- ☒ Sexual orientation recognized in state hate crimes law
- ☒ Sexual orientation recognized for data collection about hate crimes
- ☒ State hate crimes law noninclusive

[116]

necessary treatment ... even if that treatment strikes some as odd or unorthodox".^[130]

On April 3, 2015, the U.S. Department of Justice intervened in a federal lawsuit filed in Georgia to argue that denying hormone treatment for transgender inmates violates their rights. It contended that the state's policy that only allows for continuing treatments begun before incarceration was insufficient and that inmate treatment needs to be based on ongoing assessments.^[131] The case was brought by Ashley Diamond, an inmate who had used hormone treatment for seventeen years before entering the Georgia prison system.^[132]

On May 11, 2018, the US Bureau of Prisons announced that prison guidelines issued by the Obama Administration in January 2017 to allow transgender prisoners to be transferred to prisons housing inmates of the gender which they identify with had been rescinded and that biological gender would once again determine where transgender prisoners are jailed.^[133]

Immigration

In 2000, the US Ninth Circuit Court of Appeals concluded that "gay men with female sexual identities [sic] in Mexico constitute a 'particular social group'" that was persecuted and was entitled to asylum in the US (*Hernandez-Montiel v. INS*).^{[134][135]} Since then, several cases have reinforced and clarified the decision.^[136] *Morales v. Gonzales* (2007) is the only published decision in asylum law that uses "male-to-female transsexual" instead of "gay man with female sexual identity".^[136] An immigration judge stated that, under *Hernandez-Montiel*, Morales would have been eligible for asylum (if not for her criminal conviction).^[137]

Critics have argued that allowing transgender people to apply for asylum "would invite a flood of people who could claim a 'well-founded fear' of persecution".^[135] Precise numbers are unknown, but Immigration Equality, a nonprofit for LGBT immigrants, estimates hundreds of cases.^[135]

The United States has no process for accepting visa requests for third gender citizens from other countries. In 2015, trans HIV activist Amruta Alpesh Soni's request for a visa was delayed because her gender is listed as "T" (for transgender) on her Indian passport. In order to receive a visa, the State Department requires the gender identification on the visa to match the gender identification on the passport.^[138]

Military

In 2015, the Pentagon reviewed its policy regarding transgender service members and announced that its ban would be removed.^[139] It announced on June 30, 2016 that, beginning on that date, otherwise qualified service members could not any longer be discharged, denied reenlistment, involuntarily separated, or denied continuation of service because of being transgender.^[140] It was also announced at the same time that, starting in July 2017, under Department of Defense regulations transgender persons may serve in the United States military so long as they have adapted to their identified gender for at least an 18-month period.^[140] Prior to these announcements, discharges for gender transitioning were commonplace. In one case, a postoperative trans person was discharged from the Air Force Reserve, a decision supported by the Court of Appeals.^[141]

President Donald Trump announced on July 26, 2017, that transgender individuals will not be allowed to "serve in any capacity in the U.S. military."^[142] However, Chairman of the Joint Chiefs of Staff General Joseph Dunford stated "There will be no modifications to the current policy until the President's direction has been received by the Secretary of Defense and the Secretary has issued implementation guidance. In the meantime, we will continue to treat all of our personnel with respect."^[143]

On August 1, 2017, the Palm Center released a letter signed by 56 retired generals and admirals, opposing the proposed ban on transgender military service members. The letter stated that if implemented, the ban "would cause significant disruptions, deprive the military of mission-critical talent and compromise the integrity of transgender troops who would be forced to live a lie, as well as non-transgender peers who would be forced to choose between reporting their comrades or disobeying policy".^[144] On August 9, 2017,^{[145][146]} five transgender United States military personnel sued Trump and top Pentagon officials over the proposed banning of transgender people from serving in the military. The suit asks the court to prevent the ban from going into effect.^{[145][146]} Two major LGBT-rights organizations filed a petition in the United States District Court in Washington on behalf of the five transgender personnel.^[146]

On August 25, 2017, Trump signed a presidential memorandum directing that an implementation plan be submitted to him by the Secretary of Defense and the Secretary of Homeland Security February 2018.^[147]

On August 28, 2017, the American Civil Liberties Union (ACLU) of Maryland filed a federal lawsuit, *Stone v. Trump*, on behalf of several transgender military service members, alleging that the ban violated their equal protection rights.^{[148][149]} The same date, Lambda Legal filed a federal lawsuit in Seattle on behalf of three trans people, the Human Rights Campaign, and the Gender Justice League, alleging that the ban violated equal protection, due process and free speech protections.^{[150][151]}

On August 29, 2017, Secretary Mattis announced that currently serving transgender troops would be allowed to remain in the armed services, pending further study. Mattis stated he would set up a panel of experts from the Departments of Defense and Homeland Security to provide recommendations on implementing the President's policy direction.^[152]

Taxes

IRS Publication 502^[153] lists medical expenses that are tax-deductible to the extent they 1) exceed 7.5% of the individual's adjusted gross income, and 2) were not paid for by any insurance or other third party. For example, a person with \$20,000 gross adjusted income can deduct all medical expenses *after* the first \$1,500 spent. If that person incurred \$16,000 in medical expenses during the tax year, then \$14,500 is deductible. At higher incomes where the 7.5% floor becomes substantial, the deductible amount is often less than the standard deduction, in which case it is not cost-effective to claim.

