UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF ALABAMA
NORTHERN DIVISION

REV. PAUL A. EKNES-TUCKER; BRIANNA BOE, individually and on behalf of her minor son, MICHAEL BOE; JAMES ZOE, individually and on behalf of his minor son, ZACHARY ZOE; MEGAN POE, individually and on behalf of her minor daughter, ALLISON POE; KATHY NOE, individually and on behalf of her minor son, CHRISTOPHER NOE; JANE MOE, Ph.D.; and RACHEL KOE, M.D.

Plaintiffs,

v.

KAY IVEY, in her official capacity as Governor of the State of Alabama; STEVE MARSHALL, in his official capacity as Attorney General of the State of Alabama; DARYL D. BAILEY, in his official capacity as District Attorney for Montgomery County; C. WILSON BAYLOCK, in his official capacity as District Attorney for Cullman County; JESSICA VENTIERE, in her official capacity as District Attorney for Lee County; TOM ANDERSON, in his official capacity as District Attorney for the 12th Judicial Circuit; and DANNY CARR, in his official capacity as District Attorney for Jefferson County.

Defendants.

Civil Action No.
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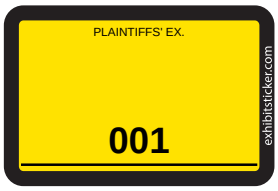
DECLARATION OF BRIANNA BOE, IN SUPPORT OF PLAINTIFFS' MOTION FOR TEMPORARY RESTRAINING ORDER & PRELIMINARY INJUNCTION



I, Brianna Boe,[1] declare as follows:

1. I am plaintiff to this action and the mother of Michael Boe, a twelve-year-old transgender boy and another plaintiff in this action.

2. I am a citizen of Alabama and reside with Michael in Montgomery County, Alabama.

3. As a young child, Michael was very care-free and outgoing. He was just a happy kid. Then, when Michael was about nine years old, I noticed a significant change in his behavior. He became depressed, withdrew from his friends, and became more anxious and impatient. He also started acting out in school and struggled academically. Some mornings he would beg not to go to school. Although I still took him, I could see that he was both sad and afraid.

4. I talked with him to try to figure out what was going on. He told me that he was starting to feel different and like he didn't belong, and that he was not like other girls. Michael worried that other kids were judging him, and he told me that he was getting bullied a lot at school.

5. Worried that his stress and anxiety was interfering with this ability to learn, I placed him in a new school the following year and started taking him to see

[1] Because of concerns about criminal liability and my child's privacy and safety, I am seeking to proceed in this case under a pseudonym. *See Motion to Proceed Pseudonymously*, filed concurrently herewith. In addition, contemporaneous with signing this declaration, I have signed with my legal name a separate copy of this declaration. My attorneys have a copy of that separate declaration.

a therapist, who helped Michael begin untangling what was causing his depression. Seeing this therapist helped Michael, but he had still not returned to his old self. Over the following year, he regularly talked to me about his growing awareness of his male gender identity. I could see that this was something that occupied a lot of his mental energy and that navigating the mismatch between his inner sense of who he is and the way others saw him was very stressful for him.

6. At the same time, Michael started going through puberty. His chest, and eventually his period, caused him a lot of anxiety and further fueled his depression. Michael would dread getting his period every month—and still does. He finds it very difficult to go to school—let alone pay attention—during the first few days of his period every month. For Michael, this discomfort is far beyond any sort of normal adjustment or discomfort that a non-transgender adolescent might experience. He is anguished, and often debilitated, by these physical reminders that his body does not match who he knows himself to be.

7. About a year ago, in June 2021, Michael disclosed to me that he is transgender. I was happy that he felt comfortable sharing this with me, and I let him know that I love and support him in being who he is. I also was scared because I saw what the bullying had done to him before and knew that his peers may not be accepting of him. Setting that fear aside, I looked for resources to learn what I needed to know to best support Michael, including making sure that he was seen by

healthcare providers with experience working with kids like him. I wanted to be sure that Michael was getting the best possible treatment and that I would have experts who could answer my questions and advise me about treatment options.

8. Soon after Michael came out as transgender to me, I told Michael's father, his siblings, and extended family that Michael is transgender. As I expected, his father was initially taken aback, but we talked about it, and he took the time to learn about transgender children and the importance of supporting them. After that, he came around quickly and has been supportive of Michael ever since. Michael's siblings and grandparents have been equally supportive.

9. I also started taking Michael to see a second therapist who specializes in working with adolescents experiencing gender dysphoria. The therapist confirmed that Michael has gender dysphoria and recommended that he be evaluated for medical treatment. At the same time, with the support of his therapist and family, Michael began to socially transition. Coming out as transgender and socially transition had a remarkably positive effect on Michael, but because he has not yet been able to start any medical treatments for his gender dysphoria, the conflict between his male identity and his body causes him a lot of distress.

10. Although he doesn't have a large chest, his breasts cause him significant distress. He wears a binder everyday to flatten his chest as much as possible, which he couples with baggy clothes to further hide the contour of his

chest. If he could, he would wear his binder all the time, but it is not recommended to wear a binder more than 8-10 hours each day. As a compromise, I bought him numerous sports bras with different levels of compression for him to wear when he takes the binder off. He relies on those sports bras almost as much as his binder. Michael cannot sleep without wearing a sports bra.

11. Michael's period also continues to be a source of significant distress for him. We keep track of his cycles in hopes that he will be mentally prepared, but no amount of preparation or notice is enough. Every month his depression and anxiety spikes, like clockwork.

12. Michael is working hard to manage his depression and recently started taking medication to treat his mental health. Still, there are days that those coping mechanisms fail him due to the intense distress caused by his gender dysphoria. He has engaged in self-harm, such as cutting, and has had suicidal ideation, which I have learned is common among transgender adolescents who are unable to receive the medical treatments they need.

13. Unfortunately, his school environment has become unwelcoming. Recently, he was cornered by a group of students who insisted that Michael was not a boy. Although his teacher addressed the situation afterwards, most of his teachers have not been that supportive, regularly referring to him by the wrong name or pronouns.

14. In February 2022, I called the gender clinic at Children's Hospital to make an initial appointment for Michael. The first availability they had was in December 2022. If this law goes into effect, Michael will not even be able to be evaluated for medical treatment for his gender dysphoria.

15. I am worried that if law prevents Michael from receiving medical evaluation and care for his gender dysphoria that the hormones in his body will continue to change his body in ways that are inconsistent with his gender identity and that his mental health will decline rapidly. Knowing that he has an appointment at the gender clinic has given him hope. Taking that way will leave him with therapy and mental health medications, which we have already seen are not able to adequately address his gender dysphoria. The fact that Michael has a history of cutting and prior suicidal ideation makes even more worried for his safety and wellbeing. One of my other children lost a transgender friend to suicide and I cannot let that happen to Michael.

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

Executed this 19th day of April, 2022.

Brianna Boe

Brianna Boe

UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF ALABAMA
NORTHERN DIVISION

REV. PAUL A. EKNES-TUCKER; BRIANNA BOE, individually and on behalf of her minor son, MICHAEL BOE; JAMES ZOE, individually and on behalf of his minor son, ZACHARY ZOE; MEGAN POE, individually and on behalf of her minor daughter, ALLISON POE; KATHY NOE, individually and on behalf of her minor son, CHRISTOPHER NOE; JANE MOE, Ph.D.; and RACHEL KOE, M.D.

Plaintiffs,

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Defendants.

Civil Action No.

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DECLARATION OF REV. PAUL A. EKNES-TUCKER IN SUPPORT OF PLAINTIFFS' MOTION FOR TEMPORARY RESTRAINING ORDER & PRELIMINARY INJUNCTION

I, Paul A. Eknes-Tucker, declare as follows:

1. I am the Senior Pastor at Pilgrim Church in Birmingham, Alabama. I have been a pastor for forty-five years and worked in congregations across the United States.

2. Seven years ago, I was honored to be called to serve the congregation at Pilgrim Church. This calling also allowed me to return to Alabama, the state where I was born and raised.

3. Pilgrim Church was established in Birmingham in 1903 and is part of the United Church of Christ. We hold services every Sunday and open our church during the week for events and community gatherings.

4. A core tenet of this congregation is to love and support all people to be their true selves. This is a belief that I talk about while performing my duties as a Senior Pastor. In fact, my sermon on Easter Sunday this year touched on supporting and caring for the transgender young people in our communities.

5. In my role as Senior Pastor, I have also provided pastoral counseling to parents of transgender children who are church congregants as well as to members of the Birmingham community. In those counseling discussions, parents are often uncertain about what guidance their religious faith can provide as they figure out how to support their child and how their faith can sustain them through that process.

We often talk about their children being made in the image of God and about the role of parents in helping and supporting their children.

6. While providing pastoral counseling, parents of transgender children will often share their worries and fears as well as hopes and aspirations for their transgender child's future. Some of the questions they have relate to the application of our faith's teachings to and the spiritual effects of medical treatments for gender dysphoria. My goal in those conversations is to answer their questions and provide information that the parents would find useful in guiding their decisions about their child's medical care. My religious faith compels me to support parents to love and affirm their transgender children. This includes counseling parents to get help from medical and mental health professionals, when needed, to assist and care for their children and to embrace who they are.

7. I have been fortunate to continue working with the families of transgender children for whom I have provided pastoral counseling. Watching parents support their child, I have seen improvements in the mental health and wellbeing of their children, but also as a family unit; their commitment to one another and their faith only grew stronger.

8. Given my understanding of Alabama's Vulnerable Child Compassion and Protection Act (SB 184), I am concerned that I could face criminal penalties or

fines for my work as a pastoral counselor, which could "cause" a transgender minor to begin receiving medical treatment for their gender dysphoria.

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

Executed this 19 th day of April, 2022.

Rev. Paul A. Eknes-Tucker

IN THE UNITED STATES DISTRICT COURT
MIDDLE DISTRICT OF ALABAMA
NORTHERN DIVISION

REV. PAUL A. EKNES-TUCKER; BRIANNA BOE, individually and on behalf of her minor son, MICHAEL BOE; JAMES ZOE, individually and on behalf of his minor son, ZACHARY ZOE; MEGAN POE, individually and on behalf of her minor daughter, ALLISON POE; KATHY NOE, individually and on behalf of her minor son, CHRISTOPHER NOE; JANE MOE, Ph.D.; and RACHEL KOE, M.D.,

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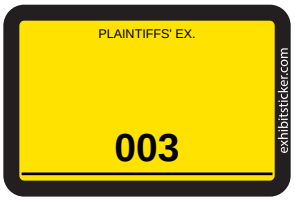
Defendants.

Civil Action No. 2:22-cv-184-LCB

Hon. Liles C. Burke

DECLARATION OF LINDA A. HAWKINS, PH.D., LPC IN SUPPORT OF PLAINTIFFS' MOTION FOR TEMPORARY RESTRAINING ORDER & PRELIMINARY INJUNCTION



I, Linda A. Hawkins, Ph.D., M.S.Ed., LPC, declare as follows:

1. I submit this expert declaration based upon my personal knowledge.

2. If called to testify in this matter, I would testify truthfully based on my expert opinion.

Qualifications and Experience

3. I am a Licensed Professional Counselor with a M.S.Ed. in Psychological Services from the University of Pennsylvania in 1998, and a Ph.D. in Human Development and Human Sexuality from Widener University in 2009, specializing in working with children and adolescents experiencing gender dysphoria and their families. A true and correct copy of my Curriculum Vitae is attached hereto as **Exhibit A**.

4. I have over two decades of experience in supporting lesbian, gay, bisexual, transgender, and queer (LGBTQ) youth and their families, both in private practice and through my work with hospitals and clinics. During that time, I have individually worked with more than 4,000 LGBTQ children, adolescents, and families from around the world.

5. In January 2014, I helped found and co-direct the Gender & Sexuality Development Program at The Children's Hospital of Philadelphia, which now operates from two clinics: Philadelphia, Pennsylvania and Voorhees, New Jersey. As Program Director, I oversee the care of nearly 3,000 families and field an average of

twenty new referrals a week. I also lead and participate in research for developing best care practices for LGBTQ children and their families, train health care and mental health providers on best care practices, establish gender-affirming hospital policies, and advise local, regional, and national organizations as they create and update guidelines for the care of transgender and gender-expansive children, youth, and their families. This includes direct trainings and policy review with schools, churches, social service agencies, mental health centers, and juvenile correction centers and insurance companies.

6. In January 2018, I helped found the Advanced Training Program in Affirmative Therapy for Transgender Communities, which is a year-long national professional training course for therapists to train them in supporting transgender clients across their clients' lifespans, that now has sites based in Seattle, Washington and Philadelphia, Pennsylvania. I have served as the Founder and Director since the program's inception, which includes both teaching duties and supervising the eight employees who implement the training and supervise the program on a daily basis. The American Psychological Association, U.S. Professional Association of Transgender Health, American Counseling Association, and American Association of Sexuality Educators, Counselors and Therapists are currently considering endorsing the program.

7. My recent publications include *Experience of Chest Dysphoria and Masculinizing Chest Surgery in Transmasculine Youth*, Pediatrics, 147(3) (2021); *Transgender Youth Experiences with Implantable GnRH Agonists for Puberty Suppression*, Liebert (https://doi.org/10.1089/trgh.2021.0006) (2021); *Sexual and Gender Minority Adolescents: Meeting the Needs of Our LGBTQ Patients and Their Families*, Clinical Pediatric Emergency Medicine, 20(1), 9–16 (2019); *Sexual Orientation/Gender Identity Cultural Competence: A Simulation Pilot Study*, Clinical Simulation in Nursing, 16, 2–5 (2018); *Barriers to Care for Gender Non-Conforming Youth: Perspectives of Experienced Care Providers, Transgender Youth and Their Parents*, Journal of Adolescent Health, Vol. 62, Issue 2 (2018); *Effective Treatment of Depressive Disorders in Medical Clinics for Adolescents and Young Adults Living with HIV: A Controlled Trial*, Journal of Acquired Immune Deficiency Syndrome, 71(1), 38–46 (2017); *Policy Perspective: Ensuring Comprehensive Care and Support for Gender Nonconforming Children and Adolescents*, Transgender Health, 1(1), 75–86 (2016); and *Creating Welcoming Spaces for Lesbian, Gay, Bisexual and Transgender (LGBT) Patients: An Evaluation of the Healthcare Environment*, Journal of Homosexuality, 63(3), 387–93 (2016). I have also authored chapters of textbooks, including "Sexual Disorders and Transgender Health" in *Fundamentals in Consultation Psychiatry: Principles and Practice*, Eds. Lavakumar, M., Rosenthal, L., & Rabinowitz, T. Nova Medicine & Health: New

York, NY (2019). A listing of my publications is included in my Curriculum Vitae in **Exhibit A**.

8. I belong to a number of professional organizations and associations relating to (i) the overall mental health and well-being of all children, youth and their families; (ii) the health and well-being of children and adolescents, including those who are transgender; and (iii) to appropriate medical treatments for transgender individuals. For example, since 2005, I have been a member of the World Professional Association for Transgender Health ("WPATH"), an international multidisciplinary professional association to promote evidence-based care, education, research, advocacy, public policy and respect in transgender health. I was also elected as a Fellow of the College of Physicians of Philadelphia, invited to join based on my local, regional, national, and international contributions to the medical and mental health and wellness of transgender and gender non-binary children and youth, as well as my contributions to the education of medical professionals as part of this care. A complete list of my involvement in various professional associations is located in my Curriculum Vitae in **Exhibit A**.

9. From 2010-present, I have served as an Editorial Reviewer for Academic Pediatrics and the Society for the Scientific Study of Sexuality.

10. I have previously testified two times at trial or in deposition as an expert witness.

11. My opinions contained in this declaration are based on: (i) my years of experience as a Licensed Counselor and PhD training in treating transgender patients, including children, adolescents and young adults; (ii) my knowledge of the peer-reviewed research, including my own, regarding the treatment of LGBTQ patients and those suffering from gender dysphoria; and (iii) my review of the various declarations submitted in support of the motions. I generally rely on these types of materials when I provide expert testimony, and they include the documents specifically cited as supportive examples in particular sections of this declaration. The materials I have relied on in preparing this declaration are the same type of materials that experts in my field of study regularly rely upon when forming opinions on the subject.

12. I was provided with and reviewed the following case-specific materials: (i) the expert declaration of Stephen Rosenthal, M.D. ("Dr. Rosenthal Decl."), and (ii) Senate Bill 184, as enacted ("the Act").

13. I have not met or spoken with the Plaintiffs or their parents for purposes of this declaration. My opinions are based solely on the information that I have been provided by Plaintiffs' attorneys as well as my extensive experience studying gender dysphoria and treating transgender patients.

14. I am being compensated at an hourly rate for the actual time that I devote to this case, at the rate of $300 per hour for any review of records, preparation

of reports or declarations, and deposition and trial testimony. My compensation does not depend on the outcome of this litigation, the opinions that I express, or the testimony that I provide.

Gender Identity Development and Gender Dysphoria

15. Because a person's gender identity is unknowable at birth, doctors assign sex based on the appearance of a newborn's external genitalia. For most people, that assignment also turns out to be a consistent reflection of their gender identity. However, for transgender people, their assigned sex does not match their gender identity.

16. Gender identity is a person's innate, inner sense of belonging to a particular gender, such as male or female.

17. Medical, mental health and human development research has repeatedly shown that gender identity is hard wired and a core component of human identity. Every person has a gender identity. Dr. Rosenthal's declaration provides a comprehensive overview of the research demonstrating that gender identity has strong biological ties. (Dr. Rosenthal Decl. at ¶¶ 14-17.)

18. A person's gender identity is not a personal decision, preference, or belief. Like nontransgender people, transgender people do not simply have a "preference" to live consistent with their gender identity; trying to live as a gender they are not feels viscerally wrong and can cause a range of psychological outcomes

from minor distress to overwhelming daily anxiety and depression that can culminate in thoughts of self-harm or death.

19. A key milestone of child development is a child becoming aware of their gender identity. My declaration will focus on that process and the psychological distress young people experience when their assigned sex and gender identity do not match.

20. Children typically become aware of their gender identity between the ages of three and five years old. During these young years, individuals will often gravitate toward toys, clothing, activities, and peer relationships that most typically align with their gender identity. At the same time, those children are also surrounded by gender rules, regulations and expectations in their families, the media, and community. Children assigned male at birth are typically rewarded for following the male-based expectations set out for them and the children assigned female at birth are equally rewarded for following the female-based expectations set out for them, regardless of the child's gender identity.

21. Transgender individuals who become aware in childhood that those expectations do not match with who they are often begin to express their cross-gender identity to their family members and caregivers. The statements and actions transgender children use to communicate their cross-gender identity differ significantly from age-appropriate imaginative play. Transgender children are

insistent, persistent, and consistent over time in their cross-gender identification. Transgender children will also manifest psychological distress as a result of the mismatch between their assigned sex and their gender identity if they are not allowed to live consistent with their gender identity.

22. This sets the experience of transgender children apart from non-transgender children. While non-transgender children may also experience some gender exploration, and some girls will be "tomboys" and some boys will live as feminine boys, the intensity and persistence of the cross-gender identification that transgender children express is of a different order. Historically, earlier studies included a wide range of gender nonconforming children, rather than differentiating between transgender and non-transgender children, and also suffered from other serious methodological flaws that make them unreliable. Today, based on current scientific knowledge and clinical practice, researchers and clinicians are much better equipped to differentiate transgender from non-transgender children and adolescents. Recent studies have found that, when following the standard of care for diagnosing gender dysphoria, the rate of "desistance" for transgender adolescents who are properly diagnosed, evaluated, and treated is virtually nonexistent.

23. A significant proportion of transgender children do not have the ability to clearly understand, state or share the distress they are experiencing. Those children can experience a wide range of psychological distress from difficulty

sleeping to anxiety at school or severe depression and may not fully realize that this distress is linked to being transgender. Over time, their inability to understand the root of their distress and/or to express themselves further exacerbates their psychological distress.

24. Yet another significant proportion of young transgender children may have had an underlying feeling of not fully aligning with the sex they were assigned at birth, but felt "good enough" being supported and perceived as a female identified as a tomboy or a feminine presenting gay male. However, as puberty starts and a young person begins to experience the physical changes associated with their birth sex including developing secondary-sex characteristics (*e.g.*, breast development, menstruation, testicular and penile expansion, and deepening of voice) these youth experience intense distress that cannot be explained as simply being upset about puberty. That distress is caused by gender dysphoria, which is exacerbated by puberty for youth who are transgender, not simply gender nonconforming. These youth share a strong and real awareness of their gender identity not as a female identified as a tomboy, but as male, and not as a feminine male, but a female.

25. Gender Dysphoria is the diagnosis characterized by the severe and unremitting emotional pain resulting from the incongruity between a person's assigned sex and their gender identity. It is a serious condition and is listed in the *Diagnostic and Statistical Manual of Mental Disorders* ("DSM-5") of the American

Psychiatric Association and has been for decades. Because Gender Dysphoria also has significant implications for a transgender young person's physical health that require medical care, there is also a companion diagnosis in the World Health Organization's International Classification of Diseases (ICD-10). Major medical and behavioral health associations recognize the validity and seriousness of the condition of gender dysphoria and support its treatment consistent with established standards of care. These include the American Medical Association, the Endocrine Society, the American Academy of Pediatrics, the American Psychological Association, the American Psychiatric Association, National Association of Social Workers, and others.

Standards of Care for Working with Transgender Children

26. When loved, supported, and treated consistent with their gender identity by their parents and caretakers and in their social, medical and educational environments, transgender children—like all children—can thrive, grow into healthy adults and have the same capacity for happiness, achievement, and contribution to society as others. For transgender children and youth, that means supporting them to live in a manner consistent with their gender identity.

27. Getting treatment for Gender Dysphoria and ensuring that a transgender child is in an environment that does not undermine that treatment are critical to a transgender child's healthy development and well-being. For young transgender

children, the treatment of Gender Dysphoria consists of social transition, which involves changes that bring the child's outer appearance and lived experience into alignment with the child's gender identity. Changes often associated with a social transition include changes in clothing, name, pronouns, hairstyle, and updating government-issued identity documents to reflect the child's new name and correct the sex listed on those documents so that others interact with them in a manner that affirms and supports their gender identity.

28. Research and clinical experience have shown that social transition for a child with Gender Dysphoria improves that child's mental health and greatly reduces the risk that the child will experience anxiety, depression and possibly engage in self-harming behaviors. *See Kristina Olson, et al., Mental Health of Transgender Children who are Supported in Their Identities*, 137 Pediatrics 1 (2016). In fact, longitudinal studies demonstrate that undergoing a social transition before puberty often provides tremendous and immediate relief because there are few, if any, observable physical differences between boys and girls at that age.

29. A social transition is often eventually coupled with other treatments for Gender Dysphoria once a young person enters adolescence including puberty blockers and hormone therapy to bring a person's body into alignment with their gender identity. The availability and effects of those treatments are discussed in detail in Dr. Rosenthal's declaration. (Dr. Rosenthal Decl. ¶¶ 32-55.) As with social

transition those treatments occur within a context of treatment and assessment by qualified professionals, often in a single multidisciplinary setting meaning that a patient's multiple providers (endocrine, primary care, mental health specialist) all work in consultation and coordination with one another to provide care for the patient.

30. Mental health counseling can have a tremendous positive effect on a patient's mental health. Not only can counseling reduce a young person's psychological distress, but it can help reduce their reliance on harmful coping strategies, if not replace them all together. I have seen many patients make significant progress through counseling to address many, but not all, areas of distress a transgender child or youth may be experiencing with their own identity as well as coping with how others around them may be reacting to their transgender identity.

31. For transgender young people approaching or going through puberty, however, counseling by itself is not sufficient to fully manage their Gender Dysphoria. The physical changes associated with puberty greatly exacerbate a transgender young person's psychological distress because their bodies are becoming more incongruent with their gender identity every day. More importantly, counseling is unable to stop those changes from occurring, nor can it help bring a patient's body into alignment with their gender identity. For many transgender youth, medical care is crucial and vital for survival.

The Role of Mental Health Providers in Assessing Necessity of Medical Treatments for Gender Dysphoria

32. When a child or adolescent experiencing Gender Dysphoria starts to see a mental health provider such as myself, that provider's first objective is assessment, including diagnosis. As with any assessment, the provider must gather a detailed history of the patient and their psychological distress surrounding their gender identity, including its sources and manifestations. To appropriately conduct that assessment, the mental health provider must draw from their professional training and experience in working with transgender young people, exercise professional judgment, and tailor the assessment to each individual patient and their family. The number of sessions that assessment requires will vary greatly depending on the patient's presentation and the complexity of the issues the patient is navigating.

33. In addition to meeting with the patient and family, this assessment process typically includes gathering and reviewing additional information from the child's Primary Care Provider, local therapist and psychiatrist and any additional adult professionals who are part of the patient's care team. Without this thorough and comprehensive assessment, a mental health provider could not accurately diagnose a patient with Gender Dysphoria and provide the recommendations for treatment and care.

34. Once the mental health provider has confirmed that the patient is experiencing Gender Dysphoria, the provider develops a treatment plan, which can

include referrals to medical providers for treatments like puberty-blocking medications and hormone therapy.