IRS Publication 502 includes several deductions that may apply to gender transition treatments, including some operations.^[153] The deduction for operations was denied to a trans woman but was restored in tax court.^[154] The deductibility of the other items in Publication 502 was never in dispute.

See also

- Transgender disenfranchisement in the United States
- Identity documents in the United States
- History of transgender people in the United States
- LGBT rights in the United States
- Intersex rights in the United States
- Transgender rights
- Name change
- List of transgender-related topics

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Values

Mission: Transgender Law Center changes law, policy, and attitudes so that all people can live safely, authentically, and free from discrimination regardless of their gender identity or expression.

Transgender Law Center (TLC) is the largest national trans-led organization advocating self-determination for all people. Grounded in legal expertise and committed to racial justice, TLC

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employs a variety of community-driven strategies to keep transgender and gender nonconforming people alive, thriving, and fighting for liberation.

At TLC, we believe:

- TGNC people hold the resilience, brilliance, and power to transform society at its root.
- No one is disposable.
- The people most impacted by the systems we fight must lead the work.
- Until TGNC immigrants and Black trans women are safe and free, none of us are.
- Liberation for everyone is both necessary and possible.
- Self-determination is a right we were all born to realize.
- Our survival is revolutionary.
- Because of those who came before us, we have already won.

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About Us

About Us

The National Center for Transgender Equality is the nation's leading social justice advocacy organization winning life-saving change for transgender people.

NCTE was founded in 2003 by transgender activists who recognized the urgent need for policy change to advance transgender equality. With a committed board of directors, a volunteer staff of one, and donated office space, we set out to accomplish what no one had yet done: provide a powerful transgender advocacy presence in Washington, D.C.

Today, NCTE has grown to a staff of 17 and works at the local, state, and federal level to change laws, policies and society. Download NCTE's brochure here. (</sites/default/files/docs/AboutNCTE.pdf>)

Mission

The National Center for Transgender Equality is a national social justice organization devoted to ending discrimination and violence against transgender people through education and advocacy on national issues of importance to transgender people.

By empowering transgender people and our allies to educate and influence policymakers and others, NCTE facilitates a strong and clear voice for transgender equality in our nation's capital and around the country.

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Projects

Racial and Economic Justice Initiative (REJI)

NCTE's Racial and Economic Justice Initiative ensures the perspectives and priorities of transgender people of color, and those who live in urban and rural poverty, are part of the national policy and advocacy agenda. This includes federal policy, local and state advocacy, and collaborating with other racial, social, economic and criminal justice movements and initiatives. Currently, the Initiative's work includes reforming detention conditions for transgender people in correctional facilities and in immigration detention. [Click here to learn more about REJI \(/issues/racial-economic-justice\).](#)

Trans Legal Services Network (TLSN)

NCTE helps ensure every transgender person can navigate the complicated name and gender change process and confidently address other legal issues they may face. NCTE created the Trans Legal Services Network to increase support for organizations across the country who are serving or aiming to serve the legal needs of our communities. Comprised of over 50 organizations, the Network shares advice, provides technical support and legal resources to support their work and expand their services. [Click here to learn more about TLSN \(/about-transgender-people/transgender-legal-services-network\).](#)

Voices for Trans Equality (VTE)

Voices for Transgender Equality (VTE) empowers transgender people and allies so that they can better advocate for transgender rights. VTE allows community members to connect directly with NCTE, to receive resources and opportunities as well as to help NCTE stay informed about transgender rights issues in communities across the country. There's no cost to join, and members never have to share their stories or be public if that's not the right decision for them. Overall, this group will help ensure that trans people and allies are able to use their voices to demand dignity and respect for all. [Click here to learn more about VTE \(http://www.transequality.org/voices\).](http://www.transequality.org/voices)

Families for Trans Equality (FTE)

Families for Transgender Equality (FTE) is a network of families with trans youth, and groups that support these families, who all want to change policies and society to improve trans people's lives. There's no cost to join, and families never have to share their stories or be public if that's not the right decision for them. Overall, this group will help ensure that all families with trans youth are being treated well, and that trans youth are able to live their lives with dignity and respect. [Click here to learn more about FTE \(http://www.transequality.org/families\).](http://www.transequality.org/families)

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LGBT RIGHTS

The ACLU works to ensure that lesbian, gay, bisexual, and transgender people can live openly without discrimination and enjoy equal rights, personal autonomy, and freedom of expression and association.

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WHAT'S AT STAKE

The ACLU has a long history of defending the LGBT community. We brought our first LGBT rights case in 1936 and founded the LGBT Project in 1986. Today, the ACLU brings more LGBT cases and advocacy initiatives than any other national organization does. With our reach into the courts and legislatures of every state, there is no other organization that can match our

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record of making progress both in the courts of law and in the court of public opinion.

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The ACLU Lesbian Gay Bisexual Transgender Project seeks to create a just

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LOVE WINS! Same-sex couples now have the freedom to marry in all 50 states

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In 31 states there are no explicit employment protections for transgender people



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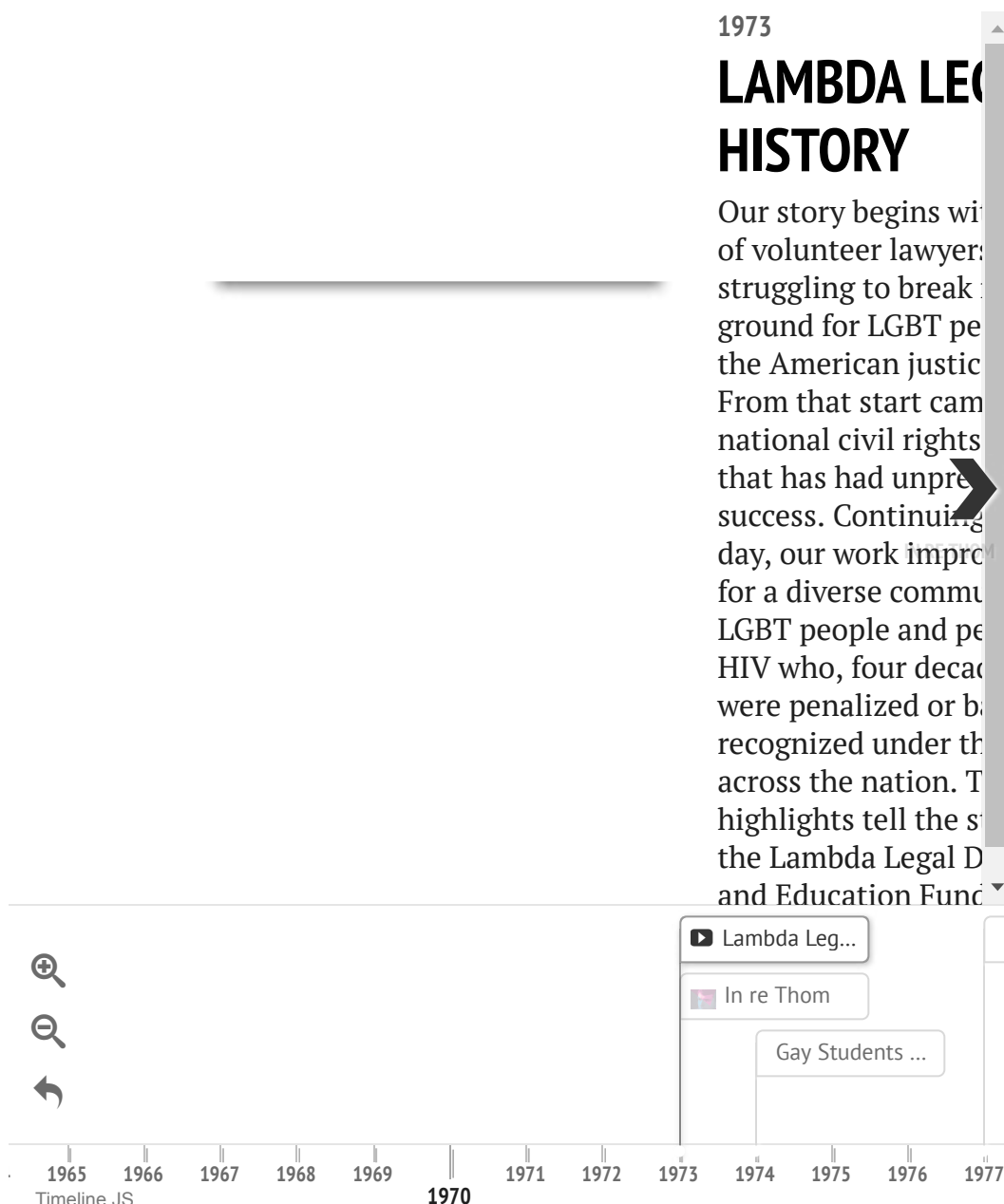
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WE THE PEOPLE DARE TO CREATE A MORE PERFECT UNION



Lambda Legal History



Lambda Legal was founded in 1973 as the nation's first legal organization dedicated to achieving full equality for lesbian and gay people. When [founder Bill Thom](#) filed an application in early 1972 to establish Lambda Legal Defense and Education Fund, he borrowed from the bylaws of another newly established organization—the Puerto Rican Legal Defense and Education Fund (now Latino Justice PRLDEF).