35. Over the course of their initial assessment—and subsequent treatment—mental health providers will engage their patients in many discussions about the aspects of the patient's life and appearance that exacerbate their Gender Dysphoria. The purpose of those conversations is two-fold: identify the areas where the patient needs to develop resilience and coping strategies to minimize the effects of their Gender Dysphoria; and evaluate the mental health benefits of future social changes and medical treatment. For example, those discussions may reveal that a transgender patient's distress about the onset of puberty is impairing their ability to engage in peer relationships or routine self-care (*e.g.,* avoiding showering), as well as impairing their ability to focus at school. The mental health provider can then work with the patient to develop psychological and social strategies to reducing the functional limitations caused by the Gender Dysphoria. While this level of care can prove fully beneficial for some young people diagnosed with Gender Dysphoria, in other cases the treatment plan strongly indicates that puberty-blocking medications is necessary to prevent that patient's mental health from deteriorating at the onset of puberty.

36. If the patient and their family decide to pursue medical treatment, the mental health provider will build on those discussions to also assess the patient's

appropriateness and readiness for that treatment. As mentioned above, the appropriateness of any medical treatment is determined by a multidisciplinary team of expert mental and medical care providers. A patient's readiness to begin a particular course of medical treatment requires an evaluation of the patient's understanding of the goals and potential limitations of the contemplated treatment. For example, for puberty-blocking medication, the provider will gauge the patient's ability to comprehend the effects of puberty on their body and mental health. An integral part of that discussion is evaluating a patient's grasp of the consequences of stopping those physical changes from occurring and alternatives to puberty-blocking treatment. And, in cases of the addition of hormone therapy in adolescence, the review of physical impact, including benefits and limitations, is explored over multiple meetings with the patient and parents.[1] The provider will have those discussions with the patient and their parents both individually and together. As with the initial diagnosis, the amount of time required to complete this evaluation will depend on numerous factors including the length of their existing therapist-patient relationship and the complexity of the issues facing that patient.

[1] *See*, *e.g.*, *"This Wasn't a Split-Second Decision": An Empirical Ethical Analysis of Transgender Youth Capacity, Rights, and Authority to Consent to Hormone Therapy*, Clark, BA, Bioethical Inquiry (2021) https://doi.org/10.1007/s11673-020-10086-9.

37. The mental health provider will then document the results of their assessment in a letter to the patient's treating physician. The letter details the provider's diagnostic analysis as well as any professional opinions regarding the benefits of and readiness for the contemplated treatment. The medical provider uses that letter as one piece of their own independent assessment. It is not uncommon for a medical provider to contact the patient's mental health provider to discuss the details of the letter.

Medical Treatment for Gender Dysphoria is Critical to the Mental Health of Transgender Youth

38. Scientific literature and clinical experience consistently find that, like social transition, medical treatment for Gender Dysphoria offers significant psychological benefit to transgender young people. For example, one longitudinal study found that transgender young adults who received the full range of medical and mental health treatments for their gender dysphoria had a mental health profile that was indistinguishable from their non-transgender peers. Annelou L.C. de Vries, et al., *Young Adult Psychological Outcome After Puberty Suppression and Gender Reassignment*, 134 Pediatrics 696 (2014). Medical treatments for gender dysphoria are effective because they keep a transgender person's body in alignment with their gender identity, either by stopping that incongruence from growing or by changing the person's body to be more congruent with their gender identity, which in turn help reduce a person's Gender Dysphoria.

39. Conversely, however, the denial of medical treatment will severely hinder a transgender young person's development and well-being. Even if not initially visible to the public, the physical changes associated with puberty widen the incongruence between a transgender young person's body and their gender identity. The permanence of those physical changes can result in distress that is significant and acute because the changes brought on by puberty become constant triggers for Gender Dysphoria, such as monthly menstruation, chest development, deepening of voice and unwanted erections.

40. As puberty progresses, those physical changes become more obvious and will undermine a transgender young person's ability to live in a manner consistent with their gender identity. Their appearance will cause them to be repeatedly referred to by their birth sex, which is different than their gender identity. The incongruence between their gender identity and appearance will also subject them to ridicule, harassment, and discrimination. In either situation, a transgender young person will experience that mistreatment as a rejection of their core self and identity, which will further exacerbate their Gender Dysphoria.

41. If left unaddressed, as under the wait-and-see approach, a transgender young person is likely to develop co-occurring mental health conditions, such as major depression, anxiety or obsessive-compulsive disorders, eating disorders, self-harm, and thoughts of suicide. Transgender young people can also experience

difficulties focusing on schoolwork, building and maintaining friendships, among other serious functional limitations.

42. Those harms are exponentially compounded for a transgender young person living at the intersection of minority identities based on the layered ways in which peers and adults can stigmatize identified differences in race, ethnicity, religion/faith and socioeconomic status. Multiply marginalized children and youth face vastly higher levels of anxiety and depression that are more likely to lead to self-harm and even death by suicide. In the last few years, as individuals in these multiply marginalized communities are coming under direct and indirect attack from political and religious groups, these children are becoming gravely aware that they are not safe in their own neighborhoods and are constantly exposed to negative messages that profoundly state that they do not matter, are not important parts of our community, and otherwise do not belong.

43. Chronic exposure to those levels of sustained stress results in persistent surges of cortisol in the brain for children and youth. This leads to a wide array of short and long-term detrimental consequences, all of which can permanently affect development, emotional, physical and mental health, and quality of life. For example, research has shown that it leads to increased difficulty in differentiating between threatening and safe situations, impaired short-term and long-term memory, struggles with decision-making and attention, and issues with mood control, even in

adulthood. Studies have also shown that chronic stress in childhood and adolescence results in a higher likelihood of developing a myriad of physical health issues, including diabetes, heart disease, and cancer.

44. Once an area of clear and consistent stress and distress has been identified for any child, it should be addressed in a way that provides clear, consistent and safe relief. This is vital based on the research on both the negative health impact of chronic stress/distress on human bodies as well as the clear, safe and consistent guidelines for relieving this stress and distress for transgender children and youth.

Conclusion

45. Criminalizing the provision of medical treatment for Gender Dysphoria will inflict immeasurable harm on transgender young people throughout Alabama that will have long-lasting implications for the mental health of this already vulnerable population and the many family members who support them. Transgender young people will have proven effective, life sustaining medical care dangerously delayed between five and ten years to obtain what are considered time-sensitive medical treatments for gender dysphoria. Not only will their mental health decompensate during that time, but their ability to treat and manage their Gender Dysphoria will be greatly diminished with some body changes being irreversible. For many transgender children, the inability to access essential time-sensitive medical treatment will result in irreparable damage to their physical and

psychological health.

46. Those harms will significantly compound the inability of transgender young people to live in a manner consistent with their gender identity due to body changes that negate their ability to keep private, for those who wish to do so, the deeply personal fact that they are transgender. Additionally, the social and educational harms resulting from profound and debilitating bullying and harassment of transgender children in local social settings (clubs, sports, after school programs, churches) and school settings will frequently result in out of school placements, online schooling and/or complete removal from academic efforts overall. All of these negative outcomes in childhood have far-reaching and exponentially impacting effects on overall health and wellbeing, typically resulting in a significant increase in anxiety, depression, self-harm and death by suicide.

47. Despite claiming to protect transgender children, the Act will have the exact opposite effect.

This declaration was executed this 17th day of April, 2022.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Linda Hawkins, Ph.D., M.S.Ed., LPC

EXHIBIT A

Curriculum Vitae

Name: **Linda Aline Hawkins, PhD, LPC**
Address: 7153 Anderson Street, Philadelphia, PA 19119
Phone: **215-280-7128**
Email: drlahawkins@gmail.com

Education & Licensure

Licensed Professional Counselor, Pennsylvania – PA #006287 - March, 2012
Ph.D., Human Development & Human Sexuality, Clinical Counseling Focus – Widener University, Chester, PA, October, 2009
Linda Lehnert Memorial Award – Excellence in Academics & Research (4.0 GPA)
Distinguished Dissertation Nomination – Gender Identity Development among Gender Variant Adolescents: A Qualitative Analysis
M.S.Ed., Psychological Services – University of Pennsylvania, Philadelphia, PA, August, 1998
B.S., Speech and Hearing Sciences – University of Washington, Seattle, WA, June, 1993

Current Employment

Founder & Director: Gender & Sexuality Development Program, The Children's Hospital of Philadelphia, Philadelphia, PA, January 2014 to present.
This clinic was one of the nation's first four pediatric gender clinics to support children and youth who are gender non-conforming, gender explorative and/or transgender.
Accomplishments as part of achieving this include:

- Developed the business plan and founded the Philadelphia clinic at the Hospital in January, 2014 and expanded to include a Voorhees, NJ clinic in January of 2020.
- Established needed gender affirming policies within the Hospital to support the clinic patients and families, including updating the employee non-discrimination policy and the patient bill of rights.
- Currently running a clinic of nearly 1500 families within first three years of opening; fielding 10-15 referrals weekly.
- Securing nearly 100% rate of insurance coverage for puberty blockers through advocacy and education between hospital physicians and insurance adjustors.
- Secured multiple internal and externa funding for patient and family needs, including full funding for the family support group, giving library of books to support family exploration and childhood learning on gender, and training support.
- Supervise and coordinate staff and scheduling.
- Lead and participate in research development as it pertains to the development of best care practices for our patients and families.
- Assure the Hospital and all affiliates are performing at the highest level possible in the overarching support for all LGBTQ staff, employees and providers.
- Providing state and regional trainings for health care and mental health providers.
- Mentoring hospitals nationwide in developing gender affirming care clinics with practices, policies, training and advocacy.
- Advising local, regional and national guidelines for the care of transgender and gender expansive children, youth and their families.

Family Services Specialist: Department of Patient & Family Services, The Children's Hospital of Philadelphia, January, 2014 to present.
Goal is to provide on-going assessment of the Hospital policies and practices to assure at every point of contact with patients, families and staff, LGBT individuals are treated with respect, competence and the best practices in health care and employment experience.

- Conducting annual training seminars and lectures throughout the CHOP Network and affiliates to increase their LGBT competence in supporting patients and families.
- Conducted numerous Grand Rounds presentations and private sessions to assist multiple hospitals to both increase their LGBT patient and family competence, as well as increase specific competence with transgender child/youth patient care.
- Establishing first pediatric plans for Transgender Child & Youth Policy & Practice.
- As a result of all of the above, successfully supported the Hospital in achieving the Human Rights Campaign Endorsement as a Leader in LGBT Healthcare Equality for The Children's Hospital of Philadelphia from 2014 to present..

Director & Trainer: Advanced Training in Affirmative Therapy for Transgender Communities, Widener University, January, 2018 to present.
Designed and implemented a one-year professional training program for mental health providers based at Widener University. Expanded to bi-coastal in-person offering in Philadelphia and Seattle, shifted to online during pandemic.

- Designed year-long curriculum that includes two, in-person weekends and weekly on-line supervision as well as monthly readings.
- Supervise 6 training staff to implement the above training and supervision needs.
- Develop promotion materials to reach a national audience of potential participants.

Additional Program Development & Management Experience
Interim Director, Gender Affirming Care Clinic: Johns Hopkins All Children's Hospital, St. Petersburg, FL, September 2019 to September 2021. Accomplishments: Completed comprehensive needs assessment of the hospital network to determine existing strengths and areas for growth in providing gender affirming care. Completed comprehensive needs assessment of patient and family care needs. Developed and implemented program expansion plan resulting in the first fully staffed, interdisciplinary care program for transgender and gender nonbinary children, youth and families in the state of Florida.

Interim Director, Center for Gender Affirming Care: Rady Children's Hospital, San Diego, CA, January 2017 to January 2019. Accomplishments: Completed comprehensive needs assessment of the hospital network to determine existing strengths and areas for growth in providing gender affirming care. Completed comprehensive needs assessment of patient and family care needs. Developed and implemented program expansion plan resulting in the rebuilt interdisciplinary care program for transgender and gender nonbinary children, youth and families in San Diego.

Director of Counseling Services: The Attic Youth Center, Philadelphia, PA, May, 2004 to September, 2011. Accomplishments: Expanded program from 2 therapists to 7 therapists with psychiatry partnership and insurance funding. Supervised therapists (MSW, MEd, PsyD and

PhD level clinicians) to provide complete counseling and psychosocial services to sexual and gender minority youth (ages 14-24 years old). Built collaboration with Community Behavioral Health (CBH) to ensure funding for services. Developed annual student training program. Clinical team awarded the Association of Gay & Lesbian Psychiatrists Honor of Mental Health for Youth in 2011. Supervisors: Carrie Jacobs, PhD, Executive Director and Cornelius Furgesson, PhD, Licensed Psychologist.

Program Manager, HIV Counseling and Testing: Adolescent Medicine, The Children's Hospital of Philadelphia, Philadelphia, PA, October, 2004 to March, 2008. Accomplishments: Organized and coordinated all adolescent sexual health and HIV counseling within the Hospital network. Expanded program from 2 testing sites to 9 sites including multiple community events throughout Philadelphia. Developed testing protocols that met and exceeded best practice for testing with youth and young adults. Led strategic grant writing to fund existing and expanded programming, securing annual funding for 4 full time health educators/testers and partial supervision/management salaries. Supervisor: Christine Ambrose, LSW, Program Manager.

Program Coordinator: The Injury Free Coalition for Kids of Philadelphia, The Children's Hospital of Philadelphia, Philadelphia, PA, February, 1999 to February, 2004. Accomplishments: Developed a community based coalition of medical, education, public health, government, and faith based leaders to address the crisis of unintentional injury to children in West and Southwest Philadelphia. Led research and interventions to assess needs, build partnerships and strategize solutions with and for the community. Provided training and guidance to MD, MPH, SW, MEd, and PhD students interested in community based wellness and public health promotion. Led strategic grant writing to secure initial and sustainable funding for core coalition staff and all projects through sources including: Robert Wood Johnson Foundation, DHHS, Ronald McDonald House Philadelphia, Philadelphia Foundation, PEW Charitable Trust, and multiple local funding groups. Successfully funded a $300,000 playground through grassroots, faith-based and competitive matching funds. Supervisors: Flaura Winston, MD, PhD, Center for Pediatric Injury Prevention, and Marla Vanore, MSEd, Trauma Program Manager.

Additional Clinical Experience

Private Practice: Hawkins LifeWorks LLC, Philadelphia, PA, September, 2012 to January, 2014. *Private practice offering clinical support to children and youth who identify as LGBTQ and their families (no new clients as of 2014). Currently offering training for schools, churches and community agencies. Also providing clinical supervision to trainees seeking clinical training needs in these specific areas.*

- Supported numerous children, youth and families in their mental health care needs.
- Supervised 12 clinical trainees, to date, in their clinical training hours.
- Continue to clinically supervise 4 trainees seeking licensure and a dozen clinicians within private practice.
- Providing trainings at colleges and hospitals throughout the nation to increase their competency in supporting the needs of LGBT children, youth and families.

Lead Mental Health Counselor: Adolescent HIV Initiative, Adolescent Medicine, The Children's Hospital of Philadelphia, Philadelphia, PA, February, 2004 to December, 2013. Duties:

Providing one on one, couples, family, and group counseling to youth diagnosed with HIV. Train and supervise intern, extern and practicum students in clinical counseling. Build partnerships with community-based counseling and psychiatry services to provide comprehensive seamless care to patients. Lead and assist in grant writing to fund psychosocial support team members (social work, nursing and wellness counselor) with successful awards from the AIDS Activities Coordinating Office (AACO), NIH, NIMH, and DHHS. Supervisor: Tracy DiFonzo, LCSW, Program Manager and Benoit Dube, MD, Psychiatrist.

Adolescent Counselor: The Attic Youth Center, Philadelphia, PA, February, 1999 to December, 2006. Duties: Providing one on one, couples, and group counseling to gay, lesbian, bisexual, transgender, and questioning youth. Supervisor: Cornelius Furgesson, PhD, Licensed Psychologist

Adolescent Counselor: The Open Door, Philadelphia Community Health Alternatives, Philadelphia, PA, March, 1999 to March, 2001. Duties: Providing one on one, couples, and group counseling to gay, lesbian, bisexual, transgender, and questioning youth. Supervisor: Phillip Rutter, PhD, Program Director.

Child Clinical Therapist Intern: Philadelphia Child Guidance Center – Department of Child & Adolescent Psychiatry at the Children's Hospital of Philadelphia, Philadelphia, PA, September, 1997 to May, 1998. Duties: Conducted individual and group counseling with behaviorally challenged children and their families. Collaborated with multidisciplinary team to devise and implement treatment plans. Supervisor: Dr. Brenda Pemberton, Director.

Additional Teaching Experience

Adjunct Associate Professor: Widener University Center for Human Sexuality Studies, Chester, PA, Summer, 2008 to Spring, 2017.

The Center for Human Sexuality Studies at Widener University is the only nationally accredited program in sexuality education and clinical sexuality training in the United States. Students come from across the nation and Canada to train within this program.

Courses Taught as Lead Instructor:

- *HSED 645 – Sexual Minorities*
- *HSED 624 - Education and Training Methods for the Clinical Sexologist*
- *HSED 695 & 696 - Practicum Supervision (2 semesters)*
- *HSED 588(elective) – Clinical Implications of HIV*
- *HSED 588(elective) - Sexually Transmitted Infections & HIV/AIDS*
- *HSED 593 - Behavioral Foundations of Human Sexuality*
- *HSED 645 - Sexual Minorities*
- *ED652 - Group Process and Dynamics*
- *PY 622 – Trauma, Advocacy & Social Justice*
- *CFTP 511 – Introduction to Sex Therapy: Concepts in Human Sexuality*

Consistently achieving exceptional ranking in all course evaluations, on both content, communication and expertise.

Awarded the 2015 Widener Points of Pride Award – awarded annually to the faculty member for exceptional scholarship in the field of sexuality to support the students, faculty and overall profession in the field.

Adjunct Professor: Arcadia University Masters in Psychology Program, Glenside, PA, Fall, 2013 to Spring, 2014. Duties: Design, instruct and evaluate courses for Masters level students. Supervisor: Dr. Eleonora Bartoli, Program Director.

Additional Research Experience

Study Coordinator & Behavioral Study Interventionist: Adolescent Trials Network (ATN), The Children's Hospital of Philadelphia, Philadelphia, PA, January, 2008 to December, 2013. Duties: Implement NIH funded research protocols as designed and designated through the ATN. As coordinator, assure all subject selection, protocol procedure, documentation, data entry, and quality assurance meets and exceeds study requirements. As interventionist, assure all aspects of intervention procedures meet the dynamic needs of the subjects and the study protocol. Supervisor: Mary Tanney, RN, MPH, Research Nurse.

2010 – 2013: Study Interventionist & Coordinator for *Treatment for Depression Among HIV-Infected Youth – (ATN 080)*

2008 – 2013: Study Coordinator for *Neurocognitive Assessment in Youth Initiating HAART, A Multi-Center Study of the Adolescent Medicine Trails Network for HIV/AIDS Interventions (ATN 071)*

2009 – 2012: Study Coordinator & Supervisor for *Mindfulness Approaches to Increasing Wellness Among Youth Living with HIV – Partnership with The Johns Hopkins School of Medicine*

2008 – 2010: Study Interventionist & Coordinator for *Integrated Treatment of Alcohol and/or Marijuana Abuse for HIV-Infected Youth – Focus Groups, Phase I & Phase II (ATN 069)*

2008 – 2009: Co-Investigator for *Sexual Health Risk Among Adolescent and Young Adult African Americans Living with HIV who have Sex with Men – Adolescent Initiative Study, The Children's Hospital of Philadelphia*

2005 - 2006: Primary Investigator for *Internal Validation of OraQuick Advance Rapid HIV 1-2 Antibody Test Kit on Oral Fluids Compared to Standard ELISA Serum Screening – Point of Care Testing, The Children's Hospital of Philadelphia*

2004 – 2005: Co-Investigator for *Post-Traumatic Stress Reactions in HIV-positive Youth: An exploratory study to identify life stressors and impact of diagnosis - Adolescent Initiative Study, The Children's Hospital of Philadelphia*

Peer-reviewed Publications

2021 Hobson, B., Lett, E., **Hawkins, L.**, Swediman, R., Nance, M., & Dowshen, N. Transgender Youth Experiences with Implant GnRH

Agonists for Puberty Suppression. *Transgender Health*, 16 Sep 2021https://doi.org/10.1089/trgh.2021.0006

2021 Experiences of Chest Dysphoria and Masculinizing Chest Surgery in Transmasculine Youth. Mehringer, J., Harrison, J., Quain, K., Sea, J., **Hawkins, L**., & Dowshen, N. *Pediatrics*, 147(3).

2020 Schlupp, A., Dowshen, N., **Hawkins, L.,** & Stallings, V. The Prevalence and Patterns of Food and Beverage Restriction for Bathroom Avoidance in Transgender and Gender-Diverse Youth: A Retrospective Chart Review. *Journal of Adolescent Health Research Poster Symposia*, 66(2), S29.

2019 Libby, B., Miller, V., Regan, K., Gruschow, S., Hawkins, L., & Dowshen, N. Communication of Acceptance and Support In Families Who Have Gender-Variant Youth. *Journal of Adolescent Health*, 64(2), S101-S102.

2019 House, H., Gaines, S., **Hawkins, L**., Sexual and Gender Minority Adolescents: Meeting the Needs of Our LGBTQ Patients and Their Families. *Clinical Pediatric Emergency Medicine*, 20(1), 9-16.

2018 Dowshen, N., Gruschow, S., Taylor, S., Lee, S., & **Hawkins, L**. Barriers to Care for Gender Non-Conforming Youth: Perspectives of Experienced Care Providers, Transgender Youth and Their Parents. *Journal of Adolescent Health*, 62(2), S42.

2018 Hickerson, K., **Hawkins, L.**, & Hoyt-Brennan, A. Sexual Orientation/Gender Identity Cultural Competence: A Simulation Pilot Study. *Clinical Simulation in Nursing*, 16, 2-5.

2017 Brown, L., Kennard, B., Emslie, G.,…**Hawkins, L**. Effective Treatment of Depressive Disorders in Medical Clinics for Adolescents and Young Adults living with HIV: A controlled trial. *Journal of Acquired Immune Deficiency Syndrom*, 71(1), 38-46.

2016 Contributing author. Supporting & Caring for Transgender Children. *Human Rights Campaign*.

2016 Dowshen, N., Lee, S., Castillo, M., **Hawkins, L.**, & Barg, F. Barriers and Facilitators to HIV Prevention, Testing, and Treatment among Young Transgender Women. *Journal of Adolescent Health*, 58(2, Supp), S81-82.

2016 Dowshen, N., Meadows, R., Bymes, M., **Hawkins, L.,** Eder, J., & Noonan, K. Policy Perspective: Ensuring comprehensive care and support for gender nonconforming children and adolescents. *Transgender Health*, 1(1), 75-86. http://online.liebertpub.com/doi/pdfplus/10.1089/trgh.2016.0002

2016	McClain, Z., **Hawkins, L.A.**, & Yehai, B. Creating Welcoming Spaces for Lesbian, Gay, Bisexual, and Transgender (LGBT) Patients: An Evaluation of the Healthcare Environment. *Journal of Homosexuality*, 63(3).
2015	Dowshen, N., Meadows, R., Bynes, M., **Hawkins, L.,** Eder, J., & Noonan, K. Ensuring Comprehensive Care and Support for Gender Non-Conforming Children and Adolescents. *Policy Lab: Evidence To Action*, Fall 2015.
2014	Kennard, B., Brown, L., T., **Hawkins, L**., Risi, A., Radcliffe, J., Emslie, G., Mayes, T., King, J., Foxwell, A., Buyukdura, J., Bethel, J., Naar-King, S., Safran, S., Xu, J., Lee, S., Garvie, P., London, C., Tanney, M., Thornton, S., and the Adolescent Trials Network for HIV/AIDS Interventions. Development of Health and Wellness CBT for Individuals with Depression and HIV: Feasibility and Acceptability. Journal of Cognitive & Behavioral Practice, pp 237-246.
2011	Radcliffe, J., Beidas, R., **Hawkins, L**. & Doty, N. Trauma and Sexual Risk Among Sexual Minority African American HIV Positive Young Adults. *Traumatology*, June 2011.
August, 2010	Radcliffe, J., Doty, N., **Hawkins, L.A.**, Smith, C. Beidas, R., and Rudy, BJ. Stigma and Sexual Health Risk in HIV-Positive African American Young Men who have Sex with Men. AIDS Patient Care and STDs, 24(8).
May, 2010	Radcliffe, J., Beidas, R., **Hawkins, L.A.**, and Doty, N. Trauma and Sexual Risk Among Sexual Minority African-American HIV+ Young Adults. Traumatology. May 7, 2010 as doi:10.1177/1534765610365911
June, 2009	Valenzuela, J., Buchanan, C., Radcliffe, J., Ambrose, C., **Hawkins, L.A.,** Tanney, M. and Rudy, BJ. Transition to Adult Services Among Behaviorally Infected Adolescents with HIV – A Qualitative Study. Journal of Pediatric Psychology, Advanced Access published June 19, 2009
June, 2008	Mollen, CJ, Lavelle, J., **Hawkins, LA**, Ambrose, C. and Rudy, BJ. Description of a Novel Pediatric Emergency Department-Based HIV Screening Program for Adolescents. *AIDS Patient Care and STDs*, 22(6), 505-512.
July, 2007	Radcliffe, J, Fleisher, C.L., **Hawkins, LA**, Tanney, M, Kassam-Adams, N, Ambrose, C, and Rudy, BJ. Posttraumatic Stress and Trauma History in Adolescents and Young Adults with HIV. *AIDS Patient Care and STDs*, 21(7), 501-508.

June, 2004	Posner,J., **Hawkins, LA**, Garcia-Espana, F., & Durbin, D. A randomized controlled trial of a home safety intervention based in an emergency department setting. *Pediatrics*, 113(6), 1603-1608.
September, 2004	Nance, ML, **Hawkins, LA**, Branas, CC, Vivarelli-O'Neill, C, and Winston, FK. Optimal driving conditions are the most common injury conditions for child pedestrians. *Pediatric Emergency Care*, 20(9), 569-573.
December, 2001	Kodman-Jones, C., **Hawkins, L.**, Schulman, S.L. Behavioral characteristics of children with daytime wetting. *Journal of Urology*, 166(6);2392-2395.

Book chapters and other publications

2019	Dube, B, & **Hawkins, L.A** (2019). Sexual Disorders and Transgender Health. Chapter 11 in Fundamentals in Consultation Psychiatry: Principles and Practice. Eds Lavakumar, M., Rosenthal, L., & Rabinowitz, T. Nova Medicine & Health: New York, NY
2018	Hickerson, K., **Hawkins, LA**., Hoyt-Brennan, A. (2018). Sexual Orientation/Gender Identity Cultural Competence: A simulation pilot study. Clinical Simulation in Nursing, 16, 2-5.
2016	McClain, Z., **Hawkins, LA**, Yehia, BR. (2016). Creating Welcoming Spaces for Lesbian, Gay, Bisexual and Transgender (LGBT) Patients: An evaluation of health care environment. Journal of Homosexuality, 63(3), 387-393.
2016	**Linda A. Hawkins,** Nadia Dowshen, Susan Lee. The Bathroom Debate: A legal argument that is causing a public health crisis, PolicyLab, Children's Hospital of Philadelphia http://policylab.chop.edu/blog/bathroom-debate-legal-argument-causing-public-health-crisis
2015	Ensuring Comprehensive Care and Support for Gender Non-Conforming Children and Adolescents. http://policylab.chop.edu/evidence-action-brief/ensuring-comprehensive-care-and-support-gender-non-conforming-children-and
2015	Simms, S., & **Hawkins, L.A.**, *Families with Chronic Medical Issues*, book chapter in Browning, S (Ed.), Contemporary Families: Translating Research into Practice. Routledge: New York, NY.

2014	**Hawkins, L.A.**, & Ginsburg, K.R., *Core Principles in Communicating with Adolescents*, in Ginsburg KR and Kinsman SB. Reaching Teens: Wisdom from Adolescent Medicine. Elks Grove Village IL; American Academy of Pediatrics; (A Textbook and Video Product)
2014	Dowshen, N., **Hawkins, L.A.**, Arrington-Saunders, R., Reirden, D.H., & Garofalo, R, *Sexual and Gender Minority Youth*, in Ginsburg KR and Kinsman SB. Reaching Teens: Wisdom from Adolescent Medicine. Elks Grove Village IL; American Academy of Pediatrics; (A Textbook and Video Product)
2014	Dowshen, N., **Hawkins, L.A.**, Arrington-Saunders, R., Reirden, D.H., & Garofalo, R, *HIV-Infected Youth*, in Ginsburg KR and Kinsman SB. Reaching Teens: Wisdom from Adolescent Medicine. Elks Grove Village IL; American Academy of Pediatrics; (A Textbook and Video Product)
2014	Radcliffe, J., **Hawkins, L.A.,** & Buchanan, C. Pediatric HIV, book chapter in Clinical Practice of Pediatric Psychology: Cases and service delivery. Guilford Press.

Professional Organizations & Appointments

2019 – Present	College of Physicians of Philadelphia - Fellow
2018 – Present	Pennsylvania Transgender Task Force – Appointed by Dr. Rachel Levine and Governor Tom Wolfe - Member
2017 – Present	Human Rights Campaign Transgender Working Group - Member
2012 – Present	American Counseling Association – Member
2012 – Present	Pennsylvania Counseling Association - Member
2011 – 2017	Sexuality Information and Education Council of the United States – Board Member
2010 – Present	Academic Pediatrics – Reviewer
2010 – Present	Society for the Scientific Study of Sexuality – Member & Reviewer
2008 – 2010	Equality Advocates (now Equality Pennsylvania) – Board Member
2005 – Present	World Professional Association for Transgender Health (formerly HBIGDA) - member
2005 – Present	Society for the Scientific Study of Sexuality – Member
2005 – Present	American Association of Sexuality Educators, Counselors and Therapists – Member

Invited Lectures

February 2020	Supporting Transgender, Gender Non-Conforming and Gender Expansive Children & Youth Department of Social Work Johns Hopkins All Children's Hospital, St. Petersburg, FL
January 2020	It Starts With You: Promoting LGBTQ Competence among Colleagues

	Lecture Series: Office of Diversity & Inclusion The Children's Hospital of Philadelphia, Philadelphia, PA
October 2019	Expanding Care for All to Include Transgender Children & Youth Keynote: New Jersey Physicians Advisory Committee, Cherry Hill, NJ
September 2019	Supporting Transgender Children & Youth Keynote: Cooper Pediatrics Group, Moorestown, NJ
September 2019	Collaborating for Care: Models of Gender Clinic Collaboratoin & Mentorship Across the US National Conference, United States Professional Association for Transgender Health (USPATH), Washington, DC
July 2019	Building Knowledge, Skills and Community to Support Transgender Communities: A training program for mental health professionals 2019 Trans Wellness Conference, Philadelphia, PA
July 2019	Non-Binary Youth: Clinical Complexities of Supporting Gender Creativity in a Binary World Gender Spectrum Conference, Moraga, CA
June 2019	Transforming Systems: Creating the Ideal Trans Care Experience National Conference, Canadian Professional Association for Transgender Health (CanPATH), Toronto, Canada
December 2018	Foundational Aspects of Gender Development & Gender Identity Emergence across the Lifespan Hospital of the University of Pennsylvania, Philadelphia, PA
September 2018	Understanding Gender Identity & Development in 2018: Professional, parental and personal perspectives The College of Physicians of Philadelphia, Philadelphia, PA
February 2018	Creating the Ideal LGBTQ Patient & Family Experience: From Policy to Practice Boston Children’s Hospital, Boston, MA
February 2017	Creating Systemic Change for Transgender Children & Youth: Establishing a multidisciplinary pediatric practice that supports patients and families within a hospital network and beyond National Conference, United States Professional Association for Transgender Health (USPATH), Los Angeles, CA
March 2016	Pennsylvania College of Physicians

	Supporting Transgender, Gender Non-Conforming and Gender Expansive Children & Youth, Philadelphia, PA
March 2016	Children's Hospital Association National Conference Creating an Inclusive Experience for LGBT Patients & Families: Policy to Practice, New Orleans, LA
September 2015	Supporting Transgender, Gender Non-Conforming and Gender Expansive Children & Youth Keynote speaker, MSW Field Faculty Orientation University of Pennsylvania School of Social Policy & Practice
April, 2015	Understanding Transgender & Gender Expansive Children & Youth Psychiatry Grand Rounds Baystate Medical Center, Springfield, MA
March, 2015	Creating an Inclusive Experience for LGBT Patients & Families ***Human Rights Campaign Endorsed Training* Family Centered Care Grand Rounds The Children's Hospital of Philadelphia, Philadelphia, PA
March, 2015	Supporting Gender Non-Conforming Children & Youth in Primary Care CHOP at Virtua Care Center, Voorhees, NJ
March, 2015	Creating a Supportive Campus for All Students William Penn Charter School, Middle School, Philadelphia, PA
December, 2014	Understanding & Supporting Your Transgender Patient Family Practice Resident Training Hospital of the University of Pennsylvania, Philadelphia, PA
December, 2014	LGBT Inclusive Research Practice ***Human Rights Campaign Endorsed Training* PROSPER Research Training Children's Hospital of Philadelphia Research Institute, Philadelphia, PA
December, 2014	Creating Child Abuse Investigations Inclusive of Sexual Orientation & Gender Identity Philadelphia Children's Alliance Annual Conference, Philadelphia, PA
November, 2014	Affirmative Clinical Work with Gender-Expansive Children & Youth: Common Issues & Considerations Gender Spectrum East Conference, Baltimore, MD
October, 2014	Supporting Lesbian, Gay, Bisexual and/or Transgender Individuals & Families

	Montgomery Behavioral Health Provider Training Series, Norristown, PA
September, 2014	Creating a Supportive Campus for All Students William Penn Charter School, Upper School, Philadelphia, PA
June, 2014	Multidisciplinary Best Practice: Medical, Mental Health & Legal Perspectives 13th Annual Trans Health Conference, Philadelphia, PA
June, 2014	Supporting Non-Binary Children & Youth: A partnership between mental health and medical providers 13th Annual Trans Health Conference, Philadelphia, PA
February, 2014	Supporting LGBT Families in the NIICU ***Human Rights Campaign Endorsed Training* NIICU Medical Professional Day of Learning The Children's Hospital of Philadelphia, Philadelphia, PA
June, 2013	Contemporary Counseling with Transgender Children, Youth & Families 12th Annual Philadelphia Trans-Health Conference, Philadelphia, PA
April, 2013	Supporting Youth & Young Adults who are Living with HIV Marriage & Family Therapy Program Jefferson University, Philadelphia, PA
March, 2013	LGBT Child & Youth Update: Coming out, therapy needs & family support Marriage & Family Therapy Program Jefferson University, Philadelphia, PA
November, 2012	Creating the Ideal Patient Experience: Serving our Lesbian, Gay, Bisexual and/or Transgender Patients & Families Pride at CHOP Staff Training Seminar Series The Children's Hospital of Philadelphia
November, 2012	The Internet as a Factor in Gender Identity Development for Transgender and Gender Variant Adolescents Society for the Scientific Study of Sexuality Annual National Conference, Tampa, Florida
September, 2012	Building on Classroom Inclusion: Adding a Layer on Gender School-wide Training Greene Street Friends School, Philadelphia, Pennsylvania

UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF ALABAMA
NORTHERN DIVISION

REV. PAUL A. EKNES-TUCKER; BRIANNA BOE, individually and on behalf of her minor son, MICHAEL BOE; JAMES ZOE, individually and on behalf of his minor son, ZACHARY ZOE; MEGAN POE, individually and on behalf of her minor daughter, ALLISON POE; KATHY NOE, individually and on behalf of her minor son, CHRISTOPHER NOE; JANE MOE, Ph.D.; and RACHEL KOE, M.D.

Plaintiffs,

v.

KAY IVEY, in her official capacity as Governor of the State of Alabama; STEVE MARSHALL, in his official capacity as Attorney General of the State of Alabama; DARYL D. BAILEY, in his official capacity as District Attorney for Montgomery County; C. WILSON BAYLOCK, in his official capacity as District Attorney for Cullman County; JESSICA VENTIERE, in her official capacity as District Attorney for Lee County; TOM ANDERSON, in his official capacity as District Attorney for the 12th Judicial Circuit; and DANNY CARR, in his official capacity as District Attorney for Jefferson County.

Defendants.

Civil Action No.

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DECLARATION OF RACHEL KOE, MD, IN SUPPORT OF PLAINTIFFS' MOTION FOR TEMPORARY RESTRAINING ORDER & PRELIMINARY INJUNCTION

I, Rachel Koe,[1] declare as follows:

1. I am a physician licensed to practice by the State of Alabama. I work in southeast Alabama.

2. I attended medical school in Alabama and, since completing my pediatrics residency, have provided care to patients in rural southeast Alabama. I have been practicing for approximately ten years.

3. As a board-certified pediatrician, I treat patients from birth to nineteen years of age. Because I provide primary medical care, my patients present with a wide range of physical and mental health conditions. That also means that I have a wide network of medical and mental health providers that I rely on to refer patients who require subspecialty care. I am very careful with my referrals, ensuring that I am referring my patients to providers who offer quality care and follow evidence-based medicine.

4. About eight years ago, I started treating my first transgender patient. I had learned about gender dysphoria during my medical residency, but had never treated a transgender patient. When the patient first came under my care, he was seeing a therapist, a psychiatrist, and pastoral counselor, but his health and wellbeing

[1] Because of concerns about criminal liability and my privacy and safety, I am seeking to proceed in this case under a pseudonym. *See Motion to Proceed Pseudonymously*, filed concurrently herewith. In addition, contemporaneous with signing this declaration, I have signed with my legal name a separate copy of this declaration. My attorneys have a copy of that separate declaration.

were not improving despite this care. His mother knew that her son, who had been assigned female at birth, was struggling with gender dysphoria, but the only answer she had been given to that point was more psychiatric medication. She came to me scared that her son's declining mental health was placing him at serious risk for self-harm or even suicide.

5. Because of my involvement in pediatrics community in Alabama, I had heard of the gender clinic at UAB and referred this patient to the clinic. The referral was life changing for my patient. After about six months, he started puberty-blocking medications and approximately eighteen months later began taking testosterone. Over that time, my patient became a totally different child. He blossomed in ways that neither I nor his mother could have anticipated.

6. Due to the distance between my patient's home and the gender clinic in Birmingham, he would come to my office for regular blood work. I would always review the test results to make sure there wasn't something urgently wrong and would then pass the results along to his medical providers at the UAB gender clinic. Once my patient started testosterone, he did not feel comfortable self-administering the medication so he came to my office every other week to have my medical staff give him his medication.

7. This patient has graduated from my practice, but his mother keeps me updated on his life. According to his mother, he continues to thrive as a healthy and well-adjusted adult.

8. After seeing the difference in my patient once he received care at the gender clinic, I started to learn more about medical treatments for gender dysphoria so that I would be better able to answer questions posed to me by future patients and their parents. As part of my self-study, I familiarized myself with the medical literature including publications by the World Professional Association for Transgender Health and the Endocrine Society detailing the standards of care for medical treatment for gender dysphoria.

9. Since then, I have treated four more transgender patients. When those patients first came to see me, most had just started expressing that they were transgender. Given that, I referred them to local mental health providers for support. Once the patient was diagnosed with gender dysphoria and reached an age where medical treatment may be appropriate, I referred them to the gender clinic for further evaluation and specialty care. As with my first patient eight years ago, these patients would come to me for regular blood tests and lab work, the results of which would be sent to the UAB gender clinic so their medical providers could monitor their progress.

10. Unfortunately, not all those patients were fortunate enough to have supportive parents to take them for treatment at the UAB gender clinic, but those who did were able to lead the happy and healthy lives that every parent wants for their child. One of those patients is still under my care to this day.

11. As a pediatrician, I see my purpose as increasing access to quality, evidence-based care for children throughout Alabama. If allowed to go into effect, the Vulnerable Child Compassion and Protection Act (the "Act") would do the opposite. My transgender patient, and every other transgender young person across Alabama, would be denied evidence-based medical treatment for gender dysphoria. As a medical provider, this situation is very concerning to me. I am certain that my transgender patient's mental health will suffer significantly if she is denied ongoing medical treatment for her gender dysphoria. If I were to comply with the Act, I would be limited to referring her to counseling and a psychiatrist. Doing so would be a violation of my professional and ethical duties as a physician for two reasons: (1) talk therapy and psychiatric medication alone will not be effective in treating her gender dysphoria; and (2) I would be refusing to provide proven effective treatments, namely puberty-blocking medications and estrogen. That course of treatment is consistent with the standards of care and is well-supported in the medical literature by data published in reputable and peer-reviewed medical journals.

12. This Act also would criminalize me for making appropriate referrals to providers, such as the UAB gender clinic, who can offer the specialized care that transgender young people need. The Act would prevent me from answering parent questions and educating them about the literature underpinning the current standards of care. Without primary care providers who can share that critical information with transgender youth and their parents and connect them with healthcare providers who treat gender dysphoria, families raising transgender children will experience even greater isolation and barriers to medical providers with the necessary expertise to offer quality medical care. Even my support staff are concerned that the broad language used in the Act could result in them violating the Act simply by helping to provide competent quality care.

13. The Act places me in an impossible situation on multiple fronts. If I comply with the Act to avoid criminal penalties, I am abandoning my current transgender patient by not providing medical care consistent with the accepted standard of care. Further, as a medical provider who accepts Alabama Medicaid, and thus receives federal funds, complying with the act would require me to discriminate against transgender patients, jeopardizing all of my patients' access to care by violating federal antidiscrimination laws.

14. This Act also sets a dangerous precedent for interfering with the sanctity of the doctor-patient relationship. If the Alabama legislature can criminalize

evidence-based medical treatment for gender dysphoria, the Act may have a chilling effect on the treatment of many other conditions where public opinion may not align with medical treatments grounded in evidence-based standards of care.

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

Executed this 19 th day of April, 2022.

Rachel Koe, MD

Dr. Rachel Koe, MD

UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF ALABAMA
NORTHERN DIVISION

REV. PAUL A. EKNES-TUCKER; BRIANNA BOE, individually and on behalf of her minor son, MICHAEL BOE; JAMES ZOE, individually and on behalf of his minor son, ZACHARY ZOE; MEGAN POE, individually and on behalf of her minor daughter, ALLISON POE; KATHY NOE, individually and on behalf of her minor son, CHRISTOPHER NOE; JANE MOE, Ph.D.; and RACHEL KOE, M.D.,

Plaintiffs,

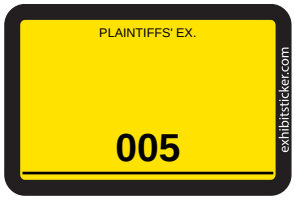
v.

KAY IVEY, in her official capacity as Governor of the State of Alabama; STEVE MARSHALL, in his official capacity as Attorney General of the State of Alabama; DARYL D. BAILEY, in his official capacity as District Attorney for Montgomery County; C. WILSON BAYLOCK, in his official capacity as District Attorney for Cullman County; JESSICA VENTIERE, in her official capacity as District Attorney for Lee County; TOM ANDERSON, in his official capacity as District Attorney for the 12th Judicial Circuit; and DANNY CARR, in his official capacity as District Attorney for Jefferson County,

Defendants.

Civil Action No.
2:22-cv-184-LCB-SRW

DECLARATION OF RACHEL KOE, MD, IN SUPPORT OF PLAINTIFFS' MOTION FOR LEAVE TO PROCEED PSEUDONYMOUSLY



I, Rachel Koe, declare as follows:

1. I will not be able to proceed as a Plaintiff in this litigation without the protections afforded me by the pseudonym Dr. Rachel Koe because of my fears for my safety and that of my family and for the safety and privacy of my transgender patients.

2. I live and work in rural southeast Alabama. Some people in my community have very strong negative views of the transgender community and oppose the provision of medically necessary treatment to transgender youth. I have heard local community members express these strongly negative views not only in the local news and on social media but also in personal conversations while out in public, for example, in the local grocery store near where I live. The passage of the Act has increased public attention on this issue and intensified the strong feelings held by those who agree with the Act and believe that health care providers who provide medical treatments to these children are committing a crime and should be punished.

3. And, as a pediatrician providing medical care to children in a rural part of Alabama, I have had parents and others in the local community approach me in a combative manner to state their opposition to doctors providing medical treatment for transgender young people even before the Act was passed and signed. At times, they have asked me directly how I would treat a transgender young person if I were

to encounter such a patient in my medical practice. I have answered this question in very broad terms because I fear for my safety and that of my family if I disclose that, where appropriate, I refer parents of transgender children to specialists who provide needed medical care.

4. I have recently experienced how quickly a hostile community reaction can escalate when I was invited to speak at a public meeting about mask wearing to slow the spread of COVID-19. The debate at the meeting became very heated. I faced physical threats because of the position I took in favor of masking, and a uniformed police officer had to escort me out of the meeting, to protect me from likely physical violence.

5. Following my comments at the meeting, someone in my neighborhood posted personal information about my children on social media, encouraging others to taunt and harass my children for my comments regarding public health and masks. While thankfully we were able to get the post removed, the threats were real and frightened us. This experience has left me keenly aware of how disagreements about a politically sensitive medical issue can result in harassment, threats, and the potential for serious violence.

6. Because of those prior experiences and the very sensitive nature of the issues involved in this case, I believe that if the public learned my identity, it would jeopardize my and my family's physical safety.

7. I also feel responsible for the safety of the nurses and administrative staff my practice employs. We do not currently have security at our medical practice and do not have the financial capacity to maintain a security presence. I believe based on the experiences, it is likely that a member of the community who learns about my involvement in the case and disagrees with my position may enter my practice and try to harm me, my pediatric patients, or others on the staff.

8. Moreover, I have previously experienced harassment relating to our practice group's recommendation of vaccinations of children, another politically charged issue in the community where I practice. On numerous occasions, community members who have learned that my practice group recommends that parents vaccinate their children have posted false, negative reviews of our practice–falsely claiming to be patients—to intentionally harm our professional reputation.

9. People have equally strong views about the issues at the heart of this case. I am concerned that my involvement in the case will draw significant negative attention from our local community and—given the reach of social media—will likely be noticed by a far wider audience geographically. Responding to fabricated negative reviews or other negative reactions—whether from members of my community or from those outside of it—will require me to divert significant resources, financial and otherwise, from my medical practice, which will take away

the time I have to care for my pediatric patients and, potentially, could escalate to a point that jeopardizes the ability of the practice to remain in business.

10. I am also concerned that this inevitable publicity would result in violence or threats of violence against me, my family, staff, and patients at my practice. Given how strongly some people in my local community feel about this issue and how easily a practice like mine—located in a relatively small rural community—can be highlighted online and become the target of nationwide negative attention, I cannot proceed in this case as a plaintiff unless I can protect my identity while doing so.

11. Finally, I believe hostile public attention will also threaten the privacy of all my patients, whether or not they are transgender, and will simultaneously threaten my livelihood. I currently have a very busy medical practice and very few of my patients know that I have and treat transgender young people in my practice, due to our strict patient privacy protocols. If that information became widely known, public surveillance of our premises is likely. Community members opposed to my participation in this lawsuit may attempt to discern the identities of my transgender patients or their parents, threatening the privacy of all my patients.

12. I am also concerned about the potential criminal exposure I may face under this Act. Because of the vague nature of the law, it is not clear to me what actions of mine may be considered criminal under the Act. For example, if I discuss

the treatments available for transgender children with a parent or parents, and they subsequently obtain those treatments for their children, it is not clear to me whether such conduct would violate the Act. Similarly, if I refer parents of transgender children to providers in other states, it is not clear to me whether I am violating the Act. Although I have no intention to violate the Act should it go into effect, I am worried that I may unwittingly engage in criminal conduct or admit to criminal conduct as part of this litigation.

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

Executed this 28 th day of April, 2022.

Rachel Koe, MD

Rachel Koe, MD

UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF ALABAMA
NORTHERN DIVISION

REV. PAUL A. EKNES-TUCKER; BRIANNA BOE, individually and on behalf of her minor son, MICHAEL BOE; JAMES ZOE, individually and on behalf of his minor son, ZACHARY ZOE; MEGAN POE, individually and on behalf of her minor daughter, ALLISON POE; KATHY NOE, individually and on behalf of her minor son, CHRISTOPHER NOE; JANE MOE, Ph.D.; and RACHEL KOE, M.D.

Plaintiffs,

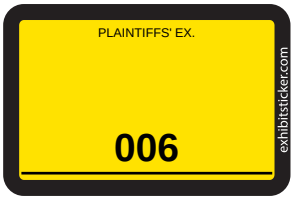
v.

KAY IVEY, in her official capacity as Governor of the State of Alabama; STEVE MARSHALL, in his official capacity as Attorney General of the State of Alabama; DARYL D. BAILEY, in his official capacity as District Attorney for Montgomery County; C. WILSON BAYLOCK, in his official capacity as District Attorney for Cullman County; JESSICA VENTIERE, in her official capacity as District Attorney for Lee County; TOM ANDERSON, in his official capacity as District Attorney for the 12th Judicial Circuit; and DANNY CARR, in his official capacity as District Attorney for Jefferson County.

Defendants.

Civil Action No. 2:22-cv-184-LCB

DECLARATION OF MORISSA J. LADINSKY, MD, FAAP, IN SUPPORT OF PLAINTIFFS' MOTION FOR TEMPORARY RESTRAINING ORDER & PRELIMINARY INJUNCTION



I, Morissa J. Ladinsky, declare as follows:

1. I am an Associate Professor of Pediatrics at the University of Alabama at Birmingham ("UAB") School of Medicine.

2. I am a practicing physician and a member of the medical staff at the Children's Hospital of Alabama and UAB Hospital, both in Birmingham. I am co-lead of the multi-disciplinary gender clinic at UAB Hospital.

3. I obtained a bachelor's degree (magna cum laude) in Human Biology from Brown University in 1985. I obtained my medical degree (with honors) from Baylor University in 1990.

4. I was certified by the American Board of Pediatrics in 1993. I am licensed to practice medicine in Alabama. I have past licensure in Ohio, Maryland, and Texas when I previously practiced and resided in these states.

5. For the last 31 years, I have dedicated my practice to the medical care of young people. Throughout my career, my patients included transgender young people. Presently, those transgender patients live in Alabama, Mississippi, Florida, and Georgia.

6. Since starting at the gender clinic at UAB, I have treated approximately 250 transgender young people for gender dysphoria.