Because of the overwhelming climate of prejudice against gay people, we became our own first client: A panel of New York judges turned down our application to be a nonprofit organization because, in their view, our mission was "neither benevolent nor charitable." With pro bono help, Thom appealed to New York's highest court, which finally allowed Lambda Legal to exist as a nonprofit organization.

Throughout the 1970s, Lambda Legal fought and won some of the nation's first cases on behalf of lesbian and gay parents and same-sex couples. In one of our first cases (*Gay Student Organization v. Bonner*), we successfully helped a gay student group at the University of New Hampshire fight a ban on their school activities. In the 1980s, we stepped up our efforts against government discrimination, while also focusing more on antigay bias in corporations and established community institutions.

In 1983, Lambda Legal won the nation's first HIV/AIDS discrimination case (*People v. West 12 Tenants Corp.*), helping establish that under disability laws it's illegal to discriminate against people who have HIV. We got insurance companies to cover HIV testing and treatments and pay benefits to those disabled by the disease. Lambda Legal also helped establish privacy rights for people with HIV, including the right to keep test results and medical records confidential.

In the 1990s we won a historic legal precedent holding schools responsible for harassment and violence against LGBTQ students (*Nabozny v. Podlesny*) and successfully defended the right of gay-straight alliances to exist in schools (*Colin v. Orange Unified School District*).

In 1992, we successfully kept Colorado's Amendment 2 from taking effect. The statewide initiative would have stripped lesbians and gay men of civil rights protections, nullifying existing bans on antigay discrimination and preventing others from being enacted. In 1996, we convinced the U.S. Supreme Court to declare the measure unconstitutional (*Romer v. Evans*). The Court's ruling made clear that lesbians, gay men and bisexuals have the same right to seek government protection against discrimination as any other group of people.

In 2000, we argued for a sheriff's culpability for his acts prior to the murder of Brandon Teena, who was brutally raped and later killed by two men who discovered he was transgender. This case (*Brandon v. Richardson County*) brought unprecedented visibility to the transgender community and was the subject of the film *Boys Don't Cry*. It also strengthened the principle that law enforcement officials must be held accountable for fair treatment of people who are the targets of hate crimes.

Lambda Legal helped convince state courts to strike down sodomy laws in New York, Kentucky, Tennessee, Montana and Georgia. And in 2003, in the historic case *Lawrence v. Texas*, we persuaded the U.S. Supreme Court to overturn all remaining state sodomy laws. That decision fundamentally changed the legal landscape and was at the time the most important legal victory for LGBT equality.

In 2009, we obtained a historic unanimous decision in Iowa Supreme Court, which ruled that denying marriage to same-sex couples is unconstitutional (*Varnum v. Brien*). This landmark victory makes Iowa the first state in the Midwest to offer marriage equality.

In 2015, we were co-counsel in one of the cases known collectively as *Obergefell v. Hodges*, in which the U.S. Supreme Court declared that denying same-sex couples the freedom to marry violates the U.S. Constitution. The Court's decision invalidates all state statutes and constitutional amendments barring same-sex couples from marriage.

With the generous support of thousands of friends around the country, what began in 1973 as a couple of volunteers working out of a spare room in a supporter's apartment has now grown to an expert staff of more than 100 in six offices around the country—New York, Atlanta, Dallas, Chicago, Los Angeles and Washington DC.

Our work is vital, and our strategy works: We make the case for equality in the nation's courts and in the court of public opinion. We make a big impact in people's lives by changing laws, policies and ideas. Until we achieve full equality under the law in every state in this country, we will keep fighting and moving history forward.

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DIGNITY DENIED: RELIGIOUS EXEMPTIONS AND LGBT ELDER SERVICES

(/dignity-denied-lgbt-older-adults)

Religious exemptions laws jeopardize the security and safety of LGBT older adults, who rely on many religiously affiliated organizations for services like congregational meals, skilled nursing, and health care.



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(/understanding-masterpiece-cakeshop-case)

In June 2018, the U.S. Supreme Court ruled in *Masterpiece Cakeshop vs. Colorado Civil Rights Commission*. This guide offers background on the case, the Court's ruling, and similar cases about service refusals.

THE BROADER DANGER OF THE MASTERPIECE CAKESHOP CASE

The First Step to Eroding Nondiscrimination Protections Nationwide

Issue Brief | November 2017



INTRODUCTION

On Dec. 5, 2017, the U.S. Supreme Court will hear arguments in *Masterpiece Cakeshop, Ltd. v. Colorado Civil Rights Commission*.¹ On the surface, the Court considers a Colorado bakery that refused to serve a gay couple in violation of Colorado's law protecting people from discrimination in public accommodations based on sexual orientation and gender identity. But the real impact of this case could be much broader than the facts of the case suggest. A loss in the *Masterpiece* case would pave the way to dismantling our nation's nondiscrimination laws. Not only would it open the door to much wider ranging *forms* of discrimination, but it would also

commercial businesses that involve some form of creativity should be exempt from nondiscrimination laws. The bakery claims that requiring it to follow those laws not only violates its religious beliefs, but because the business involves "artistic expression," it also violates its right to free speech.