7. The treatment of gender dysphoria is well-established in the medical profession. This is not a pioneering or experimental area of medicine. There are comprehensive standards of care governing the treatment of gender dysphoria that were developed by the World Professional Association for Transgender Health (WPATH), founded in 1979, and Endocrine Society, in collaboration with the Pediatric Endocrine Society. These guidelines are recognized as the prevailing standard of care by the major associations of medical professionals, including the American Medical Association, American Academy of Pediatrics, and the Society for Adolescent Health and Medicine, to name a few. The current version of the WPATH standards of care have been in place for more than a decade.

8. The treatment of gender dysphoria is also part of medical school curricula across the country and world. In fact, this subject is taught as part of the endocrine module to all students at the UAB School of Medicine. The broader topic of transgender medicine is also found on every state board medical exam, including in Alabama.

9. Incorporated within the standards of care is a process each patient must follow before beginning any treatment for gender dysphoria. And, as with any treatment, we also follow a protocol for obtaining informed consent as part of that process. Standard protocol requires that medical treatment for gender dysphoria is

not prescribed until a patient meets the rigorous requirements outlined in the standards of care and consistent with an informed-consent process.

10. The informed consent procedures used by the gender clinic at UAB are very comprehensive. Patients at the clinic begin that process with their primary care provider and often community based mental health provider before they even have an initial appointment with a doctor like me. The patient's mental health provider thoroughly assesses the patient's mental health, maturity, presence and acuity of dysphoria and if indicated, ultimate readiness to undergo medical treatment for gender dysphoria. Using those assessments as our baseline, our multidisciplinary team begins its evaluation. We meet with the patient and their parents/legal guardians, review the risks, benefits, and alternatives of treatment, as medical and mental health providers do for all treatments. After that initial meeting, we meet with our patients at regular intervals for follow up, allowing us to monitor the patient's gender dysphoria as well as their overall physical and mental health over time. The team also provides families with materials to review and community-based supports and resources to connect with in the time between appointments.

11. Most of our patients are in the care of the gender clinic for one to three years before initiating medical treatment for gender dysphoria, depending on when they first come to the clinic and their individual healthcare needs. Even after that extended observation and assessment period, we will not prescribe any treatment

unless the full multidisciplinary team agrees that treatment is appropriate, and the patient and the patient's parents fully understand, have the capacity to consent, and sign the informed-consent forms. This process is intentionally set up to ensure all involved are making an informed, measured decision, from the healthcare providers to the patients and their parents.

12. Throughout this evaluation information-sharing process, patients are encouraged to avail themselves of the various services offered as part of our multidisciplinary clinic, including pastoral care. The purpose of these services is to get a full picture of a patient's health, wellbeing, household support, and functioning. Each of those data points help determine whether a potential treatment option may be appropriate for any given patient.

13. Once a patient begins medical treatment, their progress is monitored at regular intervals, typically every six months, to assess the efficacy of the prescribed treatment through a physical examination or laboratory tests. This ongoing monitoring also ensures ongoing evaluation of a patient's mental health and the chance to address any questions the patient or their parents may have.

14. I understand that Governor Ivey signed the Vulnerable Child Compassion and Protection Act (the "Act"). My understanding is that the Act expressly prohibits physicians, and others, from doing or saying anything that could cause a transgender young person, under age 19, in Alabama to undergo medical

treatment for gender dysphoria. I further understand that violating the Act exposes Alabama healthcare providers and others to criminal prosecution, which could result in a prison sentence or substantial fine.

15. Puberty-blocking medication and hormone-replacement therapy have greatly improved the physical and mental health and wellbeing of my patients. Denying my patients access to these well-established medical treatments will cause the mental health of many of my patients to regress, including increasing their suicidality and likelihood of attempting suicide. To cease ongoing care, without a medical basis, would violate my professional, ethical, and legal obligations by forcing me to harm my patient.

16. In the days since the Act was signed into law, I have met with numerous patients who are experiencing significant psychological distress due to the prospect of the Act going into effect. One teenage patient was visibly trembling in fear. Parents are regularly calling the clinic in tears. The uncertainty weighs heavily on the minds of my patients and their parents. And, for some, their worst fears have already started to materialize: several of my patients have reported to me that their pharmacies are refusing to fill prescriptions relating to the treatment of their gender dysphoria, including for menstrual suppression medications which are supposedly not criminalized by the Act.

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

Executed this 20 th day of April , 2022.

Morissa J. Ladinsky, MD, FAAP

APRIL 29, 2022

CURRICULUM VITAE

PERSONAL INFORMATION:

Name:	Morissa J. Ladinsky, MD, FAAP
Citizenship:	United States
Other Languages:	Spanish
Address	7 Carla Circle, Birmingham, AL 35213
Phone:	205-504-1748

CURRENT RANK/TITLE:

2015-present	Associate Professor of Pediatrics, UAB School of Medicine
2015-present	Associate Professor, Medical Education, UAB School of Medicine
Business address:	Department of Pediatrics Division of Academic General Pediatrics 310 Children's Park Place 1 1600 7th Avenue South Birmingham, AL 35233-1711
Phone: Fax Email	205-638-9585 205-975-6502 mladinsky@uabmc.edu

HOSPITAL APPOINTMENTS:

Medical Staff: Children's Hospital of Alabama, Birmingham, AL 2015-

Medical Staff: UAB Hospital Birmingham, AL 2015-

EDUCATION:

Year	Degree	Institution
1990	Doctor of Medicine	Baylor College of Medicine,

	With Honor	Houston, TX
1985	Bachelor of Arts Human Biology Magna cum laude	Brown University Providence, RI

LICENSURE

Alabama	#34204
Ohio	#35-07-7337 (inactive)
Maryland	#D47256 (inactive)
Texas	#J0053 (inactive)

BOARD CERTIFICATION:

American Board of Pediatrics, Certificate # 51388
October 13, 1993
Recertified 2001, 2008, 2014, 2019 Participating in MOC

POSTDOCTORAL TRAINING:

Year	Degree	Institution
1995-1997	Fellowship, General Academic Pediatrics and Program Development	Johns Hopkins School of Medicine
1990-1993	Residency in Pediatrics	Baylor College of Medicine

ACADEMIC APPOINTMENTS:

Year	Rank/Title	Institution
2015-present	Associate Professor	UAB School of Medicine Department of Pediatrics Division of Academic General Pediatrics
2005-2015	Assistant Professor	Division of General and Community Pediatrics Cincinnati Children's Hospital Cincinnati, OH
2000-2005	Assistant Professor	Division of Ambulatory Pediatrics

		Ohio State University School of Medicine Nationwide Children's Hospital Columbus, OH
1997-1999	Instructor in Pediatrics	Johns Hopkins University School of Medicine
1997-1999	Clinical Assistant Professor Pediatrics	University of Maryland School of Medicine

OTHER EMPLOYMENT:

1981-1983	Brown University, Research Assistant, Department of Genetics Providence, Rhode Island
1985-1986	Rural Eight County Family Planning Program Clinic Assistant, Counselor, San Marcos, Texas
1989	Bearskin Meadow Camp Medical Assistant, Diabetes Educator, CA Diabetic Youth Foundation, San Francisco, California
1993-1995	Ashford Pediatric Associates, Pediatrician (private practice) Houston, Texas
1995-1999	Franklin Square Hospital Center Pediatrician-Department of Pediatrics Consultant Baltimore, Maryland
1995-1997	Attending, Johns Hopkins Hospital Division of Pediatric/Emergency Medicine
1999	Baltimore City Dept. of Health, Physician-School based health center, Northwestern High School, Baltimore, Maryland
1999-2000	Physician- Locum Tenens, Walnut Hills Health Center, Cincinnati, Ohio
2006-2015	Pediatrician, Private Practice, Group Health Associates Cincinnati, Ohio

AWARDS/HONORS:

Phi Beta Kappa, Brown University	inducted 1984
Sigma Xi Scientific Honor Society, Brown University	inducted 1983
Academic Achievement Award: Brown University Division of Biology and Medicine	1983-1985
Alpha Omega Alpha, Baylor College of Medicine	inducted 1989
Who's Who in America	2004-present
Who's Who of American Women	2005-present
Dayton Business Journal Best Doctors:	2010-2015
Cincy Magazine Best Doctors:	2010-2015

Cover Physician, Dec. 2011

Best Doctors in America:	2011-2022
America's Top Doctors (Castle Connolly/US News):	2012-2022
Birmingham Magazine Best Doctors	2015- 2021
UAB Department of Pediatrics Educational Excellence Award	2017-2021
UAB Multicultural and Diversity Programs Research and Initiative Award	2018
TAKE of Birmingham, AL: Hope for Tomorrow Award	2018, 2019
UAB Department of Pediatrics Ralph Tiller Distinguished Faculty Award	2018
UAB Department of Pediatrics Sergio Stagno Friend of the Housestaff Award	2018

American Academy of Pediatrics, Special Achievement Award 2018

UAB Research in Medical Education Annual Symposium,
First Place Award for Educational Innovation:
"Closing Healthcare Gaps for Marginalized Populations: A Transgender Standardized Patient Approach" 2019

Castle Connolly's Exceptional Women in Medicine 2019, 2021

American Academy of Pediatrics,
Alabama Chapter President's Award 2021

UAB School of Medicine Dean's Excellence Award for Diversity 2022

PROFESSIONAL SOCIETIES/MEMBERSHIPS

Fellow of the American Academy of Pediatrics	1993-present
Member, Section on LGBT Health and Wellness	2015-present
Member Section on Minority Health, Equity and Inclusion	2020-present
Ambulatory Pediatric Association	1995-present
American Medical Women's Association	1997-present

STATE OF ALABAMA, JEFFERSON COUNTY COUNCILS AND COMMITTEES:

2015	Magic City Acceptance Project, Training Committee. Council of agencies representing at risk Birmingham Youth. Advocacy for and training of service providers in law, education, social services around needs of sexual minority and gender variant youth.
2015-present	West Alabama Area Health Education Coalition, (taking teams of trainees to the West Alabama Black Belt for reciprocal training and mentoring)
2016	Curriculum Developer/Participant, HERO Project/UAB Dept. of Pediatrics Health Education Project with Washington K-8/ Birmingham Public Schools.
2016	Organized first Community (now statewide) Support Group for Spanish Speaking Parents of Children with Autism. Joint project: UAB Dept. of Pediatrics/Alabama Autism Society/HICA

2016-present	Board of Directors, TAKE (Transgender Advocates Knowledgeable Empowering) Community Empowerment and Support for Transgender Women of Color in Alabama.
2017-present	Alabama Stakeholder Workgroup: Data Driven Prevention Initiative for Heroin/Opioid Overuse/Abuse
2017-2018	Advisory Board, Central Alabama PRIDE
2017-2020	Alabama Department of Public Health, Alabama's Adolescent Vaccine Task Force
2017-present	Alabama Department of Public Health Office of Women's Health/Alabama American Academy of Pediatrics Opioid Misuse in Women/Neonatal Abstinence Syndrome Taskforce, Protocols Committee Co-Chair
2017-present	Alabama Governor's Opioid Council, Implementation Team, Treatment and Recovery Support Subcommittee
2018-present	Board of Directors, Children's Policy Council of Jefferson County. Multi-sector and agency policy network united around child advocacy.
2019-present	Alabama Medicaid Agency-Medical Care Advisory Committee
2019-present	Mayor's LGBTQ Advisory Board, Office of Mayor Randall Woodfin, Birmingham, Alabama
2019-present	Alabama Perinatal Quality Collaborative -Steering Committee for Neonatal Opioid Withdrawal Syndrome Statewide QI Initiative
2020	Advisory Board, Junior League of Birmingham
2021	Council on Accreditation, Medical Association of the State of Alabama
2021	Council on Medical Education, Medical Association of the State of Alabama
2021	Ethics Committee, Jefferson County Medical Society

NATIONAL COUNCILS AND COMMITTEES

2000-2002	Medical Consultant, Chances for Children (Former US Charity of UK Duchess Sarah Ferguson)
2013-2015	Practice Alliance/Translation Workgroup **Co-Chair**, Autism Treatment Network/Autism Speaks, National Offices, Princeton, New Jersey
2015-present	American Academy of Pediatrics, Section on LGBTQ Health and Wellness
2018-present	Co-Leader. Multi-agency Social Justice Experience. GLIDE Center for Social Justice, UCSF Department of Pediatrics, UAB Pediatrics. Annual experience uniting leaders in medicine, faith, tech and criminal justice from San Francisco and Alabama to empower coalition building around equity and social justice.

UAB AND CHILDREN'S of ALABAMA COUNCILS, COMMITTEES, ACTIVITIES

2015-2018	Center For Aids Research/Community and Behavioral Sciences Core/UAB School of Public Health. Faith and Spirituality-Health Equity Interface Programming
2017-2019	Family-Centered Care Initiatives Council: Hispanic, Other Non-English Speaking and Low SES Families (COA)
2017-2019	Faculty Advisor, Medical Student MedPride Gay/Straight Alliance, UAB School of Medicine
2018-present	Advisory Board, Psychiatric Intake and Response Center (PIRC), Children's of Alabama Departments of Psychiatry and Emergency Medicine
2019-present	Advisory Board, UAB Comprehensive Center for Addiction in Pregnancy Program
2020-present	UAB Department of Pediatrics Diversity, Equity and Inclusion Faculty Committee
2021	UAB Department of Pediatrics Residency Program Evaluation Committee
2021	UAB School of Medicine Community Engaged Teaching Roundtable

2021	UAB School of Public Health LGBTQ Endowed Professorship Executive Committee

LOCAL/REGIONAL COUNCILS AND COMMITTEES AT OTHER INSTITUTIONS

1981-1984	Steering Committee. Meiklejohn Academic Advising Brown University
1983-1985	Student representative and advisor, Brown University Office of Undergraduate Admissions
1987-1990	Baylor Medical School Admissions Committee
1998	Sinai Hospital of Baltimore Pediatric Residency Selection Committee
2012-2015	Quality Improvement Team, Physician Member, The Kelly O'Leary Center for Autism/Autism Treatment Network, Cincinnati Children's Hospital Medical Center
2014-2015	Access to Care Workgroup, Center for Developmental Disabilities and Behavioral Pediatrics Cincinnati Children's Hospital Medical Center

MAJOR RESEARCH INTERESTS:

1) Impact of faith and community on quality of health for at risk youth including LGBTQ youth living in the Deep South.

2) Implementation of AAMC Curricular Guidelines around LGBTQ health care using Standardized Patient Methodology.

3) Developmental outcomes for infants facing neonatal opioid withdrawal syndrome.

TEACHING and MENTORING EXPERIENCE:
(Academic appointments listed earlier)

1995-1997	Preceptor, Harriet Lane Pediatric Primary Care Clinic Johns Hopkins Hospital
1995-1997	Pediatric Inpatient Co-Attending Physician Johns Hopkins Hospital

1997-1999	Faculty Attending Pediatrician/Preceptor Greenspring Pediatric Associates, Department of Pediatrics, Sinai Hospital of Baltimore
2007-2015	Revision and presentations of Pediatrician section. Pre-natal Course series, Bethesda North Hospital/TriHealth, Cincinnati, Ohio
2009-2013	Pediatrician Preceptor for Family Nurse Practitioner students during Pediatric Clerkship. University of Cincinnati School of Nursing, Good Samaritan Hospital/TriHealth School of Nursing
2009-2015	Pediatrician preceptor for residents during outpatient ambulatory clerkship, Cincinnati Children's Hospital/University of Cincinnati
2015-present	Faculty Attending Primary Care Preceptor for 14-16 residents providing both continuity and acute care, 4-5 sessions weekly
2015-present	Faculty Attending Pediatrician, Multidisciplinary Transgender Health Team, Children's of Alabama
2015-present	Children's of Alabama Staff Training for Inpatient Psychiatry, ER, Child Abuse Program, Laboratory Medicine, Social Work, Patient Relations teams: *Delivering Quality and Affirming Care to LGBTQ Patients. Focus on transgender and gender non-binary youth.*
2015-present	Faculty Mentor for several Pediatric Residents, all share mutual interest in health disparities and marginalized populations.
2016-2017	UAB Department of Pediatrics Faculty Scholars Program
2016	Lead Physician for Children's of Alabama's Primary Care Clinic HPV Vaccine QI Initiative
2017-present	Curricular Development and execution of Standardized Patient/OSCE models in training medical and allied health students around LGB and transgender healthcare. UAB School of Medicine
2018-present	LGBTQ Healthcare and Education, Special Topics Course Developer and Leader, UAB School of Medicine
2018-present	Annual guest lecturer, *Cultural Humility and Spirituality in Public Health*, Samford University, School for the Health Professions, Birmingham, AL

2019-present	Mentor for 2 ongoing pediatric resident QI initiatives. Firearm Injury Prevention in a Primary Care Clinic and After Visit Anticipatory Guidance for Spanish Speaking Families.
2020-present	Health Equity Scholars Co-Lead. Development and execution of UAB Pediatrics Residency curriculum and special interest team around improving health equity through understanding of structural racism and impact on social determinants of health.
2021	Faculty Facilitator: Case Studies in Diversity in Healthcare. Pilot initiative within UAB School of Medicine

MAJOR NATIONAL LECTURES:

"Autism Spectrum Disorders in the Community, the Role of the PCP" Invited Guest Speaker, Autism Treatment Network/Autism Intervention Research Network on Physical Health Fall Program Meeting. Denver, CO, November 8, 2012

"Primary Care Physician Engagement in the Care of Children with Autism; Lessons Learned from ADHD", Invited Guest Speaker, Autism Speaks/Autism Treatment Network Steering Committee, National Meeting, Washington, DC, July 11, 2013

"Enhancing Medical Student Competencies in Transgender Healthcare: A Transgender Standardized Patient Approach", AAMC Learn Serve Lead National Conference, Phoenix, AZ, November 10, 2019

"Clinical Advocacy and Care for Transgender Youth", Harvard Medical School, Equity and Social Justice Series. Boston, MA October 27, 2021

GRANT SUPPORT:

1996-1997	The Thomas Wilson Sanitarium for the Children of Baltimore City.
1997	Baltimore Council on Human Resources "Startup funding for Reach out and Read, The Harriet Lane Primary Care Center at Johns Hopkins"
	"The WHO Oral Rehydration Solution in US Pediatric Practice: An Evaluation of Parent Satisfaction" Principal Investigator

2017-2019	Community Foundation of Greater Birmingham, "Expansion of the Multidisciplinary Gender Clinic, Pediatric Endocrinology, Children's of Alabama"
2017-2022	UAB Health Services Foundation, General Endowment Fund, "Curricular Advancement of LGBT Healthcare Competencies Using Standardized Patients"

MANUSCRIPTS:

1. Novack DH, Detering BJ, Arnold R, Forrow L, **Ladinsky, M**, Pezullo JC. Physicians' Attitudes Toward Using Deception to Resolve Difficult Ethical Problems. JAMA. 1989;261:2980-2985.

2. Raef H, **Ladinsky MJ**, Arem R. Concomitant euthyroid Graves' ophthalmopathy and isolated ocular Myasthenia Gravis. Postgraduate Medical Journal. 1990;66:849-852.

3. Musher DM, Hamill RJ, **Ladinsky MJ**, Winsor DK, Baughn RF. Acute Glomerulonephritis Due to Shigella Flexnerii Dysentery with Demonstration of a Virulence Protein of Shigella in Circulating Immune Complexes. The Journal of Infectious Diseases. 1990;161:366-377

4. Ladinsky M, Lehmann H, Santosham M. The Cost-Effectiveness of Oral Rehydration Therapy for US Children with Acute Diarrhea. Medical Interface. 1996;9:113-119.

5. Ladinsky M, Goepp J, Santosham M. Outpatient Oral Rehydration Therapy: Safe, Effective, and Rapid. Annals of Emergency Medicine. 1997;29(4):551-552.

6. Ladinsky M, Duggan A, Santosham M, Wilson M. The World Health Organization Oral Rehydration Solution in US Pediatric Practice; A Randomized Trial to Evaluate Parent Satisfaction. Archives of Pediatrics & Adolescent Medicine. 2000;154:700-705.

7. Johnson C, Hurtubise L, Castrop J, French G, Groner J, **Ladinsky M**, McLaughlin D, Mahan J. Learning management systems: technology to measure the medical knowledge competency of the ACGME. Medical Education. 2004;1365-1374

8. Shah, K, Zabielinski, M, **Ladinsky, M.** Isolated pustular nodule on the thumb, JAMA Pediatrics, 2015 Nov 1;169(11): doi: 10.1001/jamapediatrics.2015.1301, 1061-1062

9. Ladinsky, M, Cohen, M. Mind the Gap. J Pediatr. 2020 May 31. pii: S0022-3476(20)30692-2. doi: 10.1016/j.jpeds.2020.05.054

10. Kirpalani H, Bell EF, Hintz SR, Tan S, Schmidt B, Chaudhary AS, Johnson KJ, Crawford MM, Newman JE, Vohr BR, Carlo WA, D'Angio CT, Kennedy KA, Ohls RK, Poindexter BB, Schibler K, Whyte RK, Widness JA, Zupancic JAF, Wyckoff MH, Truog WE, Walsh MC,

Chock VY, Laptook AR, Sokol GM, Yoder BA, Patel RM, Cotten CM, Carmen MF, Devaskar U, Chawla S, Seabrook R, Higgins RD, Das A; Eunice Kennedy Shriver NICHD Neonatal Research Network (**Ladinsky, M**) Higher or Lower Hemoglobin Transfusion Thresholds for Preterm Infants. N Engl J Med. 2020 Dec 31;383(27):2639-2651. doi: 0.1056/NEJMoa2020248. PMID: 33382931 Clinical Trial.

11. Bell EF, Hintz SR, Bann CR, Wyckoff MR, DeMauro SB, Walsh MC, Carlo WA, VanMeurs KP, Vohr VR, Eunice Kennedy Shriver NICHD Neonatal Research Network (**Ladinsky, M**). Mortality, In-Hospital Morbidity, Care Practices, and 2-Year Outcomes for Extremely Preterm Infants in the US, 2013-2018. JAMA, 2022 Jan 18:327(3): 248-263

BOOKS AND BOOK CHAPTERS:

Cohen, MB, **Ladinsky M**, and Marino, B. Pediatric Gastroenterology in Pediatric Blueprints 6th Edition, ed, Marino and Fine. Lippincott Williams & Wilkins, 2012

Published Abstracts and Poster Exhibits

1. Ladinsky MJ, Duggan A, Santosham M, Goepp JG, Wilson MH. Why is the WHO-ORS Underused by US Pediatric Practitioners? Ambulatory Pediatric Association Region IV Meeting, January 20, 1996 and National Annual Meeting, May 7, 1996. (Archives of Pediatrics & Adolescent Medicine. 1996;150:P29)

2. Goepp J, Edwards L, **Ladinsky M**, Gilger M, Oberherman R. Effect of an Oral Rehydration Training Program on Residents' Knowledge and Attitudes. Ambulatory Pediatric Association 3. 3. National Annual Meeting, May 7, 1996. (Archives of Pediatrics & Adolescent Medicine. 1996;150:P21)

4. Webb A, **Ladinsky, M.** Early Initiation of Hormone Therapy: A Lifesaving Treatment for a Transgender Teen with Anorexia Nervosa. *J Investig Med*, 2018; 66: 506

ORAL PRESENTATIONS

Scientific/Scholarly papers presented at national meetings:

Morissa Ladinsky, MD "Why is the WHO-ORS Underused by US Pediatric Practitioners?" Ambulatory Pediatric Association Region IV Meeting, January 20, 1996.
Ambulatory Pediatric Association National Annual Meeting, May 7, 1996.

Morissa Ladinsky, MD "The WHO Oral Rehydration Solution in US Pediatric Practice; A Randomized Trial to Assess Parent Satisfaction." Ambulatory Pediatric Association National Annual Meeting, May 4, 1998

Shawn Galin, PhD**, Morissa Ladinsky, MD "**Enhancing Medical Student Competencies in Transgender Healthcare: A Transgender Standardized Patient Approach", Learn, Serve, Lead 2019: The AAMC National Annual Meeting, Phoenix, AZ. November 9, 2019

Shawn Galin, PhD, Morissa Ladinsky, MD **"**Enhancing Medical Student Competencies in Transgender Healthcare: A Transgender Standardized Patient Approach", International Meeting on Simulation in Healthcare (IMSH), San Diego, CA January 20, 2020

Tina Simpson, MD, MPH, Chrystal Rutledge, MD, Morissa Ladinsky, MD **"**Developing a Health Equity Scholars Program for Pediatric Residents in the Heart of the Civil Rights Movement" American Society of Pediatric Department Chairs (AMSPDC), Virtual. March 6, 2021

Invited Workshops at local and regional meetings:

Morissa Ladinsky, MD, Teaching Oral Rehydration Therapy So It's Used. Workshop presented at the Ambulatory Pediatric Association National Annual Meeting, May 3, 1997.

Morissa Ladinsky, MD , Provision of Affirming Care to Transgender and Gender Diverse Patients, Children's Hospital of Alabama Divisions of: Pathology (September, 2015), Emergency Medicine (January, 2016), Inpatient Psychiatry (March, 2016), Child Abuse/CHIPS Teams (May, 2016), UAB Medical Student 1st and 2nd year Interest Group (May 2016), Second year medical student class (February, 2017-20).

Morissa Ladinsky, MD, Nefertiti Durant, MD, MPH, Group CME/MOC Part 2 Lead/Facilitator. Adolescent Medicine Self-Assessments. Alabama American Association of Pediatrics 2016 Annual Meeting and Fall Pediatric Update. Birmingham, AL October 2, 2016

Morissa Ladinsky, MD, Hussein Abdul-Latif, MD, Marianthe Grammas, MD "How Providers Can Support Trans and Gender Variant Youth" Jefferson County Medical Society Provider Workshop. October 27, 2017

Morissa Ladinsky, MD "Trans/Gender Non-Conforming Affirming Healthcare," Webinar addressing importance of medical education in healthcare. May 19, 2020

Morissa Ladinsky, MD , Shajuane Jones, MS "A Community Approach to Implementing Plans of Safe Care in Jefferson and Jackson Counties, Alabama" National Quality Improvement Center for Collaborative Community Court Teams Webinar. The Children's Bureau. July 10, 2020.

Morissa Ladinsky, MD, Heather Austin PhD, "LGBTQ: The Reality for Youth and Families", Alabama Psychological Association 2021 Annual Conference, Orange Beach, AL June 12, 2021

Morissa Ladinsky, MD , Samantha Hill, MD, MPH, Matthew Kiszla, BS, MS-2, "What's on the Books: Sexual and Gender Minority Health in Alabama Post 2020", Blackburn Institute 2021 Annual Symposium, University of Alabama, Tuscaloosa, August 27, 2021

Morissa Ladinsky, MD, Shajuane Jones, MS "Understanding Substance Dependence when Serving Pregnant and Parenting Women", Addiction and The Law Training, Dallas County Court and DHR. Montgomery, AL September 9, 2021

Invited lectures at local/regional meetings:

Oral Rehydration Therapy, an Update" Pediatric Grand Rounds at Sinai Hospital of Baltimore, February 2, 1998.

"Current Research in Pediatric Obesity and Realities in Clinical Practice" Regional Annual Meeting, National Association of Pediatric Nurse Practitioners. Cincinnati, OH. November 12, 2006

"Care Coordination for our NICU Grads in Alabama", Perinatal Grand Rounds, UAB Departments of Neonatology, OB/GYN and Pediatrics, March 30, 2016

"Pediatricians Preparing Youth for College, Can We Still Anticipate and Guide?" Alabama American Academy of Pediatrics, Spring Meeting and Pediatric Update, Point Clear, AL, April 29, 2016

"Office Based Care for LGBTQ Youth in 2016" at Raising the Resilient Teen, It Takes a Village Children's of Alabama, Adolescent Health Symposium, April 8, 2016

"Office Based Care for LGBTQ Youth in 2016" Alabama American Academy of Pediatrics, Spring Meeting and Pediatric Update, Point Clear, AL, April 30, 2016

"How Pediatricians can Support Trans and Gender Variant Youth in 2016", at American Academy of Pediatrics District II and VII Executive Leadership Annual Meeting", Washington, DC, June 25, 2016

"Pediatricians Preparing Youth for College, Can we Still Anticipate and Guide?" Pediatric Grand Rounds, Children's of Alabama, July 7, 2016

"Beyond Bathrooms, Understanding Trans and Gender Variant Youth in 2016". Grand Rounds, Children's of Alabama, October, 13, 2016.

"Gender Dysphoria, Eating Disorders and Health Challenges for Trans/Gender Variant Youth", Intensive Course in Pediatric Nutrition, Department of Pediatrics, UAB. February 24, 2016, 2019 and 2020

"Neonatal Abstinence Syndrome" at *The Opioid Crisis in Alabama; From Silos to Solutions*. A public policy conference. Montgomery, AL. March 10, 2017.

"Neonatal Abstinence Syndrome", National Association of Pediatric Nurse Practitioners Annual Meeting, UAB School of Nursing, May 21, 2017

"Who are LGBTQ Youth, Who Am I? Alabama Mental Health Symposium, Children's Hospital of Alabama, May 19, 2017.

"You are the Key to HPV Cancer Prevention". Provider Education and Networking Event, Alabama Area Health Education Coalition, Tuscaloosa, AL, May 24, 2017

"Opioid Use in Pregnancy and Neonatal Abstinence Syndrome", Alabama American Academy of Pediatrics, Fall Annual Meeting, Birmingham, AL, October 1, 2017

"HPV Vaccine Update" at Progress in OB/GYN 2018, Alabama ACOG, UAB Department of OB/GYN Annual Meeting, Birmingham, AL February 16, 2018

"Neonatal Opioid Withdrawal Syndrome, Drugs and the Brain" at Alabama Department of Health, Women's Health Update, Birmingham, AL August 3, 2018

"Opioid Use in Pregnancy and Neonatal Opioid Withdrawal Syndrome", Statewide Opioid Clinical Conference, Birmingham, AL, August 10, 2018

"The Opioid Crisis: National and State Initiatives", Annual Perinatal Conference:, Huntsville Hospital for Women and Children, Huntsville, AL, September 21, 2018

"Sound the Alarm: Opioid Use in Pregnancy and Neonatal Opioid Withdrawal Syndrome" 34th Annual Statewide Early Intervention and Preschool Conference, Birmingham, AL. October 16, 2018

"The Opioid Epidemic as a Child Health Crisis. State and National Initiatives, Outcomes and Insights", Grand Rounds, Children's of Alabama, Birmingham, AL. November 29, 2018

"Stakeholder Unity to Improve the Future for Substance Dependent Women and their Children", First Annual Alabama Child Protective Services/Department of Human Resources Conference, Birmingham, AL February 28, 2019

"Neurologic Outcomes of NICU Graduates", UAB Perinatal Conference, Birmingham, AL, June 30, 2019

"The Alabama 2020 Legislative Session, Bills affecting Child Health", First Fridays Community Stakeholder Conference, February 8, 2020

"Understanding Medication Assisted Treatment for Opioid Dependent Alabamians Within the Criminal Justice System", Annual Meeting of Family Court Judges, Alabama Association of Drug Court Professionals, AL Administrative Office of Courts. January 9, 2021

"Understanding Medication Assisted Treatment for Opioid Use Disorder", Alabama Association of Drug Court Professionals Annual Conference, Opening Plenary Session speaker, February 9, 2021

INVITED MEDIA APPEARANCES, INTERVIEWS, PANEL PARTICIPATION:

Invited Participant, US Department of Justice Roundtable Discussion on LGBTQ Issues, Office of US Attorney Joyce Vance for the Northern District of Alabama, July 12, 2016.

Panelist, "Legal Rights Intersection with LGBTQ Health", Senator Doug Jones, Moderator, UAB, October 14, 2016

Panelist, "LGBTQ Rights", Rep. Patricia Todd, Moderator, Vestavia Hills Library, January 21, 2017

Panelist, "Forum on The Future of the Affordable Care Act", Congresswoman Terri Sewell, Organizer and Moderator. Princeton Hospital. January 20, 2017.

Panelist, Your Voice, Your Future Roundtable, "Transgender in Alabama", Sinclair Broadcast Group, ABC33/40. Birmingham, AL. April 18, 2017

Panelist, "Anti-bullying Community Forum", Hadassah/Birmingham Community Foundation, April 20, 2017

Helio Health, Invited editorial response to "PCP-Transgender Patient Relationships Needs Improvement", November 27, 2018. *https://www.healio.com/news/primary-care/20181127/pcptransgender-patient-relationships-need-improvement*

Helio Health, "How PCP's Can Meet Needs of Transgender Patients", March 5, 2019, *https://www.healio.com/news/primary-care/20190305/how-pcps-can-meet-needs-of-transgender-patients*

NBC News, "Alabama Moves Closer to Transgender Health Ban for Minors", March 10, 2020. *https://www.nbcnews.com/feature/nbc-out/alabama-moves-closer-transgender-health-care-ban-minors-n1154791*

Alabama Media Group, "Doctors Call New Alabama Abortion Bill 'Medically Implausible'", March 11, 2020. *https://www.al.com/politics/2020/03/doctors-call-new-alabama-abortion-bill-medically-implausible.html*

Reuters Media Group, "Anxieties Mount for Transpeople as Coronavirus Delays Surgeries", April 9, 2020, *https://www.openlynews.com/i/?id=380a10c1-b93c-4a25-8691-0d1f84e39a7b*

American Academy of Pediatrics Voices, "Stripping of Transgender Protections Does not Have to Hamstring our Ability To Help All Patients" July 23, 2020. *https://services.aap.org/en/news-room/aap-voices/stripping-of-transgender-protections-does-not-have-to-hamstring-our-ability-to-help-all-patients/*

https://www.birminghamal.gov/2021/03/08/city-of-birminghams-lgbtq-advisory-board-issues-statement-on-hb1sb10/?fbclid=IwAR2aHeKeYh04PYOjYDXj2GN_28nVyptL7kMVHKTDa1KNJQ5vFyxPwJzv4O0 Primary Statement Author

Health Highlights with Dr. Kay, Podcast. "Teaching Medical Students About Transgender Healthcare with Drs. Morissa Ladinsky and Shawn Galin". March 19, 2021. https://podcasts.apple.com/us/podcast/teaching-medical-students-about-transgender-health/id1555978677?i=1000513735920

VICENews https://www.youtube.com/watch?v=ZQ4o1RqYJmc March 29, 2021. Alabama Wants to Send Doctors to Prison for Treating Trans Kids

Let's Think On It Live, Radio Show and Podcast with Dr. Mark Westfall. "Current Medical Understanding of Being Transgender". Live radio event on 107.3 FM and livestream http://bhammountainradio.com . Podcast http://letsthinkonitnow.com April 8, 2021

https://www.npr.org/2021/03/28/981225604/its-hurtful-trans-youth-speaks-out-as-alabama-debates-banning-medical-treatment National NPR with Melissa Block

Birmingham Aids Outreach Community Conversations on HB-1, SB-10. Facebook Live panelist. March 29, 2021 https://www.facebook.com/events/1587818304941823 https://www.alreporter.com/2021/03/23/the-dad-and-daughter-asking-lawmakers-to-stop-the-trans-health-care-ban/

Politifact. April 2021, Assistance with fact checking regarding proposed legislation prohibiting receipt of gender affirming healthcare

https://www.al.com/opinion/2021/05/im-a-doctor-and-alabama-could-arrest-me-for-doing-my-job.html

Maynard Cooper and Gayle (Legal Firm with Birmingham and national offices), Pride Month Dialogue, Pro-Bono Legal Document Clinic and Its Far Reaching Impact for Trans identified Clients. June 16, 2021

"Caring for Trans and Gender Diverse Youth; From Tavistock to US State Legislatures" 60 Minutes, Australia. Interviewer Sarah Abo. Taped September 3, 2021.

https://time.com/6146269/doctors-trans-youth-gender-affirming-care-harassment/
Time Magazine national. February 16, 2022

DIRECT LEGISLATIVE ADVOCACY AND POLICY ENGAGEMENT

Gave testimony to Alabama House of Representatives in support of HB-76, Childcare Safety Act. February 2, 2018. The bill was signed into law March 27, 2018 saving many lives by equalizing accountability around safety and hiring in licensure of faith based **and** secular day care centers in Alabama.

Delivered the pediatrician perspective to several hundred attendees rallying against the Trump Administration Family Separation policy. Speaker, "Families Belong Together Rally", Kelly Ingram Park, Birmingham, AL, June 30, 2018

Alabama Media Group and House/Senate Proceedings, 2019 Alabama Legislative Session:
https://www.al.com/news/2019/05/doctors-question-need-for-alabama-born-alive-bill.html

Nominated and asked by the Jefferson County Medical Society to run for a Delegate At Large position on the Board of Censors of the Medical Society of the State of Alabama. (MASA). Involved statewide travel and campaigning. February-April, 2019

Together with AL DHR Commissioner Nancy Buckner, Chief of Prosecution Services Barry Matson, authored proposal for pre-arrest diversion pathway for pregnant substance dependent women accused of non-violent crimes in AL. November 20, 2019
Proposal presented in person to Governor Ivey's Task Force on Prison Reform, December 4, 2019, Montgomery, AL.

Gave testimony to Alabama House and Senate Subcommittees on Health in opposition to HB303/SB 219, Vulnerable Child Advocacy and Protection Act (VCAP), February 26, 2020. Such act would criminalize pediatricians, pharmacists and teachers who prescribe, fill or discuss administration of puberty blocking or hormonal medications to minors suffering gender dysphoria.

With 3 pediatric colleagues and executive leadership of the AL American Academy of Pediatrics, met with AL State Rep. Wesley Allen (R-Troy), author of VCAP bill pre-filed as HB-1 for 2021 Legislative Session. Mutually beneficial education session around standards of care for pediatric and adolescent management of gender dysphoria. August 26, 2020

Gave testimony to House Judiciary and Senate Health in opposition to HB-1/SB-10, Vulnerable Child Advocacy and Protection Act (VCAP). February 19, 2021

Gave testimony to House Health in opposition to HB-1/SB-10, Vulnerable Child Advocacy and Protection Act (VCAP). March 10, 2021

Opinion editorial published in the Alabama Political Reporter
https://www.alreporter.com/2021/08/01/uab-pediatrician-theres-a-lot-we-know-about-covid-vaccines/ August 1, 2021

Additional invited media appearances, interviews and reporting on testimony given by myself relative to the 2021 Legislative Session's VCAP Bill HB-1, SB-10

https://www.pinknews.co.uk/2021/02/11/david-fuller-cop-trans-daughter-alabama-bill-puberty-blockers-federal-crime/ International reporting

https://www.rocketcitynow.com/article/news/local/transgender-treatment-minors-alabama-criminalize-bill/525-3d0980fd-63c1-44fb-9cd8-b8433e7cdb02
https://www.advocate.com/transgender/2021/2/12/alabama-father-testifies-passionately-against-trans-treatment-ban

https://www.al.com/news/2021/02/father-of-transgender-daughter-tells-alabama-lawmakers-treatment-ban-is-misguided.html?e=5eb4073b1edbca3e5a2ac3b00086c885&utm_source=Sailthru&utm_medium=email&utm_campaign=Newsletter_politics%202021-02-11&utm_term=Newsletter_politics

https://www.montgomeryadvertiser.com/story/news/2021/02/11/alabama-bill-would-criminalize-transgender-treatment-minors/4448260001/

https://www.alreporter.com/2021/02/12/alabama-senate-committee-votes-to-criminalize-treatment-for-transgender-minors/

https://www.them.us/story/alabama-anti-trans-student-legislation?fbclid=IwAR1SxrDQ8M9oqTPoz3qTnsQBMRTLOyexTuHQ4cQkoTkURoTFCnDVqOwygfg

https://www.metroweekly.com/2021/02/anti-trans-health-care-bill-would-force-alabama-schools-to-out-transgender-students-to-their-parents/?fbclid=IwAR1auaz0XKgN4KX3IqK57CWyjsQ8QVGI3hb2SP8f0OIvqFRiKjBe625QQAg

https://www.them.us/story/alabama-anti-trans-student-legislation

https://www.gadsdentimes.com/story/news/politics/2021/02/23/alabama-bill-criminalizing-transgender-therapy-kids-prompts-debate/6793134002/

https://www.gadsdentimes.com/story/news/local/2021/02/23/transgender-minors-bill-alabama-legislature-impact-gadsden-dad/6754825002/

https://www.rocketcitynow.com/article/news/local/local-parent-says-transgender-medical-care-bill-for-youth-are-steps-backward-gender-dysphoria/525-257093f1-9834-4ac7-b608-3f22a6cda9b2

https://www.al.com/news/2021/03/alabama-senate-passes-bill-banning-transgender-treatments-for-minors.html

https://www.alreporter.com/2021/04/20/opponents-of-alabamas-transgender-youth-treatment-ban-implore-lawmakers-to-stop/

https://www.al.com/news/2021/04/alabama-gov-kay-ivey-weighs-possible-economic-ramifications-over-restricting-transgender-rights.html

https://abc3340.com/news/local/transgender-advocates-push-back-on-proposed-alabama-laws

https://theaggie.org/2021/04/19/call-it-what-it-is-alabamas-vulnerable-child-compassion-and-protection-act-is-discrimination/

https://theaggie.org/2021/04/19/call-it-what-it-is-alabamas-vulnerable-child-compassion-and-protection-act-is-discrimination/
https://www.newsweek.com/alabama-considering-making-transgender-treatment-minors-felony-even-if-parents-approve-it-1575478?amp=1

https://www.audacy.com/wearechannelq/latest/pediatrician-who-treats-trans-youth-might-be-arrested

https://www.montgomeryadvertiser.com/story/news/2021/04/20/alabama-transgender-youth-bill-banning-medical-treatment-advocates-urge-rejection/7307227002/

https://www.them.us/story/alabama-pediatrician-fears-anti-trans-healthcare-bill

https://www.axios.com/transgender-youth-bills-doctors-health-care-bdefd950-b41d-4728-af11-26afd2f484f0.html

UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF ALABAMA
NORTHERN DIVISION

REV. PAUL A. EKNES-TUCKER; BRIANNA BOE, individually and on behalf of her minor son, MICHAEL BOE; JAMES ZOE, individually and on behalf of his minor son, ZACHARY ZOE; MEGAN POE, individually and on behalf of her minor daughter, ALLISON POE; KATHY NOE, individually and on behalf of her minor son, CHRISTOPHER NOE; JANE MOE, Ph.D.; and RACHEL KOE, M.D.

Plaintiffs,

v.

KAY IVEY, in her official capacity as Governor of the State of Alabama; STEVE MARSHALL, in his official capacity as Attorney General of the State of Alabama; DARYL D. BAILEY, in his official capacity as District Attorney for Montgomery County; C. WILSON BAYLOCK, in his official capacity as District Attorney for Cullman County; JESSICA VENTIERE, in her official capacity as District Attorney for Lee County; TOM ANDERSON, in his official capacity as District Attorney for the 12th Judicial Circuit; and DANNY CARR, in his official capacity as District Attorney for Jefferson County.

Defendants.

Civil Action No.

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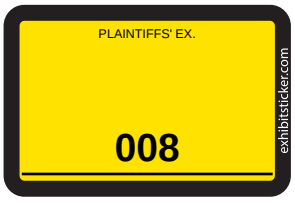
DECLARATION OF JANE MOE, PhD, IN SUPPORT OF PLAINTIFFS' MOTION FOR TEMPORARY RESTRAINING ORDER & PRELIMINARY INJUNCTION



I, Jane Moe,[1] declare as follows:

1. I am a licensed clinical psychologist and have been practicing in Alabama for twenty years. I am licensed to practice by the State of Alabama and I work and reside in Jefferson County, Alabama.

2. I obtained my PhD in clinical child psychology with a specialization in child development from a major university in Alabama. After completing my post-doctoral work and clinical intern hours, I received my license to practice in Alabama.

3. Since I started my practice twenty years ago, I have worked exclusively with patients under the age of 24. Over that time, I have treated patients with a variety of mental health issues ranging from anxiety and depression to attention deficit hyperactivity disorder or "ADHD."

4. I currently work in a hospital setting within the University of Alabama at Birmingham (UAB) system providing direct mental health care to children and adolescents as well as training other medical providers to work with young patients. For the past two years, I have dedicated part of my practice to working with transgender young people. During that time, I have treated approximately forty transgender young people, ranging in age from five to nineteen.

[1] Because of concerns about criminal liability and my privacy and safety, I am seeking to proceed in this case under a pseudonym. See Motion to Proceed Pseudonymously, filed concurrently herewith. In addition, contemporaneous with signing this declaration, I have signed with my legal name a separate copy of this declaration. My attorneys have a copy of that separate declaration.

5. My work with transgender patients is guided by the well-established standard of care developed by the World Professional Association for Transgender Health (WPATH) and a comprehensive informed-consent protocol.

6. When I start seeing a transgender patient who presents for a mental health assessment, I make clear that the assessment is a process that engages both the patient and their parents. The process requires a minimum of three to four visits, which typically take place over the course of two to three months, depending on the needs of the patient and their family. It is not uncommon for the assessment process to require more visits and take place over a longer period of time.

7. The assessment begins with gathering background information on the patient through questionnaires, rating scales, and talking with the patient and their parents. Through those methods I build a profile of the patient: their level of adjustment and overall functioning, available coping mechanisms, and an understanding of their strengths and weaknesses.

8. As the assessment proceeds, I continue to gather information from multiple sources, including the parents, that will help me determine whether the patient meets the diagnostic criteria for gender dysphoria as outlined in the Diagnostic and Statistical Manual of Mental Disorders ("DSM-5").

9. As part of the assessment, consistent with the informed-consent protocol, I review with the patient and the patient's parents the risks, benefits, and

ranges of medical treatment available and appropriate for treating any particular patient's condition. These discussions often happen over more than one session. Based on the needs of the patient and the patient's family, I may have separate meetings with the patient and parent(s), which gives each the opportunity to ask questions or talk about issues they may not initially feel comfortable discussing in front of the other.

10. I also encourage families to seek out other services that they may find helpful, such as talking with a religious leader, either in the hospital or the community.

11. Once I have completed the informed-consent protocol and am confident that the patient and their parents understand the risk, benefits, and range of medical treatments for gender dysphoria, I write a letter to the patient's doctor detailing the results of my assessment. In addition to the diagnosis, I discuss the patient's overall mental health and functioning as well as recommendations for continued mental health care, as needed. Although my letters detail a patient's readiness from a mental health perspective, I always recommend that the patient's medical provider undertake a further assessment of the patient before initiating any medical treatment.

12. Given that I work in a hospital setting, it is not uncommon for me to see patients again after they have already begun medical treatment for their gender dysphoria. During those sessions, we often talk about how their treatment is

progressing and the effects it is having on their mental health. In those discussions, we often return to our prior conversations that we had in connection with the informed-consent protocol.

13. I understand that Governor Ivey signed the Vulnerable Child Compassion and Protection Act (the "Act"). My understanding is that the Act expressly prohibits anyone from doing or saying anything that could cause a transgender young person, under the age 19 in Alabama to undergo medical treatment for gender dysphoria. I further understand that violating the Act exposes Alabama healthcare providers and others to criminal prosecution, which could result in me or others being sentenced to prison or a fine. Effectively, the Act prevents transgender young people in Alabama from obtaining medically necessary, safe, effective, and established treatments for their gender dysphoria.

14. For me, the Act means that I would have to abandon my professional and ethical obligations when treating transgender patients or risk criminal penalty for providing mental health care consistent with the prevailing standards of care. I also will be prevented from educating my patients about treatment options for gender dysphoria or referring my patients to medical providers for further evaluation and possibly prescriptions for this essential medical care. I cannot imagine doing that and, as a result, I am very afraid that I will be subject to criminal prosecution and face criminal penalties under the Act.

15. I also am deeply concerned about the effects this law will have on my patients' mental health. Before SB 184 was debated—let alone signed into law—my patients were regularly bullied and harassed in their schools and communities. Because of the dangerous message the Act sends to Alabamians about transgender young people, many of my patients are bracing for an increase in bullying and harassment from those who would feel emboldened by the Act.

16. Receiving medical treatment for gender dysphoria has also significantly improved the mental health and wellbeing of all the patients I have seen. If healthcare providers were required to comply with the Act, it would force transgender young people to put their health-related goals on hold. Their mental health would deteriorate and impair their ability to function in their day-to-day lives. That decline in mental health will cause a cascade of negative health outcomes, including exacerbating co-occurring mental health issues, increased reliance on maladaptive coping mechanisms (*e.g.* cutting, substance abuse), and suicidality. In fact, in the days following the signing of the Act, I had to work with two patients to develop safety plans to prevent them from attempting suicide, a risk that is well-documented and disproportionately affects transgender young people. Talking with them, I could see that the hope they had for the future had been replaced with distress, anxiety and sadness.

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

Executed this 19 th day of April, 2022.

Jane Moe, PhD

Dr. Jane Moe, PhD

UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF ALABAMA
NORTHERN DIVISION

REV. PAUL A. EKNES-TUCKER; BRIANNA BOE, individually and on behalf of her minor son, MICHAEL BOE; JAMES ZOE, individually and on behalf of his minor son, ZACHARY ZOE; MEGAN POE, individually and on behalf of her minor daughter, ALLISON POE; KATHY NOE, individually and on behalf of her minor son, CHRISTOPHER NOE; JANE MOE, Ph.D.; and RACHEL KOE, M.D.

Plaintiffs,

v.

KAY IVEY, in her official capacity as Governor of the State of Alabama; STEVE MARSHALL, in his official capacity as Attorney General of the State of Alabama; DARYL D. BAILEY, in his official capacity as District Attorney for Montgomery County; C. WILSON BAYLOCK, in his official capacity as District Attorney for Cullman County; JESSICA VENTIERE, in her official capacity as District Attorney for Lee County; TOM ANDERSON, in his official capacity as District Attorney for the 12th Judicial Circuit; and DANNY CARR, in his official capacity as District Attorney for Jefferson County.

Defendants.

Civil Action No.
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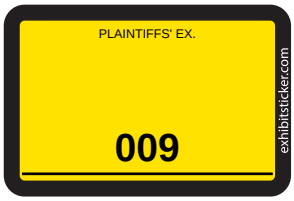
DECLARATION OF KATHY NOE, IN SUPPORT OF PLAINTIFFS' MOTION FOR TEMPORARY RESTRAINING ORDER & PRELIMINARY INJUNCTION



I, Kathy Noe,[1] hereby declare as follows:

1. My son, Christopher Noe, and I are plaintiffs in this action. We are citizens of Alabama and reside in Lee County, Alabama.

2. Christopher is a seventeen-year-old transgender boy. He is very passionate about music. He loves listening to all genres of music and plays the trumpet.