WHY IS THIS CASE SO DANGEROUS?

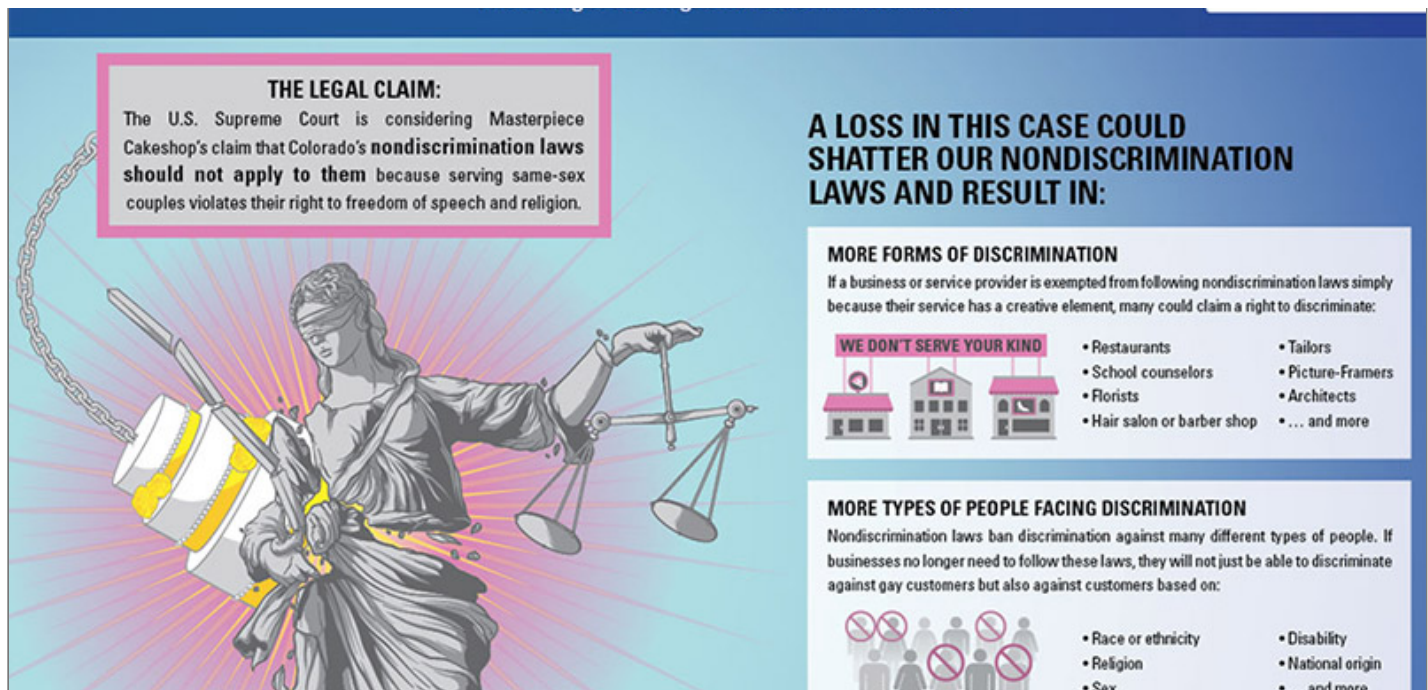
A Ruling for the Bakery Would Open the Door to Broader Forms of Discrimination

First, the kind of expression-related exemptions that the backers of the bakery seek go far beyond wedding cakes. This

ISSUE BRIEF: THE BROADER DANGERS OF THE MASTERPIECE CAKESHOP CASE

(/issue-brief-the-broader-dangers-of-masterpiece)

This issue brief provides an analysis of the legal questions in the case, and the broad legal implications the case will have on people color, women, minority faiths, people with disabilities and others.

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INFOGRAPHIC: MASTERPIECE CAKESHOP: THE DANGEROUS RIGHT-TO-DISCRIMINATE CASE

(/masterpiece-infographic)

This infographic was designed as part of the Open to All campaign and shows how a loss in Masterpiece would open the door to much wider ranging forms of discrimination and a wider array of people facing discrimination. It could lead to the erosion of federal and state nondiscrimination protections across the country. Learn more at www.OpentoAll.com

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LGBT POLICY SPOTLIGHT: CONVERSION THERAPY BANS

(/policy-spotlight-conversion-therapy-bans)