3. Christopher and I have resided in Lee County since we moved to Alabama just before Christopher's fourth birthday. We moved to Alabama when my now-former husband was stationed at Fort Benning, Georgia. It is common for families stationed at Fort Benning to live in Phenix City, Alabama, like we do. I also am former active-duty military. Christopher's father is still active-duty military and is currently stationed abroad.

4. Although Christopher was born on a military base in Oklahoma, Alabama is the only home he has known. He has gone to school in Alabama since kindergarten and still has friends he has known since kindergarten.

5. Although Christopher was assigned female at birth, I always knew he was not a typical girl. When Christopher was two and three years old, he had long,

[1] Because of concerns about criminal liability and my child's privacy and safety, I am seeking to proceed in this case under a pseudonym. *See Motion to Proceed Pseudonymously*, filed concurrently herewith. In addition, contemporaneous with signing this declaration, I have signed with my legal name a separate copy of this declaration. My attorneys have a copy of that separate declaration.

pretty hair, which I would put bows in and do in other traditionally girl hairstyles. He always hated it and pulled the bows out. When he was four years old, he asked to cut it short, and I agreed. Christopher loved his new, short haircut immediately.

6. When Christopher was in day care before he was old enough for school, he never played dress up with the other girls. He always wanted to wear pants and shorts. When his kindergarten tried to force Christopher to wear a skirt for their graduation ceremony, Christopher refused, and I fought the school and won the right for him to wear pants. The same thing happened in sixth grade, but this time, when the school refused to let him wear pants instead of a dress for the graduation ceremony, Christopher chose not to attend the ceremony rather than wear a dress.

7. As Christopher got older, he kept wanting his hair cut even shorter, to the point where his hair was shorter than his friends who were assigned male at birth. He also gravitated towards blues and darker colors.

8. When Christopher was around thirteen or fourteen and in his first romantic relationship, he realized that he felt more masculine than his boyfriend and identified more as a boy than a girl. That is when he told me he was transgender. Partly because it did not surprise me, I was immediately supportive.

9. After Christopher came out to me, I put him in counseling so he could talk about it with someone who had experience with transgender children and make sure he was doing what he thought was best for him.

10. About a year later, when Christopher was fifteen, he told his father he is transgender. Christopher's father needed some time to accept that Christopher is transgender, which really hurt Christopher. His father's initial hesitance also delayed Christopher starting hormone replacement therapy because it was important to me to have his father's approval first. Christopher's father ultimately came to accept Christopher's gender identity, which was a relief to Christopher and enabled him to start hormone replacement therapy. When Christopher's father came to support him at the Columbus, Georgia pride parade, Christopher was overjoyed.

11. When Christopher first came out as transgender, he continued to use his birth name, which is unisex. It was also at that time that he started using "he/him" pronouns. Recently, he expressed an interest in being referred to as Christopher instead. All his teachers at school began calling him Christopher and using "he/him" pronouns. Christopher also hopes to legally change his name, but it is difficult to do so while his father is stationed abroad.

12. Despite his social transition, when Christopher started going through female puberty it was a very hard time for both of us. He started his period at age nine, which immediately caused him extreme distress and anxiety. Christopher has never accepted the physical changes that came with female puberty and is particularly distressed by his breasts. Despite having naturally small breasts, Christopher wore a binder for nearly three years. He now prefers TransTape, which

he wears almost daily. He prefers the TransTape because it is more comfortable and looks more like skin than a bra. With the TransTape, he feels more like who he really is.

13. Christopher knows he is different because he is transgender, but counseling and seeing his family and his peers accept him has helped. His family—including me, his father, his aunt, and his siblings—and other longtime family friends have strived to support him. It was hard for Christopher when one of his longtime best friends rejected his transition, but he has many other supportive friends, and he strongly stands up to anyone who bullies him or other kids.

14. Christopher's counselor first recommended him for hormone therapy when he was sixteen. I discussed it several times with Christopher and his counselor, and we decided to pursue hormone treatment for him when he was seventeen. After being provided with a letter of recommendation from his counselor, Christopher's pediatrician referred him to an endocrinologist in November 2021. I took Christopher to his initial visit with the endocrinologist in February 2022. The endocrinologist reviewed Christopher's medical history, the recommendation of Christopher's counselor, and Christopher's lab results. He also asked how long Christopher had been seeing a counselor and how often and asked Christopher to see a psychologist as well, which he did, before he started hormone treatment.

15. Christopher received his first testosterone injection in March 2022, and

since then I have given him his injections at home every other week. His current prescription is valid until June, at which time we will have to go back to the endocrinologist for a follow up appointment, more lab testing, and a new prescription.

16. Christopher's care team includes his pediatrician, endocrinologist, mental health counselor, and psychiatrist. I consult with all of them on his care. Because we live in such a small town, so close to the Alabama–Georgia state line, all Christopher's doctors are in Columbus, Georgia. Both his endocrinologist and his psychiatrist have offices in both Georgia and Alabama, but we go to the Columbus, Georgia locations because they are closer. I fill his testosterone prescription at a pharmacy in Alabama.

17. Even though it has only been a short time since starting hormones, Christopher is already significantly and noticeably happier. He is bubbly, more outgoing, and more confident in himself. I have noticed it myself and have spoken about it with Christopher's counselor, who also has noticed these positive changes. Christopher's co-workers at the local pizza place have also noticed that Christopher is more excited to go to work and be around other people. He loves showing off his new facial hair and deeper voice.

18. Although we travel to Georgia for Christopher's care, because we live in Alabama, I am afraid of what would happen to Christopher if there were an

interference or disruption in his counseling or hormone schedule because of this law. I also fear criminal prosecution for helping my son get the care he needs.

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

Executed this 19th day of April, 2022.

Kathy Noe

UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF ALABAMA
NORTHERN DIVISION

REV. PAUL A. EKNES-TUCKER; BRIANNA BOE, individually and on behalf of her minor son, MICHAEL BOE; JAMES ZOE, individually and on behalf of his minor son, ZACHARY ZOE; MEGAN POE, individually and on behalf of her minor daughter, ALLISON POE; KATHY NOE, individually and on behalf of her minor son, CHRISTOPHER NOE; JANE MOE, Ph.D.; and RACHEL KOE, M.D.

Plaintiffs,

v.

KAY IVEY, in her official capacity as Governor of the State of Alabama; STEVE MARSHALL, in his official capacity as Attorney General of the State of Alabama; DARYL D. BAILEY, in his official capacity as District Attorney for Montgomery County; C. WILSON BAYLOCK, in his official capacity as District Attorney for Cullman County; JESSICA VENTIERE, in her official capacity as District Attorney for Lee County; TOM ANDERSON, in his official capacity as District Attorney for the 12th Judicial Circuit; and DANNY CARR, in his official capacity as District Attorney for Jefferson County.

Defendants.

Civil Action No.
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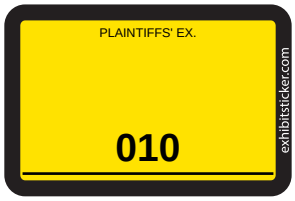
DECLARATION OF MEGAN POE IN SUPPORT OF PLAINTIFFS' MOTION FOR TEMPORARY RESTRAINING ORDER & PRELIMINARY INJUNCTION



I, Meagan Poe,[1] hereby declare as follows:

1. I am a plaintiff to this action and the mother of Allison Poe, another plaintiff in this action.

2. I was born and raised in Cullman County, Alabama. Other than the years that my ex-husband, Allison's father, was a member of the United States Army and stationed outside Alabama, I have lived in Cullman County along with my extended family.

3. Allison is a fifteen-year-old transgender girl. Allison was identified as male at birth, but, as her father and I have come to understand, she has a female gender identity. I know that if she could force herself to live as a boy, she would, but that is simply not possible for her. It is who she is.

4. Allison started showing an interest in girls' toys around the age of two. We were stationed overseas at the time and most of her friends were girls because most kids her age on the army base were girls. As a result, she would regularly play with her friends' typical "girls' toys" and wear princess dresses, but we would not buy her girls' toys or clothing. She begged us to buy her a Barbie doll and we refused. Without consulting us, however, her grandmother eventually bought her a Barbie

[1] Because of concerns about criminal liability and my child's privacy and safety, I am seeking to proceed in this case under a pseudonym. *See Motion to Proceed Pseudonymously*, filed concurrently herewith. In addition, contemporaneous with signing this declaration, I have signed with my legal name a separate copy of this declaration. My attorneys have a copy of that separate declaration.

doll. Allison carried that Barbie everywhere she went; it was like a teddy bear to her. Although we were not happy that Allison's grandmother bought the Barbie, we figured this was phase that would pass after we left that base. At most, we thought this was a clear sign that Allison would grow up to be gay.

5. We returned to the United States when Allison was approximately four years old. While stationed at the new base, Allison's interest in girls' clothing and toys persisted. Every time we went shopping for clothes, she would cry that I would not buy her clothes from the girls' section. Because Allison's grandmother already bought her a doll, I figured it would be okay to allow her to have some girls' toys. Knowing that her father wouldn't approve, I bought her a few small dolls and other toys that she could play with while her father was at work. Allison's father eventually found the toys and threw them all away, but her older brother then snuck outside and pulled them out of the garbage for Allison.

6. I eventually started working as a babysitter for a local family with kids close to Allison's age. The mother of that family was nurse and after observing Allison over time, she commented to me that Allison might be transgender. Before that day, I had never heard the word transgender. I did a little research into it but did not follow up much further because Allison's father was not accepting of her, and I still strongly believed that Allison would grow up to be gay.

7. After completing his assignment, Allison's father decided to leave the Army and was honorably discharged. We returned to Cullman County, Alabama to be closer to family. Unfortunately, soon after relocating, we legally separated and I was left to raise two kids on my own as a single working parent.

8. While around her cousins, Allison started doing more boys' activities, like playing video games. I thought maybe Allison was just growing up and that her girl phase was coming to an end. But that could not have been further from the truth.

9. Over the next few years, Allison's personality changed significantly. She became very quiet, showed signs of depression, and regularly commented that she wanted to die. She also stopped eating regularly. All of that was very concerning to me, but Allison would not share with me what was causing that change. Then, towards the end of Allison's fourth-grade year, when she was nine years old, I found a drawing she made of herself. On one side of the drawing was a crying boy and on the other was a happy girl. Around that same time, one of my family members pointed out to me that Allison was not really playing video games; she had been spending the majority of the time perfecting her female avatars on each of the games she was "playing."

10. Not sure what to make of all this, and at my wits end about how to help Allison, I took her to see her pediatrician. After evaluating Allison and talking with us about what had been going on, the pediatrician reiterated what I had heard from

that nurse years prior: Allison may be transgender. She then referred Allison to the gender clinic at UAB in Birmingham for specialized care and assessment.

11. While Allison was being evaluated by a team of clinicians at UAB, I finally got a sense of the emotional issues Allison had been trying to deal with on her own. For example, Allison earnestly asked Dr. Abdul-Latif why God hates her. Faith has always been a very important part of my life and that of our family. Hearing her ask that question broke my heart, both because I wanted Allison to have a strong tie to her faith and because I recognized that my actions as her parent likely contributed to her feeling that way.

12. Because Allison had not yet started puberty, there was no medical treatment for Allison's gender dysphoria, but Dr. Abdul-Latif and the other medical and mental health providers at the clinic gave me information about my options and recommendations about how to support Allison and treat her gender dysphoria. The clinic also connected Allison with regular mental health treatment.

13. That was a turning point for me. I had been very nervous about publicly supporting Allison's transition because I was worried about how our family—and the broader community—would respond. But, I quickly pushed those feelings aside, knowing that I had to do what was right for my child based on the advice of experts.

14. After returning from the appointment at UAB, I made an appointment for Allison to fix her hair into more of a girls' style while she grew it out. We also

cleaned out Allison's room of all boys' clothes, toys, bedding, and decorations, and I took Allison shopping to entirely redo her bedroom and wardrobe. Once we finished setting up her new room, I left her in the room so she could change into one of her new outfits. It is not an exaggeration to say that I saw a totally different child come out of that bedroom moments later. Allison was beaming. She was smiling and happy in a way that I had not seen for a long time.

15. The following night I e-mailed my family to update them about Allison's transition. My family took a long time to process that announcement and some family members initially cut ties with us.

16. The remaining few weeks of Allison's fourth-grade year were equally challenging. She experienced bullying from her classmates who were confused or did not understand Allison's transition and why it was so critical to her health and wellbeing. It was a painful time, but even through all those challenges, Allison remained resilient, further confirming that supporting her in this way was the right decision.

17. Over the summer between Allison's fourth and fifth grade, I had multiple meetings with school administrators and Allison's teachers regarding Allison's transition. We worked together to ensure that she received the supports she needed when she returned to school for fifth grade to prevent further bullying and

allow her to focus on learning. Those efforts largely worked; Allison was generally accepted by her peers and had a much better school experience than in prior years.

18. During Allison's fifth-grade year, some of her peers started showing the first signs of puberty. Allison became very scared about what would happen when she began puberty. Around that same time, we had a follow up appointment at the gender clinic at UAB. The purpose of the visit was to assess whether Allison had begun puberty and to gather more information about possible treatments for Allison's gender dysphoria once she begins puberty. I came to the appointment prepared with a list of questions and notebook to take notes. Allison and I asked many questions about puberty-blocking medications. As the providers answered our questions, I could see the relief in Allison's face when she realized that there was a solution to her worries about puberty. Given the distress Allison was already having around puberty, it was important to me that I got all the information I needed to make an informed decision so that I was prepared with my decision when that time came.

19. The providers at the UAB clinic patiently answered each of our questions during that initial follow up visit. We had several more follow up visits at UAB and in each of those visits, we asked any additional questions about puberty-blocking medications that had come to mind in the months between visits. Thus, when the doctors determined that Allison had started puberty at the end of sixth

grade, I had all the information I needed to consent to Allison starting puberty-blocking medication and did so without hesitation.

20. Because of the puberty-blockers, Allison has been able to have a typical childhood. Allison loves art and is creative. She is also an avid gamer, playing both for the entertainment and camaraderie with fellow gamers.

21. Approximately seven months ago, Allison started taking estrogen. As with puberty-blockers, the clinic at UAB answered all our questions and made sure that we understood the risks, benefits, and alternatives of hormone-replacement therapy. Allison self-administers her dose of estrogen and medication to suppress her testosterone.

22. Allison's mental health has improved dramatically since starting estrogen. She used to be very self-conscious, but now she is confident in herself and excited by all the changes in her body. She has grown new friendships and is doing well in school.

23. Without medical treatment all Allison's fears around developing an Adam's apple, facial hair, and other defining features of male puberty would become her reality. Her appearance would not align with who she is and would likely disclose to everyone that she is transgender, causing her extreme anxiety and distress and exposing her to more ridicule and harassment.

24. Seeing Allison's response to the Alabama legislature's consideration of the Act and knowing how afraid she is of male puberty, I am very worried that Allison's mental health would quickly deteriorate if the Act goes into effect. As much as I want to assure Allison that we would find a way to get her the medications she needs to treat her gender dysphoria—medications that are critical to her ability to function—I don't know if it would be possible. We receive our health insurance coverage through Alabama Medicaid. Although I would drive Allison anywhere so that she could get those medications, we cannot afford to pay for them out of pocket and I don't know if Alabama Medicaid would cover out-of-state providers or prescriptions written by those providers.

25. Stopping or delaying Allison's medical treatments for her gender dysphoria will be devastating to her overall health and wellbeing. I worry that Allison will be inconsolable and retreat into herself. Once the medications wear off, I have little doubt that I will have to bring Allison back to UAB and that she will have to be admitted for in-patient psychiatric care to prevent her from harming herself or worse. And I know that will only be the beginning, it is hard to imagine what the long-term effects will be on her day-to-day life, but I am certain that she will no longer be the same happy child that she is today.

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

Executed this 19 th day of April, 2022.

Megan Poe

Megan Poe

UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF ALABAMA
NORTHERN DIVISION

REV. PAUL A. EKNES-TUCKER; BRIANNA BOE, individually and on behalf of her minor son, MICHAEL BOE; JAMES ZOE, individually and on behalf of his minor son, ZACHARY ZOE; MEGAN POE, individually and on behalf of her minor daughter, ALLISON POE; KATHY NOE, individually and on behalf of her minor son, CHRISTOPHER NOE; JANE MOE, Ph.D.; and RACHEL KOE, M.D.

Plaintiffs,

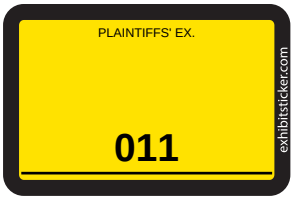
v.

KAY IVEY, in her official capacity as Governor of the State of Alabama; STEVE MARSHALL, in his official capacity as Attorney General of the State of Alabama; DARYL D. BAILEY, in his official capacity as District Attorney for Montgomery County; C. WILSON BAYLOCK, in his official capacity as District Attorney for Cullman County; JESSICA VENTIERE, in her official capacity as District Attorney for Lee County; TOM ANDERSON, in his official capacity as District Attorney for the 12th Judicial Circuit; and DANNY CARR, in his official capacity as District Attorney for Jefferson County.

Defendants.

Civil Action No.
2:22-cv-184-LCB

DECLARATION OF STEPHEN ROSENTHAL, MD, IN SUPPORT OF PLAINTIFFS' MOTION FOR TEMPORARY RESTRAINING ORDER & PRELIMINARY INJUNCTION



I, Stephen M. Rosenthal, M.D., declare as follows:

1. I submit this expert declaration based upon my personal knowledge.

2. If called to testify in this matter, I would testify truthfully based on my expert opinion.

Qualifications and Experience

3. I am a pediatric endocrinologist and have been practicing medicine for over forty years. I received my medical degree from Columbia University, College of Physicians & Surgeons, in 1976, and completed a residency in Pediatrics there. I also completed a fellowship in Pediatric Endocrinology at the University of California, San Francisco ("UCSF").

4. In 2012, I co-founded the Child & Adolescent Gender Center ("CAGC") at UCSF. I am the Medical Director at the Center, as well as a Professor of Clinical Pediatrics at UCSF. A true and correct copy of my Curriculum Vitae is attached hereto as **Exhibit A**.

5. The Child and Adolescent Gender Center (CAGC) is a multidisciplinary program that provides comprehensive medical and mental health care, as well as education and advocacy services for transgender youth and adolescents. Since 2012, the CAGC has seen close to 2,000 transgender young people with gender dysphoria, with an average of 15-20 new patients per month, ranging in age from 3 to 25 years old. As Medical Director of the CAGC, I oversee

the medical portion of the multidisciplinary program, which currently includes two other physicians, a doctor of nursing practice, one psychologist, a clinical social worker, nursing, and administrative staff.

6. As of the date of this declaration, I have published 27 scientific research papers in leading peer-reviewed medical journals and authored seven chapters in authoritative textbooks on the topic of medical treatment for gender dysphoria in children and adolescents. Those publications include "Challenges in the Care of Transgender and Gender-Diverse Youth: An Endocrinologist's View," published in Nature Reviews Endocrinology[1] on August 10, 2021, "Endocrine Treatment of Gender-Dysphoric/Gender-Incongruent Persons: An Endocrine Society Clinical Practice Guideline," a guide detailing the standard of medical care for gender dysphoria, and a chapter in the forthcoming standards of care being developed by WPATH. A listing of my publications is included in my Curriculum Vitae in **Exhibit A**.

7. I am also actively serving as a Principal Investigator or Co-Investigator on numerous research projects on the physical and mental health of transgender young people, including a national multi-site study on medical care for transgender young people funded by the NIH.

[1] Nature Reviews Endocrinology received an impact factor of 43.33 for the 2021-2022 publication year.

8. I am a member and recent past president (2016-2017) of the Pediatric Endocrine Society and, as of March, 2021, have just completed a three-year term as a member of the Board of Directors for the Endocrine Society, and one-year term as Endocrine Society Vice President, Clinical Scientist Position. I am also an elected member of the Board of Directors of the World Professional Association for Transgender Health ("WPATH"), an international multidisciplinary professional association founded in 1979 to promote evidence-based care, education, research, advocacy, public policy and respect in transgender health. A complete list of my professional associations is included in my Curriculum Vitae in **Exhibit A**.

9. In addition to my work with transgender children and adolescents, I have treated children and adolescents with differences of sex development ("DSD"), commonly referred to as intersex conditions, as well as with a variety of other endocrine conditions, including growth disorders, pubertal disorders, and diabetes. I previously served as Program Director for Pediatric Endocrinology, Director of the Endocrine Clinics, and Co-Director of the Disorders of Sex Development Clinic, a multi-disciplinary program involving pediatric endocrinology, pediatric urology, psychiatry, and social work at UCSF Benioff Children's Hospital.

10. My opinions contained in this declaration are based on: (i) my clinical experience as a pediatric endocrinologist treating transgender patients, including adolescents and young adults; (ii) my knowledge of the peer-reviewed research,

including my own, regarding the treatment of gender dysphoria, which reflects the clinical advancements in the field of transgender health; and (iii) my review of the expert declaration of Linda A. Hawkins, Ph.D., M.S.Ed., LPC ("Dr. Hawkins Decl.") submitted in support of the motions. I generally rely on these types of materials when I provide expert testimony, and they include the documents specifically cited as supportive examples in particular sections of this declaration. The materials I have relied on in preparing this declaration are the same type of materials that experts in my field of study regularly rely upon when forming opinions on the subject.

11. I was provided with and reviewed the following case-specific materials: the Dr. Hawkins Decl.

12. In the past four years, I have not provided expert testimony.

13. I am being compensated at an hourly rate for the actual time that I devote to this case, at the rate of $350 per hour for any review of records, preparation of reports or declarations. I will be compensated with a day rate (6 hours) of $2,100 for deposition and trial testimony. My compensation does not depend on the outcome of this litigation, the opinions that I express, or the testimony that I provide.

Scientific and Medical Understanding of Sex

14. By the beginning of the twentieth century, scientific research had established that external genitalia alone are not always an accurate indicator of a person's sex. Instead, a person's sex is comprised of several components, including,

among others, internal reproductive organs, external genitalia, chromosomes, hormones, gender identity, and secondary-sex characteristics. Diversity and incongruence in these components of a person's sex are a naturally occurring source of human biological diversity.

15. Scientific research and medical literature across disciplines demonstrate each component of sex has strong biological ties, including gender identity. For example, there are numerous studies detailing similarities in the brain structure and function of transgender and nontransgender people with the same gender identity. In one such study, the volume of the bed nucleus of the stria terminalis (a collection of cells in the central brain) in transgender women was equivalent to the volume found in nontransgender women. There are also studies highlighting the genetic components of gender identity. A study of identical twins found that if one twin was transgender that the other twin was far more likely to be transgender, as compared to the general population.

16. The above studies are representative examples of the growing body of scientific research and medical literature in this area of study. There is also ongoing research on the effects of the hormonal milieu in utero, and genetic sources for gender identity, among others.

17. Although the specific determinants of gender identity remain unknown, treatment to bring a person's physical characteristics into alignment with their

gender identity is widely accepted as the standard in medical practice.

Determination of an Individual's Sex

18. At birth, newborns are assigned a sex, either male or female, typically based solely on the appearance of their external genitalia. For most people, that assignment turns out to be accurate and their assigned sex matches that person's gender identity. However, for transgender people, their assigned sex does not align with their gender identity. This lack of alignment can create significant distress for transgender individuals.

19. When there is a divergence between these factors, medical science and the well-established standards of care recognize that treating a person consistent with their gender identity—and prescribing medical treatment to align their body with their gender identity—is essential to that person's health and wellbeing.

20. Gender identity is a person's inner sense of belonging to a particular gender, such as male or female. It is a deeply felt and core component of human identity. Everyone has a gender identity. Children usually become aware of their gender identity early in life.

21. A person's gender identity is innate, cannot be voluntarily changed, and is not undermined by the existence of other sex-related characteristics that do not align with it.

22. Any attempts to "cure" transgender individuals by forcing their gender

identity into alignment with their assigned sex are harmful, dangerous, and ineffective. Those practices have been denounced as unethical by all major professional associations of medical and mental health professionals, such as WPATH, the American Medical Association, the American Academy of Pediatrics, the American Psychiatric Association, and the American Psychological Association.

23. For more than four decades, the goal of medical treatment for transgender patients has been to alleviate their distress by bringing their lives into closer alignment with their gender identity. The specific treatments prescribed are based on individualized assessment conducted by medical providers in consultation with the patient's treating mental health provider. As discussed in more detail in the following section, and in the declaration of Dr. Hawkins, research and clinical experience have consistently shown those treatments to be safe, effective, and critical to the health and well-being of transgender patients.

Standards of Care for the Treatment of Gender Dysphoria

24. Due to the incongruence between their assigned sex and gender identity, transgender people experience varying degrees of "gender dysphoria," a serious condition listed in both the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders ("DSM-5") and the World Health Organization's International Classification of Diseases ("ICD-10"), and has been

recognized as such for decades. It is a condition that affects a small percentage of youth and adults.

25. Gender dysphoria is the diagnostic term for the clinically significant distress resulting from the incongruence between a person's gender identity and the sex they are assigned at birth. In order to be diagnosed with gender dysphoria, the incongruence must have persisted for at least six months and be accompanied by clinically significant distress or impairment.

26. Gender dysphoria is highly treatable and can be effectively managed. If left untreated, however, it can result in severe anxiety and depression, self-harm, and suicidality. Spack NP, Edwards-Leeper L, Feldmain HA, et al. Children and adolescents with gender identity disorder referred to a pediatric medical center. *Pediatrics*. 2012; 129(3):418-425. Olson KR, Durwood L, DeMeules M, McLaughlin KA. Mental health of transgender children who are supported in their identities. *Pediatrics*. 2016; 137:1-8.

27. The prevailing standards of care for the treatment of gender dysphoria are developed by WPATH, which has been recognized as the standard-setting organization for the treatment of gender dysphoria for more than forty years.

28. The Endocrine Society is a 100-year-old global membership organization representing professionals in the field of adult and pediatric endocrinology. In 2017, the Endocrine Society published its second clinical practice

guidelines on treatment recommendations for the medical management of gender dysphoria, in collaboration with Pediatric Endocrine Society, the European Societies for Endocrinology and Pediatric Endocrinology, and WPATH, among others. Hembree WC, Rosenthal SM, et al. Endocrine Treatment of Gender Dysphoria/Gender Incongruent Persons: An Endocrine Society Clinical Practice Guideline. *J Clin Endocrinol Metab* 2017; 102: 3869–3903.

29. Together, the SOC and the Endocrine Society's clinical practice guidelines constitute the prevailing standards guiding the healthcare and treatment of gender dysphoria. The process for writing those standard-setting documents followed well-established methods for developing standards of care, beginning with the convening a core group of experts in the relevant field(s) who are tasked with conducting a comprehensive literature review and preparing a draft document. That draft is then circulated to a larger cross-section of practitioners in the relevant field(s) for review and comment, much like the peer-review process for journals. Those edits and comments are incorporated and compiled into a final document that is reviewed and ratified in a manner consistent with the organization's bylaws. As a result, the SOC and the Endocrine Society's clinical practice guidelines reflect the consensus of experts in the field of transgender medicine, based on the best available science and clinical experience.

30. The major professional associations of medical and mental health providers in the United States, including the American Medical Association, American Academy of Pediatrics, American Psychiatric Association, American Psychological Association, and Pediatric Endocrine Society, treat those documents as the prevailing standards guiding the healthcare and treatment of gender dysphoria.

31. Those documents help ensure that healthcare providers, especially those unfamiliar with transgender medicine, know which treatments are safe and effective for the treatment of gender dysphoria, and are able to deliver that necessary medical care to maximize their patients' overall health and wellbeing.

Transition and Medical Treatments for Gender Dysphoria

32. Undergoing treatment to alleviate gender dysphoria is commonly referred to as a transition. The transition process typically includes one or more of the following three components: (i) social transition, including adopting a new name, pronouns, appearance, and clothing, and correcting identity documents; (ii) medical transition, including puberty-delaying medication and hormone-replacement therapy; and (iii) surgical transition, including surgeries to alter the appearance and functioning of primary- and secondary-sex characteristics.

33. The steps that make up a person's transition will depend on that individual's medical and mental health needs, as well as the person's stage of pubertal development.

34. Dr. Hawkins provides an extensive discussion of social transition in her expert declaration. (Dr. Hawkins Decl. at ¶¶ 26–31.) My declaration will discuss the medications and surgical care used to treat gender dysphoria.

35. There are no drug interventions for gender dysphoria until after the onset of puberty. Medical providers evaluate a patient's level of pubertal development through a physical examination and testing the hormone levels in the patient's blood. Once a provider has determined that a transgender patient has begun puberty, the patient may be prescribed puberty-blocking medications.

36. Those medications work by temporarily pausing endogenous puberty and, therefore, limiting the influence of a person's endogenous sex hormones on their body. For example, a transgender girl (someone designated male at birth with a female gender identity) will experience no progression of physical changes caused by testosterone, including facial and body hair, an Adam's apple, a deepened voice, or masculinized facial structures. And in a transgender boy (someone designated female at birth with a male gender identity), those medications would prevent progression of breast development, menstruation, and widening of the hips. This prevents a transgender adolescent from experiencing the severe psychological distress of developing permanent, unwanted physical characteristics that do not align with the adolescent's gender identity.

37. Temporarily halting a transgender adolescent's pubertal development can also obviate the need for future surgical treatments to address any ongoing gender dysphoria. Avoiding the scarring associated with surgery—and the added stresses of surgery itself—further improve a transgender person's overall health and wellbeing.

38. A transgender adolescent will remain on those puberty-blocking medications until their providers determine, in consultation with the patient, the patient's family, and consistent with the prevailing standards of care, whether additional medical treatment is necessary to treat their gender dysphoria. If the decision is to stop taking puberty blockers, the patient's endogenous puberty will resume.

39. For many transgender youth, it is medically necessary for them to begin hormone-replacement therapy with either testosterone or estrogen. That treatment induces the physical changes of the puberty associated with the patient's gender identity. The result of this treatment is that a transgender boy has the same typical levels of circulating testosterone as his nontransgender male peers. Similarly, a transgender girl will have the same typical levels of circulating estrogen as her nontransgender female peers. Those hormones cause transgender adolescents to undergo the same significant and permanent sex-specific physical changes as their nontransgender peers. For example, a transgender boy will develop a lower voice as

well as facial and body hair, while a transgender girl will experience breast growth, female fat distribution, and softer skin.

40. If a transgender youth who is on puberty blockers and hormone-replacement therapy ceases these medications, the production of endogenous hormones and puberty consistent with the individual's birth sex will resume.

41. Puberty-delaying medication and hormone-replacement therapy—both individually and in combination—also significantly improve a transgender young person's mental health because those medications ensure their physical appearance more closely aligns with their gender identity. This also decreases the likelihood that a transgender young person will be incorrectly identified with their birth sex, further alleviating their gender dysphoria and bolstering the effectiveness of their social transition.

42. The puberty-delaying medications that are used for treating transgender children are the same medications that have been used for decades and are continued to be used to treat a condition in children often referred to as "precocious puberty," a condition that causes a child's body to begin pubertal development too early. In other words, the hormone therapy used to treat transgender adolescents is often used to treat non-transgender adolescents for other medical reasons.

43. Social transition and hormone therapy are often sufficient to treat gender dysphoria for many transgender people.

44. Based on my clinical experience, there are transgender young people for whom getting on puberty blockers and hormones before the age of majority will reduce the likelihood of their needing surgical intervention later in life relating to gender dysphoria.

45. Further, recent studies have observed findings that gender-affirming hormone therapy usage is significantly related to lower rates of depression and suicidality among transgender youth. Green AE et al. Association of Gender-Affirming Hormone Therapy With Depression, Thoughts of Suicide, and Attempted Suicide Among Transgender and Nonbinary Youth. *J Adolescent Health* 1-7 (2021); Turban JL et al. Access to gender-affirming hormones during adolescence and mental health outcomes among transgender adults. PLoS ONE 17(1) 2021; https://doi.org/10.1371/journal. pone.0261039.

46. For transgender people who require surgery to treat their gender dysphoria, the SOC do not recommend surgical treatment until the age of majority, except for male chest reconstruction surgery. Like any other treatment, the medical necessity of surgical procedures to treat gender dysphoria is based on an individualized assessment of the patient's needs.

Assessing Medical Necessity of Medical Treatment for Gender Dysphoria

47. As with the initial diagnosis of gender dysphoria, determining whether a particular treatment is medically necessary for a transgender patient follows a

thorough, well-established process that requires healthcare providers to exercise professional judgment. Contrary to what some believe, prescriptions for puberty-blocking medication and hormone-replacement or referrals for surgery are not made on a whim. Every step of a transgender patient's treatment and care is planned out in consultation with the patient's care team, which includes both medical and mental health providers.

48. Prior to considering starting a course of puberty-blockers or hormone-replacement therapy, a transgender patient undergoes an extensive assessment by a mental health provider. The purpose of that assessment is three-fold: (1) obtaining a complete picture of the patient's mental health, including whether the patient has gender dysphoria; (2) determine the patient's psychological readiness to begin the contemplated treatment; and (3) provide the patient and their family the information they need to make an informed decision about whether to proceed with the treatment. If, after that assessment, the mental health provider determines that the patient should be considered for the contemplated treatment, that professional opinion is documented in a letter to the patient's medical provider.

49. The medical provider then conducts their own separate assessment of the patient, including a physical examination and any necessary laboratory testing. In addition to determining the medical necessity of the contemplated treatment and a patient's medical readiness for that treatment, the medical provider will also

discuss the risks, benefits, and alternatives for the contemplated treatment. Medical providers also discuss with parents that the medications are being prescribed for an off-label use, which is particularly common for medications being used in pediatric patients. That discussion occurs with the patient and their family to ensure that everyone involved in the decision-making process has the information they need to make an informed decision.

50. Once the medical provider has finished addressing any questions or concerns raised by the patient and family, the parents/legal guardians and the patient are provided with a detailed informed consent/assent form that outlines in writing the information the medical provider reviewed with them. The patient and family are encouraged to carefully review that paperwork and sign if they choose to consent/assent to treatment.

51. It is only at the end of that intensive assessment and informed-consent process that a patient is prescribed a particular medical treatment for gender dysphoria.

Medical Treatment for Gender Dysphoria is Evidence-Based Medicine

52. Research and clinical experience repeatedly reaffirm that transition significantly improves the mental and physical health of transgender young people.

53. This is true of each stage of a transgender young person's transition. Transgender young people who underwent a social transition in childhood

demonstrated better mental health profiles than prior studies of gender nonconforming children. *See* Lily Durwood, et al., *Mental Health and Self-Worth in Socially Transitioned Transgender Youth*, 56 J. Am. Acad. of Child & Adol. Psychiatry 116 (2017); Kristina Olson, et al., *Mental Health of Transgender Children who are Supported in Their Identities*, 137 Pediatrics 1 (2016). This same outcome has also been seen in a longitudinal study of transgender young people who underwent each of the three stages of transition outlined above. Annelou L.C. de Vries, et al., *Young Adult Psychological Outcome After Puberty Suppression and Gender Reassignment*, 134 Pediatrics 696 (2014). In a study specifically about male chest reconstruction surgery, post-operative transgender young people demonstrated significant psychological and functional improvements, from a greater willingness to plan for their future and to engage activities of daily living (e.g., bathing, buying clothing). Johanna Olson-Kennedy, et al., *Chest Reconstruction and Chest Dysphoria in Transmasculine Minors and Young Adults Comparisons of Nonsurgical and Postsurgical Cohorts*, 172 JAMA Pediatrics 431, 434 (2018)

54. Transition also can—and often does—alleviate co-occurring mental health issues a transgender young person experienced prior to transition. Following transition, transgender young people typically see significant improvements in functioning and quality of life. Treating their gender dysphoria also increases a

transgender young person's capacity to develop and maintain better coping strategies to manage any co-occurring conditions.

55. Conversely, delaying or denying transgender young people safe and effective treatment for gender dysphoria—as contemplated by the wait-and-see approach—can have severe consequences on their physical and mental health. Without those medically necessary treatments, transgender young people are likely to develop serious co-occurring mental health conditions (*i.e.* anxiety, depression, suicidality) that will interfere with their ability to learn and impede their psychosocial development.

Conclusion

56. Alabama's law criminalizing the provision of medical treatment for gender dysphoria is contrary to well-established standards of care, peer-reviewed medical literature, and clinical experience. Medical care for transgender young people in Alabama would be guided by fear of criminal penalty, forcing medical providers to abandon their professional and ethical obligations to follow the prevailing standards of care when treating patients with gender dysphoria.

57. Contrary to its stated purpose, this bill will endanger the health and wellbeing of transgender young people experiencing gender dysphoria by creating significant barriers to their receiving medically necessary care. The lack of access to

that time-sensitive care will have lifelong implications for their quality of life and their ability to effectively treat their gender dysphoria.

This declaration was executed this 19th day of April, 2022.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

By: Stephen M. Rosenthal
Stephen M. Rosenthal, M.D.

EXHIBIT A

Prepared: May 26, 2020

University of California, San Francisco

CURRICULUM VITAE

Name: Stephen M Rosenthal, MD

Position: Recalled Faculty
Pediatrics
School of Medicine

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San Francisco, CA 94143
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EDUCATION

1968 - 1972	Yale University	BA	Psychology
1972 - 1976	Columbia University, Colege of Physicians & Surgeons	MD	
1976 - 1977	Columbia University, Presbyterian Hospital	Intern	Pediatrics
1977 - 1979	Columbia University, Presbyterian Hospital	Resident	Pediatrics
1979 - 1982	University of California, San Francisco	Fellow	Pediatric Endocrinology

LICENSES, CERTIFICATION

1980	Medical License, California, #G42045
1982	American Board of Pediatrics
1983	American Board of Pediatric Endocrinology

PRINCIPAL POSITIONS HELD

1982 - 1983	University of California, San Francisco	Instructor	Pediatrics
1983 - 1992	University of California, San Francisco	Assistant Professor in Residence	Pediatrics
1992 - 1998	University of California, San Francisco	Associate Professor in Residence	Pediatrics

1998 - 2012	University of California, San Francisco	Professor in Residence	Pediatrics
2012 - present	University of California, San Francisco	Professor of Clinical Pediatrics	Pediatrics

OTHER POSITIONS HELD CONCURRENTLY

2006 - 2015	University of California, San Francisco	Director, Pediatric Endocrine Outpatient Services	Pediatrics
2008 - 2011	University of California, San Francisco	Associate Program Director, Pediatric Endocrinology	Pediatrics
2008 - 2018	University of California, San Francisco	Pediatric Endocrine Director, Disorders of Sex Development (DSD) Clinic	Pediatrics
2011 - present	University of California, San Francisco	Medical Director, Child & Adolescent Gender Center	Pediatrics
2012 - 2015	University of California, San Francisco	Program Director, Pediatric Endocrinology	Pediatrics

HONORS AND AWARDS

2011	Nominated for the Chancellor's Award for Gay, Lesbian, Bisexual, and/or Transgender Leadership for a faculty member	University of California, San Francisco
2012	Nominated for the Chancellor's Award for Gay, Lesbian, Bisexual, and/or Transgender Leadership for a faculty member	University of California, San Francisco
2012	Family Advisory Council Caring Tree Award	UCSF Benioff Children's Hospital
2013	Chancellor's Award for Gay, Lesbian, Bisexual, and Transgender (GLBT) Leadership in the faculty category	University of California, San Francisco

2014	Haile T. Debas Academy of Medical Educators Excellence in Teaching Award	University of California, San Francisco
2018	Harry Benjamin Lectureship, World Professional Association for Transgender Health, for significant contributions to the field of transgender health through research, healthcare provision and medical education	World Professional Association for Transgender Health

KEYWORDS/AREAS OF INTEREST

Biology of gender, transgender, Disorders of Sex Development (DSD), Insulin-like Growth Factors (IGFs), neuroblastoma, water balance disorders, Type 1 Diabetes, medical education, fellowship training.

CLINICAL ACTIVITIES

CLINICAL ACTIVITIES SUMMARY

I currently serve as Medical Director, Child and Adolescent Gender Center, a UCSF/ Community partnership designed to provide multidisciplinary services for pediatric and adolescent gender nonconforming/ transgender patients. I have served as Pediatric Endocrine Director, Disorders of Sex Development (DSD) monthly clinic, a multi-disciplinary program involving Pediatric Endocrinology, Pediatric Urology, Psychiatry, and Social Work. I currently Attend in the out-Patient clinics: Currently, 2 clinics/ week.

PROFESSIONAL ACTIVITIES

MEMBERSHIPS

1983 - present	The Endocrine Society
1983 - present	The Pediatric Endocrine Society (formerly known as the Lawson Wilkins Pediatric Endocrine Society)
1983 - 2000	Western Society for Pediatric Research
1986 - present	The Society for Pediatric Research
2011 - present	World Professional Association for Transgender Health (WPATH)

SERVICE TO PROFESSIONAL ORGANIZATIONS

1990 - 1993	Pediatric Endocrine Society	Member, Organizing Committee for the Combined Lawson Wilkins Pediatric Endocrine Society and the European Endocrine Society IV International Meeting

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1999 - 1999	Society for Insulin-like Growth Factor Research	Member, Scientific Planning Committee, 5th International Symposium on Insulin-Like Growth Factors, Brighton, UK
2000 - 2005	Pediatric Endocrine Society	Member, Drug and Therapeutics Committee
2002 - 2005	The Endocrine Society	Member, Special Programs Committee
2003 - 2004	Pediatric Endocrine Society	Chair, Drug and Therapeutics Committee
2005 - 2008	The Endocrine Society	Member, Science and Educational Programs Core Committee
2006 - 2006	Eli Lilly Co.	Member, National Growth Hormone Clinical Physicians Advisory Panel
2007 - 2013	Pediatric Endocrine Society	Member, Ethics Committee
2007 - 2007	Pediatric Endocrine Society, Growth Hormone Research Society, and European Society of Pediatric Endocrinology	Member, Consensus Workshop Committee on Diagnosis and Management of Idiopathic Short Stature
2008 - present	The Endocrine Society	Abstract Reviewer/Grader
2008 - 2011	The Endocrine Society	Member, Annual Meeting Steering Committee
2009 - 2009	Pediatric Endocrine Society and European Society of Pediatric Endocrinology	Abstract Reviewer/Grader

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2009 - 2011	The Endocrine Society	Team Leader, Annual Meeting Steering Committee
2010 - 2013	Pediatric Endocrine Society	Elected to Board of Directors
2012 - 2012	The Endocrine Society	ENDO 2012 Presidential Poster Competition Judge
2012 - 2015	Pfizer, Inc.	Review Committee: ASPIRE Young Investigator Awards in Endocrine Research
2012 - 2015	The Endocrine Society	Member, Clinical Endocrine Education Committee
2012 - present	Pediatric Endocrine Society	Member, Honors Committee
2013 - 2017	Pediatric Endocrine Society	Member, Maintenance of Certification Committee
2014 - 2017	Endocrine Society and Pediatric Endocrine Society	Official representative of Pediatric Endocrine Society to Endocrine Society's Clinical Practice Guidelines Revision Task Force for the Care of Transgender Individuals
2015 - 2016	Pediatric Endocrine Society	President-elect
2016 - 2017	Pediatric Endocrine Society	President
2017 - 2018	Pediatric Endocrine Society	Immediate Past President
2017 - 2018	Pediatric Endocrine Society	Chair, Honors and Awards Committee
2018 - 2019	Endocrine Society	Vice President, Clinical Scientist Position

2019 - present	Endocrine Society	Member, Board of Directors

SERVICE TO PROFESSIONAL PUBLICATIONS

1986 - present	Reviewer, Journal of Clinical Endocrinology and Metabolism
1987 - present	Reviewer, Endocrinology
1991 - 1993	Reviewer, DNA and Cell Biology
1991 - 2000	Reviewer, Life Sciences
1992 - present	Reviewer, Diabetes
1993 - 2008	Reviewer, Cancer Research
1994 - present	Reviewer, Molecular Endocrinology
1995 - present	Reviewer Journal of Cell Physiology
1996 - 2000	Reviewer, Journal of Cell Biology
1998 - 2008	Reviewer, Journal of Biological Chemistry
2006 - present	Reviewer, Journal of Pediatric Endocrinology and Metabolism
2010 - present	Reviewer, International Journal of Pediatric Endocrinology
2015 - 2018	Associate Editor, Transgender health
2015 - present	Editorial Board Member, International Journal of Transgenderism

INVITED PRESENTATIONS - INTERNATIONAL

1984	7th International Congress of Endocrinology, Quebec, Canada	Lecture
1985	Symposium "Therapeutic Agents Produced by Genetic Engineering: Quo Vadis? - The Example of Growth Hormone and Its Releasing Factor", Toulouse, France,	Invited lectures (2)
1985	28 emes Journees Internationales Henri-Pierre Klotz D'Endocrinologie Clinique, Paris, France	Invited lecture
1986	1st International Congress of Neuroendocrinology, San Francisco	Invited lecture
1988	GRF Symposium, Sanofi Group, Paris, France	Invited lecture
1990	Serono Symposium "Major Advances in Human Female Reproduction", Rome, Italy	Invited lecture and Session chair
1990	3rd International Symposium on Molecular and Cellular Biology of Insulin and IGFs, Gainesville, FL	Poster
1991	2nd International Symposium on Insulin-Like Growth Factors/Somatomedins, San Francisco,	Posters (2)

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1992	9th International Congress of Endocrinology, Nice, France	Poster
1993	4th International Symposium on Insulin, IGFs, and Their Receptors, Marine Biological Laboratory, Woods Hole, MA	Poster
1993	LWPES/ESPE Fourth Joint Meeting, San Francisco, CA	lecture, Poster, & Session chair
1994	The Third International Symposium on Insulin-Like Growth Factors, Sydney, Australia	Invited lecture
1994	AgResearch, Hamilton, New Zealand (lecture title: "Insulin-like Growth factors and Skeletal Muscle Differentiation")	Invited lecture and Visiting Professor
1994	Jacques Ducharme Annual Lectureship, University of Montreal, Canada	Invited lecture
1995	5th International Symposium on Insulin and IGFs, Gainesville, FL	Poster
1996	10th International Congress of Endocrinology, San Francisco, CA	Platform
1997	5th Joint Meeting of the European Society for Pediatric Endocrinology and the Lawson Wilkins Pediatric Endocrine Society, Stockholm, Sweden	Platform
1997	4th International Symposium on Insulin-like Growth Factors, Tokyo, Japan	Platform
1999	5th International Symposium on Insulin-like Growth Factors, Brighton, UK	Platform, Session chair, Member, Scientific Planning Committee
2000	Symposium Medicus Conference on Adolescent Medicine, Ixtapa, Mexico	Invited lectures (3)
2001	6th Joint Meeting of the European Society for Pediatric Endocrinology and the Lawson Wilkins Pediatric Endocrine Society, Montreal, Canada	Platform
2001	William Soler Children’s Hospital, Havana, Cuba	Invited lecture and Visiting Professor
2002	First Joint Symposium GH-IGF 2002, Boston, MA	Platform
2002	2nd Cuban Symposium on Immunology of Diabetes, Havana, Cuba	Invited lecture

2005	Canadian Society of Endocrinology and Metabolism and Canadian Diabetes Association Annual Meeting, Edmonton, Alberta, Canada, (Pediatric Symposium on: Activating Mutations: Genetic Basis and Therapeutic Implications)	Invited lecture
2006	38th International Symposium: GH and Growth Factors in Endocrinology and Metabolism, Granada Spain, ["Hot Topics" session: Lecture title: "Nephrogenic Syndrome of Inappropriate Antidiuresis (NSIAD): A Paradigm for Activating Mutations Causing Endocrine Dysfunction]	Invited lecture
2006	Sanofi-Aventis, Paris, France, (Lecture title: "Potential Use of Selective V2 Vasopressin Receptor Antagonists as Inverse Agonists in the Treatment of Nephrogenic Syndrome of Inappropriate Antidiuresis")	Invited lecture
2006	Primary Insulin-like Growth Factor-I Deficiency (IGFD) International Advisory Board Meeting, Tercica, Inc., San Francisco, CA,	Invited speaker
2007	1er Simposio Argentino Noditropin Simplex en Endocrinologia Pediatrica, Punta del Este, Uruguay, (Lecture titles: "Primary IGF-I Deficiency"; and "Activating Mutations of the V2 Vasopressin Receptor")	Invited Plenary Lectures (2)
2007	GeNeSIS Investigators Meeting, Paris, France, (Panel : "Growth Attenuation: Current Concepts and Controversies")	Invited Panel Member
2007	Idiopathic Short Stature (ISS) Consensus Conference/International Meeting, Santa Monica, CA	Invited participant and Session chair
2008	5th Biennial Scientific Meeting of the Asia Pacific Pediatric Endocrine Society, Seoul, Korea, [Lecture title: "Nephrogenic Syndrome of Inappropriate Antidiuresis (NSIAD): Recent Insights"]	Invited Plenary Lecture
2009	Nordiscience Forum (Novo Nordisk's International Scientific Meeting), Kyoto, Japan, (Lecture title: "Disorders of Water Balance and the Nephrogenic Syndrome of Inappropriate Antidiuresis")	Invited Plenary Lecture
2009	Osaka University, Osaka, Japan (Lecture title: "IGFs: Links to Cancer and Longevity")	Invited Lecture/Visiting Professor
2009	National Center for Child Health and Development, Tokyo, Japan (Lecture title: "Growth as a Barometer of Health")	Invited Lecture

2010	The Society for Pediatric Research/ Lawson Wilkins Pediatric Endocrine Society, Vancouver, Canada, ("Meet-the Professor" title: "Career Development: What's Next After Fellowship?")	Invited speaker/ "Meet-the Professor"
2011	9th Winter Symposium, Department of Child Health, Christian Medical College, Vellore, India (Lecture title: "Water & Sodium Balance: Current Concepts & Clinical Implications")	Invited Plenary Lecture
2011	World Professional Association for Transgender Health (WPATH) Biennial Symposium (International), Atlanta, GA	Invited speaker/ panel presentation
2012	1st St. Luke's International Conference on Pediatrics: Enhancing Pediatric Care with the Experts, Global City, Taguig City (Manila), Philippines (2 Lectures: "Gender Non-Conforming/Transgender Youth: Endocrine Considerations"; "Abnormalities of Puberty"; Case Discussant: "Disorders of Sex Development")	Invited Plenary Lectures
2013	World Professional Association for Transgender Health (WPATH) ICD-11 Consensus Meeting, San Francisco, CA	Invited Participant
2014	World Professional Association for Transgender Health (WPATH) Biennial Symposium, Bangkok, Thailand	Invited Symposium speaker
2014	Chulalongkorn University, Bangkok, Thailand (Lecture title: "Gender Nonconforming Transgender Youth: Endocrine Considerations")	Invited Lecture/Visiting Professor