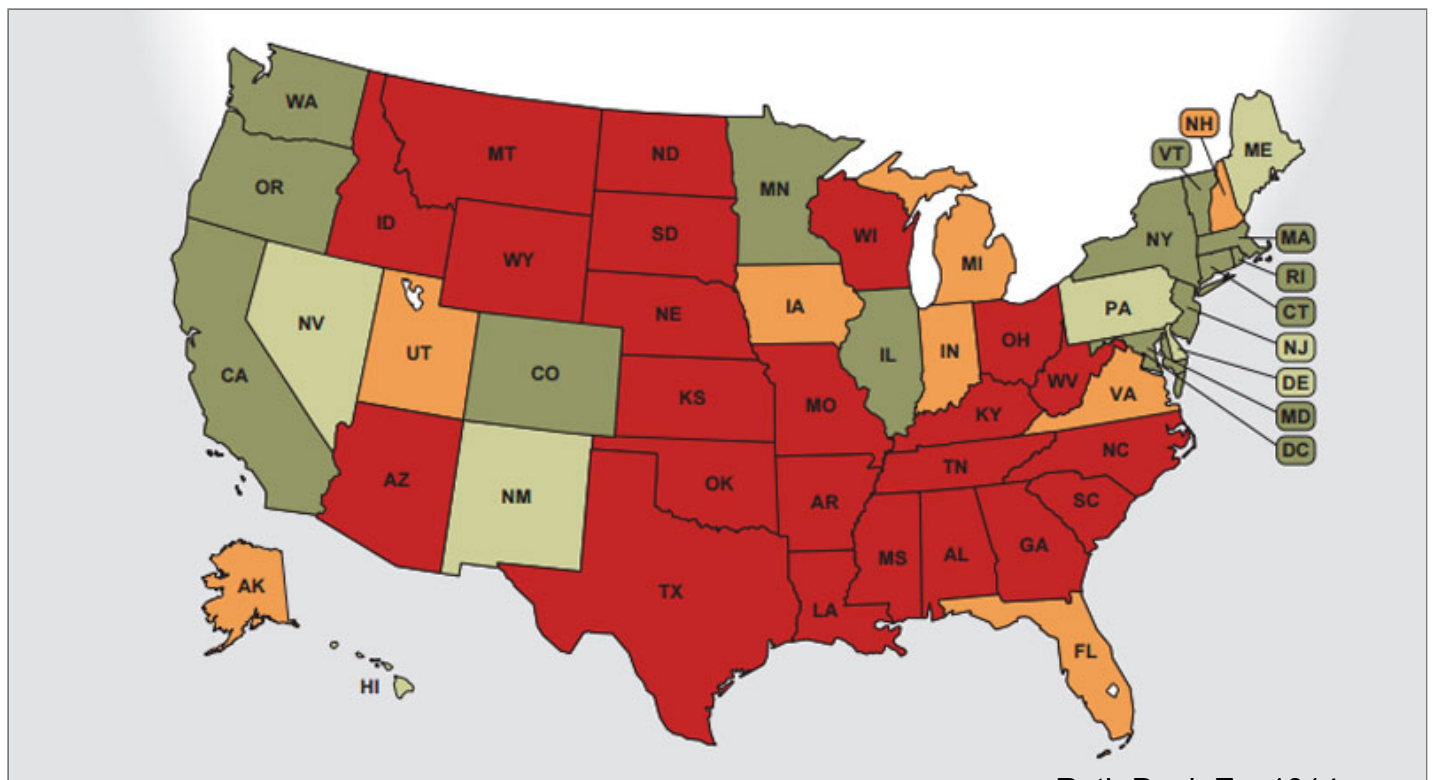
This report offers an overview of laws protecting LGBT youth from conversion therapy practices that attempt to change their sexual orientation or gender identity. These practices, which may include techniques such as shaming, hypnosis, inducing vomiting, and electric shocks, have been widely discredited and renounced, including by groups like the American Psychological Association. The brief also includes policy recommendations to ban harmful conversion therapy practices.



UNJUST: LGBTQ YOUTH INCARCERATED IN THE JUVENILE JUSTICE SYSTEM

(/criminal-justice-youth-detention)

This report examines how LGBTQ youth who are incarcerated in juvenile detention and correctional facilities face bias in adjudication, and mistreatment and abuse in confinement facilities. LGBTQ youth also lack supportive services when leaving the criminal and juvenile justice systems, often forcing them back into negative interactions with law enforcement.



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To help make sense of the current policy landscape in the states, this report looks at legal equality for transgender people across the country. The gender identity tally is comprised of 25 state laws and policies in five key categories: Non-Discrimination, LGBT Youth, Health and Safety, Ability to Correct the Name and Gender Marker on Identity Documents, and Adoption and Parenting.



TALKING ABOUT RELIGIOUS EXEMPTIONS & SERVICE DISCRIMINATION

(/talking-about-religious-exemptions-service-discrimination)

Several states have proposed legislation to allow businesses to discriminate against customers who don't conform to the specific religious beliefs that marriage should be restricted to a man and a woman, and that sex should be restricted to such marriages. Learn how to have effective conversations and broaden people's understanding of these laws and how they encourage discrimination against same-sex couples, unmarried couples and individuals, single parents, and others.

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A BRIEF OVERVIEW OF MAP

Founded in 2006, the Movement Advancement Project is an independent think tank that provides rigorous research, insight and analysis that help speed equality for lesbian, gay, bisexual and transgender (LGBT) people.

MAP's work helps educate and persuade public audiences (such as policymakers, allied organizations and funders, media and the American public) and helps support LGBT movement audiences (including LGBT organizations and advocates, and LGBT funders). You can read more about MAP and the work we do on our [About \(/our-work-and-mission\)](#) page.

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The New York Times

EDITORIAL

Trump's Heartless Transgender Military Ban Gets a Second Shot

By The Editorial Board

March 28, 2018

It often seems that there is no end to President Trump's cruel determination to transform America into a country that divides and dehumanizes its people. After his denigration of Muslims, refugees and undocumented immigrants, the latest example of this disgraceful proclivity is a presidential policy banning most transgender people from serving in the military — the second attempt to do so in less than a year. It puts thousands of servicemen and servicewomen at risk of losing their careers and means countless others may never get a chance to put on the uniform.

The policy Mr. Trump announced Friday states, "Transgender persons who require or have undergone gender transition are disqualified from military service," unless the Pentagon grants an exception. This exacerbates uncertainties about how such a policy would be enforced and "makes it clear that transgender service members are not welcome," the American Civil Liberties Union said.

The policy can't yet take effect because federal courts have issued temporary injunctions that stay the ban on transgender service members that Mr. Trump abruptly decreed in a series of tweets last July, without consulting the nation's top generals.

Transgender Americans first secured the right to defend their nation as equals in 2016, under President Barack Obama, who made gender identity a protected category in the Pentagon's equal opportunity policy. Mr. Trump's announcement last summer was an attempt to reverse that Obama-era policy — and a clear effort to pander to Vice President Mike Pence, other right-wing zealots and regressive generals. The United States "will not accept or allow" transgender people in the military "in any capacity," Mr. Trump tweeted at the time. The president, who avoided fighting in the Vietnam War by getting five deferments, also suggested that transgender enlistees are unfit to serve, tweeting that the military "must be focused on decisive and overwhelming victory."

In October, after a federal judge in Washington, D.C., temporarily blocked the move and said the ban was probably unconstitutional, Mr. Trump directed the Pentagon to find a way to carry out a version of the ban, and in February, Defense Secretary Jim Mattis provided a recommendation. Mr. Mattis, a former Marine general, said that there were “substantial risks” related to transgender people who serve in the military and that allowing some of them to serve would amount to an exemption from certain mental, physical and sex-based standards, potentially undermining troops’ readiness and disrupting unit cohesion.

Although Mr. Mattis is considered Mr. Trump’s most responsible foreign policy adviser, his handling of this matter has been disappointing. His report to Mr. Trump dismissed a RAND Corporation study that found that allowing transgender people to serve would have “minimal impact” on Pentagon readiness and health care costs.

It also seemed at odds with the comments of Gen. Joseph Dunford Jr. of the Marines, chairman of the Joint Chiefs of Staff, who told the Senate Armed Services Committee last fall that transgender troops have served with honor — not to mention research predicting there would be little to no impact on unit cohesion, operational effectiveness or readiness if transgender people were allowed to serve. Two senior Republican senators, John McCain of Arizona, who is a former P.O.W., and Orrin Hatch of Utah, as well as a group of 56 retired generals and admirals, have voiced similar views.

The number of affected troops is small; an estimated 2,000 to 11,000 identify as transgender, out of a total military force of 1.3 million active-duty members. But Mr. Trump’s discriminatory and inhumane order adds immeasurably to the suffering of this minority population yearning to come out of the shadows, be treated as human beings, feel respected and be permitted to serve their country.

As is often the case in America, the rights of vulnerable people now rest with a federal court, this one in the Western District of Washington State, near Seattle. During a hearing there on Tuesday, a judge gave lawyers seven days to file additional documents before deciding on a request by two advocacy groups, Lambda Legal and OutServe-SLDN, to permanently end Mr. Trump’s transgender ban.

That should happen as quickly as possible so that transgender troops and those who wish to enlist in the military in the future know they will be judged on their skills and abilities, not on discrimination and prejudice.

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A version of this article appears in print on March 28, 2018, on Page A22 of the New York edition with the headline: Mr. Trump’s Transgender Military Ban



Opinions

Trump's transgender troop ban is as insidious as ever

by [Editorial Board](#) March 28

PRESIDENT TRUMP [announced a ban](#) on transgender people in the military with a series of tweets last year that surprised many, including senior military leaders. There had been no study, no analysis, no consultation. That arbitrariness was one reason four federal judges have temporarily [blocked the policy](#) from going into effect. So when the latest iteration of the ban was rolled out last week, the White House made a point of stressing that it was accompanied by a 44-page Defense Department report and had the backing of Defense Secretary Jim Mattis.

That, though, doesn't make the process any less questionable. It also doesn't make discrimination against transgender people any more acceptable. So let's hope the courts see through this charade and strike down policies that would unjustly bar transgender people from the military.

The ban unveiled Friday by the White House, which won't go into immediate effect because of the pending court challenges, is slightly more nuanced than the total ban the president staked out in his July tweets. But the effect is no less insidious, in that it would prevent most transgender people from serving in the military and likely would lead to mistreatment and dismissal of some active-duty members.

CONTENT FROM PRIME VIDEO

“When you have diverse views, it makes the outcome for all people better.” – Justice Anne McKeig

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Anyone with a history of gender dysphoria (the experience of incongruity between birth gender and gender identity) would be disqualified save for limited and undefined circumstances. Also disqualified would be transgender people who have undergone gender transition. Eligible for enlistment and retention are transgender people who agree to serve in their birth gender. As Shannon Minter of the National Center for Lesbian Rights [observed](#), “It means you can't be transgender.”

The White House [defended](#) the newly revised ban as enhancing military “readiness, lethality and effectiveness” and said it was developed after extensive study by uniformed and civilian leaders. Isn't it curious, though, that the conclusion reached was essentially the same as the one the president seemingly pulled out of thin air last year?

Transgender advocates are right to call this a case of reverse engineering, with a process designed to reach the president's announced conclusion. Consider that the administration did not name the members of the so-called expert panel that is said to have studied this issue and Mr. Mattis did not answer questions about it, citing pending litigation. Groups such as the [American Psychological Association](#) and [two former U.S. surgeons general](#) have assailed the report as distorting scientific research. Also striking is that the Rand Corp., which [studied this issue in 2016](#) before the Obama administration lifted a previous ban, reached a different conclusion: namely, that allowing transgender people to serve in the military would “have minimal impact on readiness and health care costs” for the Pentagon.

The immediate issue for the federal courts hearing the challenges to the ban will be whether to make their injunctions permanent. It is likely the issue will eventually be decided by the Supreme Court. Until that happens — and unless Congress

intervenes — there will be continued, and unjust, uncertainty for the transgender men and women who want to serve their country.

Read more on this topic:

[Joshua Matz: Trump's despicable decisions look awfully alike](#)

[The Post's View: It's up to the Pentagon to set things right for transgender service members](#)

[The Post's View: A judge makes the right call on Trump's would-be transgender ban](#)

[Alexandra Chandler: I serve my country as a transgender woman. I know we can overcome our divisions.](#)

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EDITORIAL

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OPINION

Time for transgender rights opponents to give up the fight

By THE TIMES EDITORIAL BOARD
DEC 27, 2015 | 5:00 AM





An 8-year-old transgender student who lives in Los Angeles pets one of her dogs at home on Nov. 5. (Los Angeles Times)



Ever since California's law to protect the rights of transgender students went into effect two years ago, opponents have tried to whip up fear and confusion about what they see as the scary new bathroom rules, under which they say that any child of any gender may wander into any old restroom whenever they want. Voters, however, aren't buying it. For the second time, backers of a ballot initiative to overturn the law have failed to gather enough signatures to qualify for the ballot. It's time they gave up the fight.

The law covering transgender students has been in place for two years ... and there have been few complaints,

Lawmakers in 2013 passed the School Success and Opportunity Act, which was billed as a groundbreaking change for transgender rights, but really just clarified existing anti-discrimination policies in the state education code that were not always understood or followed. The law made it clear that transgender

Roth Decl. Ex. 1017

concerns or reports of misconduct or abuse.

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students may use the bathrooms and locker rooms — and can participate on the sports teams — that correspond to the gender with which they identify. The law's goal was to accommodate children born male or female, but who identify differently.

It also addressed delicate issues

transgender students confront daily, and eliminated the confusion and discomfort that might arise if, say, a teen who identifies and dresses as a girl was forced to use the boys' bathroom.



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Opponents have argued that the law overrides the wishes of non-transgender students who do not want to use the bathroom or get undressed around members of the opposite sex. They have warned that the law means girls will be exposed to male genitalia against their will, and they say that if men are allowed to intrude into private spaces reserved for women, it opens the way to co-ed restrooms and safety risks. The opponents' proposed initiative — the Personal Privacy Protection Act — would have required people to "use facilities in accordance with their biological sex" in government buildings. Yet even this year, when the number of signatures needed to qualify for the ballot is the lowest it's been in 40 years, the coalition couldn't muster enough support and missed the deadline for the November 2016 election.



The message, we hope, is that Californians have rejected fear in favor of tolerance for people whose sexuality falls outside traditionally accepted norms. And why shouldn't

Roth Decl. Ex. 1017

they? The law covering transgender students has been in place for two years (and L.A. schools have had similar policies for even longer), and there have been few complaints, concerns or reports of misconduct or abuse.



Public understanding of transgender issues has grown significantly in just the last two years, with movies and television shows such as Amazon's "Transparent." Olympic gold medalist and reality TV star Caitlyn Jenner put a familiar face on being transgender. One in five voters surveyed in a recent national poll personally knows or works with someone who is transgender, and, of those, 66% of respondents had favorable feelings toward that person. California's law is clearly on the side of equality and, as more transgender people openly share their experiences, broad public understanding and acceptance is sure to follow.



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