INVITED PRESENTATIONS - NATIONAL

1983	The Endocrine Society Annual Meeting	Platform
1985	Endocrine Days, Seattle Washington	Invited lecture
1986	The Endocrine Society Annual Meeting	Platform
1987	The Clinical Research Center Program Directors' Biennial Meeting, NIH, Williamsburg, VA	Lecture
1987	Growth Disorders: Diagnostic and Therapeutic Dilemmas, Eli Lilly, Boston, MA	Invited lecture
1989	Society for Pediatric Research Annual Meeting	Poster
1990	Society for Pediatric Research Annual Meeting	Poster
1990	The Endocrine Society Annual Meeting	Poster
1990	American Academy of Pediatrics Postgraduate Course "Recent Advances in Endocrinology", Seattle, WA	Invited lectures (2)

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1990	Eli Lilly Symposium "Roundtable Discussion Group on Current Issues in Pediatric Endocrinology", Dallas, TX	Invited lecture and Session chair
1991	NIH Workshop on Biological Consequences of Early Placental Loss, San Juan, Puerto Rico	Invited lecture
1991	The Endocrine Society Annual Meeting	Poster
1992	American Academy of Pediatrics Annual Meeting, San Francisco, CA	Invited lecture
1992	The Endocrine Society Annual Meeting	Poster
1994	The Endocrine Society Annual Meeting	Poster and Session chair
1994	Genentech National Cooperative Growth Study Symposium, Orlando, FL	Session Chair
1995	American Academy of Pediatrics, PREP: The Course, Santa Monica, CA	Invited lectures (2)
1995	The Endocrine Society Annual Meeting	Poster
1995	American Academy of Pediatrics, PREP: The Course, Minneapolis, MN	Invited lectures (2)
1997	The Endocrine Society Annual Meeting	Poster
1998	The Endocrine Society Annual Meeting	Poster
1999	The Endocrine Society Annual Meeting	Poster
2000	The Endocrine Society Annual Meeting	Poster and Session chair
2001	The Endocrine Society Annual Meeting	Poster
2002	The Endocrine Society Annual Meeting	Poster
2004	The Endocrine Society Annual Meeting	Poster
2003	Society for Women’s Health Research: Fourth Annual Conference on Sex and Gene Expression, Winston-Salem, NC	Invited lecture and Session chair
2004	Society for Pediatric Research Annual Meeting	Poster
2005	The Endocrine Society Annual Meeting	Poster
2005	American Academy of Pediatrics, PREP: The Course, Miami, FL	Invited lectures (2)
2005	American Academy of Pediatrics, PREP: The Course, Portland, OR	Invited lectures (2)
2005	GeNeSIS Symposium and Investigators Meeting, Washington, D.C.	Session chair

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2006	The Endocrine Society Annual Meeting, Boston, MA (Symposium lecture title: “How We Define IGF-I Deficiency”)	Invited lecture
2006	The Endocrine Society’s Clinical Endocrinology Update Course, San Francisco, CA (Lecture title/ “Meet-the Professor”: “Management of Type 2 Diabetes in Adolescence”)	Invited lecture/ "Meet-the-Professor"
2006	Serono GH Monitor Investigator Meeting, Symposium on Disorders of Water Balance, San Francisco, CA, 2006	Invited Plenary Lecture
2007	The Endocrine Society Annual Meeting	Poster
2008	American Academy of Pediatrics, PREP: The Course, Tempe, AZ, 2008	Invited lectures (2)
2008	The Endocrine Society Annual Meeting	Poster
2008	Society for Pediatric Research Annual Meeting	Session Co-Chair
2008	Lawson Wilkins Pediatric Endocrine Society Annual Meeting	Session Co-Chair
2009	American Academy of Pediatrics, PREP: The Course, Savannah, GA	Invited lectures (2)
2009	The Endocrine Society Annual Meeting, Washington, DC (Lecture title/ “Meet-the-Professor”: “Hyponatremia in Infants & Children”)	Invited speaker/ "Meet-the-Professor"
2009	The Endocrine Society Annual Meeting	Poster
2009	American Academy of Pediatrics, PREP: The Course, Portland, OR	Invited lectures (2)
2009	Disorders of Sex Development (DSD) Research and Quality Improvement Symposium, University of Michigan Initiative on Rare Disease Research, Ann Arbor, MI	Invited participant
2010	The Endocrine Society Annual Meeting, San Diego, CA (Lecture title/ “Meet-the-Professor”: “Hyponatremia in Infants & Children”)	Invited speaker/ "Meet-the-Professor"
2010	American Academy of Pediatrics, NeoPREP, Newport Beach, CA	Invited lectures (2)
2012	45th Annual Advances & Controversies in Clinical Pediatrics, UCSF, San Francisco, CA (Lecture title: "Gender-Variant/Transgender Youth: Endocrine Considerations")	Invited lecture
2012	The Endocrine Society Annual Meeting	Session Co-Chair
2012	American Academy of Pediatrics, PREP: The Course, San Diego, CA	Invited Lecture and Case Presentations

2013	Miami Children's Hospital 16th Annual Pediatric Board Review Course	Invited Lecture and Case Presentations
2013	National Transgender Health Summit (sponsored by UCSF), Oakland, CA (Lecture title/"The Biology of Gender")	Invited Lecture and Panel Presentations
2013	Pediatric Endocrine Society Annual Meeting: Plenary Ethics Debate: "Approach to the Prepubertal Gender Non-Conforming Child: Should Intervention Attempt to Support the Assigned or Affirmed Gender?"	Program Chair and Speaker
2013	American Academy of Pediatrics, PREP: The Course, Portland, OR	Invited Lecture and Case Presentations
2013	The Endocrine Society Annual Meeting	Symposium Chair
2013	American Academy of Pediatrics: "Mind Matters for Pediatric Practitioners", San Francisco, CA (Lecture title: "Gender Nonconforming/ Transgender Youth: Endocrine Considerations")	Invited Lecture
2014	American Academy of Pediatrics, NeoPREP: An Intensive Review and Update of Neonatal/Perinatal Medicine, San Diego, CA (Lecture title: "Neontal Thyroid Disorders")	Invited lecture
2014	UCSF CME: Diabetes Update and Advances in Endocrinology and Metabolism (Lecture title: "Gender Nonconforming/ Transgender Youth: Endocrine Considerations")	Invited Lecture
2014	1st Annual Disorders of Sex Development-Translational Research Network (DSD-TRN)) and Accord Alliance (AAN) Workshop, Phoenix Children's Hospital, Phoenix, AZ	Invited participant
2014	Endocrine Society Annual Meeting	Symposia (2) Chair
2014	UCSF CME: Current Trends in DSD Management	Course Chair and Lecturer

INVITED PRESENTATIONS - REGIONAL AND OTHER INVITED PRESENTATIONS

1983	Pediatric Grand Rounds, John Muir Hospital, Veterans Administration Hospital, San Francisco, Santa Rosa Community Hospital, Fresno Valley Children’s Hospital, University of the Pacific, Mt. Zion Hospital, Oak Knoll Naval Hospital	Invited lectures
1984	Pediatric Grand Rounds, UCSF	Invited lecture
1985	Pediatric Grand Rounds, UCSF	Invited lecture

1985	Western Socity for Pediatric Research Annual Meeting	Platform
1986	Pediatric Grand Rounds, UCSF	Invited lecture
1987	Pediatric Grand Rounds, UCSF	Invited lecture
1989	Visiting Professor, University of Florida, Gainesville, FL	Invited lecture
1989	Visiting Professor, University of Pittsburgh, Pittsburgh, PA	Invited lecture
1989	Pediatric Grand Rounds, UCSF	Invited lecture
1990	Pediatric Grand Rounds, UCSF	Invited lecture
1992	Rocky Mountain Endocrine Society, Salt Lake City, UT	Invited lectures (2)
1993	Western Socity for Pediatric Research Annual Meeting	Session Co-Chair
1993	Organization of Pediatric Endocrinologists of California, Sonoma, CA	Invited lecture
1993	Pediatric Grand Rounds, San Francisco General Hospital	Invited lecture
1994	Organization of Pediatric Endocrinologists of California, Yosemite, CA	Meeting Chair
1995	Pediatric Grand Rounds, San Francisco General Hospital	Invited lecture
1997	Visiting Professor, University of Utah, Salt Lake City, UT	Invited lecture
1998	Visiting Professor, University of Washington, Seattle, WA	Invited lecture
1998	American Academy of Pediatrics Annual Meeting, St. Petersburg, Florida	Invited lecture
1998	Genentech, Inc., South San Francisco, CA	Invited lecture
1998	Pediatric Grand Rounds, Fresno Medical Education Program	Invited lecture
1999	Pediatric Grand Rounds, UCSF	Invited lecture
2000	Natural Cooperative Growth Study (co-sponsored by University of Oregon and Genentech, Inc.), San Francisco, CA	Invited lecture
2000	“Advances and Changing Trends” (Pediatrics), The Lloyd Noland Foundation, Orlando, FL	Invited lectures (2)
2000	Michigan State Medical Society Annual Scientific Meeting, Detroit, MI	Invited Plenary Lecture
2000	Pediatric Grand Rounds, San Francisco General Hospital	Invited lecture

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2001	UCSF Diabetes Center (Lecture title: "Insulin-like Growth Factors and Skeletal Muscle Differentiation")	Invited lecture
2002	“Ninth Annual Pediatrics Update”, The Lloyd Noland Foundation, Hilton Head Island, SC	Invited lectures (3)
2003	Symposium Medicus Conference on Adolescent Medicine, Puerto Rico	Invited lectures (3)
2004	Pediatric Grand Rounds, UCSF (Lecture title: “Insulin-like Growth Factors: Not Really Like Insulin”)	Invited lecture
2005	Endocrine Grand Rounds, UCSF (Lecture title: “Nephrogenic Syndrome of Inappropriate Antidiuresis”)	Invited lecture
2005	Symposium Medicus Conference on Pediatrics, Yosemite, CA	Invited lectures (3)
2006	Pediatric Grand Rounds, Childrens Hospital Los Angeles, University of Southern California (Lecture title: “Nephrogenic Syndrome of Inappropriate Antidiuresis")	Invited lecture
2006	UCSF Diabetes Update and Advances in Endocrinology and Metabolism, “Nephrogenic Syndrome of Inappropriate Antidiuresis (NSIAD): A Paradigm for Activating Mutations Causing Endocrine Disease”, San Francisco, CA	Invited lecture
2006	“Childhood Matters” Radio Show, “Diabetes in Childhood: Who’s at Risk?”, KISS-FM, San Francisco, CA	Invited speaker (radio)
2006	Pediatric Grand Rounds, Sutter Medical Center, Santa Rosa, CA (Lecture title: “Growth as a Barometer of Health”)	Invited lecture
2006	Pediatric Grand Rounds, California Pacific Medical Center, San Francisco, CA (Lecture title: “Growth Hormone and IGF-I Treatment for Short Stature: Current Concepts and Controversies”)	Invited lecture
2007	Pediatric Endocrine Grand Rounds, University of California Los Angeles (Lecture title: “Activating V2 Vasopressin Receptor Mutations")	Invited lecture
2007	UCSF Pediatric Diabetes Symposium: “Type 1 Diabetes: Primary and Secondary Prevention”	Invited lecture
2008	Pediatric Grand Rounds, University of Massachusetts, Baystate Children’s Hospital: “Nephrogenic Syndrome of Inappropriate Antidiuresis (NSIAD): A Paradigm for Activating Mutations Causing Endocrine Dysfunction"	Invited lecture

2008	UCSF Pediatric Diabetes Symposium: “Can We Prevent Type 1 Diabetes? : Research Update”	Invited lecture
2008	Juvenile Diabetes Research Foundation, Hawaii Chapter, Honolulu, HI: “Update in Type I Diabetes Research: Honeymoon Prolongation and Primary Prevention"	Invited lecture
2009	Organization of Pediatric Endocrinologists of California, San Francisco, CA, “IGFs: Links to Cancer and Longevity”	Invited lecture
2009	Pediatric Grand Rounds, Marin General Hospital, San Francisco, CA, (Lecture title: “Growth Disorders: Current Concepts and Management”)	Invited lecture
2009	Pediatric Grand Rounds, San Francisco General Hospital (Lecture title: “Gender Identity Disorder in Pre-Adolescents & Adolescents”)	Invited lecture
2009	UCSF School of Medicine, Pediatric Interest Group: “Career Development in Pediatric Endocrinology"	Invited speaker
2010	Pediatric Grand Rounds, UCSF (Lecture title: “Gender Variant/ Transgender Youth: Endocrine Considerations”)	Invited lecture
2010	Children’s Hospital Oakland Research Institute, Oakland, CA, “Gender Variant/ Transgender Youth: Endocrine Considerations”	Invited lecture
2010	Symposium Medicus Conference on Pediatrics (Lecture titles: “Abnormalities of Puberty”, “Update in Type 1 Diabetes”, “Growth as a Barometer of Health”) Kauai, Hawaii	Invited lectures (3)
2010	Gender Spectrum 4th Annual Family Conference (Lecture title: “The Use of Pubertal Blockers in Gender Variant Youth”, Berkeley, CA	Invited lecture
2010	UCSF School of Medicine, Pediatric Interest Group: “Career Development in Pediatric Endocrinology"	Invited speaker
2010	UCSF Pediatric Noon Cnference Series (Lecture title: "Neonatal Thyroid Disorders")	Invited lecture
2011	Pediatric Grand Rounds, Riley Hospital, University of Indiana, Indianapolis, IN, (Lecture title: "Gender Variant/Transgender Youth: Endocrine Considerations")	Invited lecture
2011	Pediatric Grand Rounds, Lucile Packard Children's Hospital, Stanford University, Stanford, CA, (Lecture title: "Gender Variant/Transgender Youth: Endocrine Considerations")	Invited lecture

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2011	UCSF Pediatric Noon Cnference Series (Lecture title: "Abnormalities of Puberty")	Invited lecture
2011	Gender Spectrum 5th Annual Family Conference (Lecture title: “The Biology of Gender”), Berkeley, CA	Invited lecture
2011	Gender Spectrum Professional's Workshop, Berkeley, CA (“The Use of Pubertal Blockers in Gender Variant Youth”)	Invited speaker, panel presentation
2011	"Mind-the-GAP" Mental Health Professionals Workshop, Oakland, CA (Lecture title: "The Use of Pubertal Blockers in Gender Variant Youth”)	Invited lecture
2011	8th Annual Great Plains Pediatric Endocrine Symposium (Lecture title: "Gender Variant/Transgender Youth: Endocrine Considerations")	Invited Plenary Lecture
2011	American Psychiatric Association (APA) Institutes on Psychiatric Services Annual Meeting (Presentation title: "The Child and Adolescent Gender Center: A UCSF/ Community Collaborative")	Invited speaker, panel presentation
2011	UCSF School of Medicine, Pediatric Interest Group: “Career Development in Pediatric Endocrinology"	Invited speaker
2012	Warren Alpert Medical School of Brown University Adult and Pediatric Grand Rounds, Providence, RI (Lecture title: "Gender Variant/Transgender Youth: Endocrine Considerations")	Invited lecture
2012	Endocrine Grand Rounds, UCSF School of Medicine, Department of Medicine, Division of Endocrinology, San Francisco, CA (Lecture title: "Gender Non-Conforming/Transgender Youth: Endocrine Considerations")	Invited lecture
2012	Gender Spectrum 6th Annual Family Conference (Lecture title: “The Biology of Gender”), Berkeley, CA	Invited lecture
2012	Gender Spectrum 6th Annual Family Conference (“Safe Sports for Transgender Youth"; "Medical Panel: Concerns for Transgender Youth"), Berkeley, CA	Invited speaker, panel presentations
2012	Gender Spectrum Professional's Workshop, Berkeley, CA (“The Use of Pubertal Blockers in Gender Variant Youth”)	Invited speaker
2012	UCSF School of Medicine, Pediatric Interest Group: “Career Development in Pediatric Endocrinology"	Invited speaker

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2012	Pediatric Grand Rounds, Santa Clara Valley Medical Center, San Jose, CA (Lecture title: "Gender Non-Conforming/Transgender Youth: Endocrine Considerations")	Invited lecture
2013	Pediatric Grand Rounds, Children's Hospital of Philadelphia (CHOP), Philadelphia, PA, (Lecture title: "Gender Non-Conforming/Transgender Youth: Endocrine Considerations")	Invited lecture
2013	CHOP-Hospitals of the University of Pennsylvania (HUP) Combined Endocrine Grand Rounds, Philadelphia, PA, (Lecture title: "The Biology of Gender")	Invited lecture
2013	Pediatric Grand Rounds, Marin General Hospital, Greenbrae, CA (Lecture title: "Gender Nonconforming/Transgender Youth: Endocrine Considerations")	Invited lecture
2013	UCSF Trans Health Seminar	Invited lecture
2013	Pediatric Grand Rounds, John Muir Medical Center, Walnut Creek, CA (Lecture title: "Gender Nonconforming/Transgender Youth: Endocrine Considerations")	Invited lecture
2013	Grand Rounds, Children's Hospital & Research Center Oakland, Oakland, CA (Lecture title: "Gender Nonconforming/Transgender Youth: Endocrine Considerations")	Invited lecture
2013	Gender Spectrum 7th Annual Family Conference (Lecture title: “The Biology of Gender”), Berkeley, CA	Invited lecture
2013	Gender Spectrum Professional's Workshop, Berkeley, CA	Invited Lecture, Panel Presentations
2013	PFLAG, San Francisco Chapter	Invited speaker
2013	Expert Panel on Transgender Health for Adolescent Clients, Callen-Lorde Community Health Center, New York, NY	Invited speaker/panelist
2013	43rd Annual Fall Conference, Children's Hospital & Research Center Oakland, Monterey, CA (Lecture title: "Gender nonconforming/Transgender Youth: Endocrine Considerations")	Invited Lecture
2014	Medicine Grand Rounds, Beth Israel Medical Center, New York, NY (Lecture title: "Transgender Youth: Endocrine Considerations")	Invited Lecture
2014	UCSF Trans Health Seminar	Invited lecture

2014	Pediatric Grand Rounds and Visiting Professor, University of Wisconsin, Madison, WI (Lecture title: "Gender Nonconforming/Transgender Youth: Endocrine Considerations")	Invited Lecture and Visiting Professor
2014	Combined Adult/Pediatric Endocrine Grand Rounds, University of Wisconsin, Madison, WI (Lecture title; "The Biology of Gender")	Invited Lecture
2014	Kaiser Permanente CME: Transgender Care for the Pediatric Mental Health Provider (Lecture title: The Biology of Gender")	Invited Lecture/ Panelist
2014	Gender Spectrum 8th Annual Family Conference (Lecture title: “The Biology of Gender”), Moraga, CA	Invited lecture
2014	Gender Spectrum Professional's Workshop, Moraga, CA	Invited Lecture, Panel Presentations
2014	PFLAG Regional Convention, Napa, CA	Invited speaker
2014	47th Annual Clinical Advances in Pediatrics Symposium, Children's Mercy Hospital, Kansas City, MO (Lecture title: "Gender nonconforming/Transgender Youth: Endocrine Considerations")	Invited Keynote Address
2014	Endocrine Grand Rounds and Visiting Professor, University of Cincinnati Hospital Medical Center, Cincinnati, OH (Lecture title: Gender Nonconforming/Transgender Youth: Endocrine Considerations")	Invited Lecture and Visiting Professor

CONTINUING EDUCATION AND PROFESSIONAL DEVELOPMENT ACTIVITIES

2006	The Endocrine Society Annual Meeting
2006	The Lawson Wilkins Pediatric Endocrine Society Annual Meeting
2007	The Endocrine Society Annual Meeting
2007	The Lawson Wilkins Pediatric Endocrine Society Annual Meeting
2008	The Endocrine Society Annual Meeting
2008	The Lawson Wilkins Pediatric Endocrine Society Annual Meeting
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2014	The Pediatric Endocrine Society Annual Meeting
2014	Endocrine Society Annual Meeting
2015	Endocrine Society Annual Meeting
2015	The Pediatric Endocrine Society Annual Meeting

GOVERNMENT AND OTHER PROFESSIONAL SERVICE

1995 - 1995	USDA	Grant Review Panel
2006 - 2012	NIH/NIDDK, TrialNet Eligibility Committee	Member

UNIVERSITY AND PUBLIC SERVICE

SERVICE ACTIVITIES SUMMARY

As detailed above, the highlights of my service activities include the following: a) UCSF Campus-wide: I have served on the Committee for Human Research for 3 years was appointed to the UCSF LGBT Center of Excellence Task Force; b) School of Medicine: I was an inaugural lecturer in the 2nd year LifeCycle course and PISCES Preceptor for the 3rd year Pediatrics curriculum; c) Departmental Service: I have served on a variety of committees, most notably the Pediatric Ambulatory Clinic Operations Committee and the Pediatric Clinical Enterprise Committee. I served as the Pediatric Endocrine Clinic Director, the Pediatric Endocrine Director of the multi-disciplinary Disorders of Sex Development Clinic, and currently serve as Medical Director of the Child and Adolescent Gender Center. I also served as the Program Director for Pediatric Endocrinology Fellowship Training; and d) Public Service: My activities have focused on volunteering for the Visiting Nurses and Hospice program, volunteering for various Diabetes programs (family support groups, Diabetes camp, etc.), speaking at family conferences and professional workshops focused on the care of gender variant/ transgender youth and adolescents, and helping to raise money for financially challenged, promising figure skaters in the Bay Area.

UCSF CAMPUSWIDE

2000 - 2000	Search Committee for Division Chief, Reproductive Endocrinology	Member
2002 - 2003	Committee on Human Research	Member
2004 - 2006	Committee on Human Research	Member
2010 - 2010	Search Committee for Director, Mass Spectrometry Program	Member
2011 - present	UCSF LGBT Center of Excellence Task Force	Member

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2012 - 2013	2013 National Trans Health Summit Planning Committee	Member
2014 - present	UCSF LGBT Leadership Collaborative on Education, Research, and Clinical Care	Member

SCHOOL OF MEDICINE

1994 - 2015	Various Ad hoc Promotion Review Committees	Member
1997 - 1999	Diabetes Center Planning Committee	Member
2002 - 2003	Life Cycle course, 2nd year Curriculum	Team Leader, Small Group Designer and Leader
2002 - 2015	Life Cycle course, 2nd year Curriculum	Lecturer (2)
2003 - 2007	Life Cycle course, 2nd year Curriculum	Small Group Designer and Leader
2004 - 2009	Foundations of Patient Care	Preceptor
2006 - 2007	UCSF Intersex Task Force	Member
2007 - 2014	Parnassus Integrated Student Clinical Experiences (PISCES), 3rd year Curriculum	Preceptor in Pediatrics (20 clinics/year)

SCHOOL OF DENTISTRY

2003 - 2015	Craniofacial Anomalies CFA 206	Lecturer

DEPARTMENTAL SERVICE

1986 - 1987	Intern Selection Committee	Member
1992 - 1993	Moffitt Ward Education Committee	Member
1993 - 1994	Endocrinology/Neurology/Neurosurgery/Hematology/Oncology, Panel A, Subspecialty Outpatient Rotation	Director
1993 - 2014	Intern Selection Committee	Member
2000 - 2000	Search Committee, Faculty Member, Division of Pediatric Endocrinology	Member
2006 - 2007	UCSF High School Summer Internship program	Preceptor/ Mentor
2006 - 2015	Pediatric Endocrine Outpatient Services	Director
2008 - 2009	Karlsberger Steering Committee	Member

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2008 - 2011	Pediatric Endocrinolgy FellowshipTraining Program	Associate Program Director
2008 - present	Disorders of Sexual Development (DSD) Clinic	Pediatric Director
2009 - 2009	Ward Revision Task Force	Member
2009 - 2012	Outpatient Re-engineering Steering Committee	Member
2009 - 2010	Clinical Excellence Task Force, UCSF Pediatric Residency Program	Member
2010 - present	Child and Adolescent Gender Center	Medical Director and Steering Committee co-Chair
2011 - 2015	EPIC	"Superuser"
2012 - 2015	Pediatric Endocrinolgy FellowshipTraining Program	Program Director
2012 - 2015	Pediatric Ambulatory Clinic Operations Committee	Member
2012 - 2015	Pediatric Clinical Enterprise Committee	Member

COMMUNITY AND PUBLIC SERVICE

1991 - 2000	Visiting Nurses and Hospice of San Francisco	Volunteer, 1 evening/week
1995 - 2013	Diabetes Youth Foundation's Bearskin Meadow Summer Camp	Medical volunteer, 1 week/ year
1995 - 2002	Adult Skating Program Committee, US Figure Skating Association	Member
1996 - 1996	March of Dimes Walk Steering Committee, San Francisco, CA	Member
2000 - 2001	Skating Club of San Francisco	Member, Board of Directors, and Vice-President
2002 - 2012	Numerous Bay Area Diabetes Family Support Groups	Invited speaker
2007 - present	Skate San Francsco (Figure Skating Competition)	Medical volunteer
2008 - 2012	Diabetes Youth Foundation Annual Figure Skating event	Medical volunteer and Skating Instructor

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2009 - present	Ice Bridges, a non-profit corporation which assists financially challenged, promising figure skaters in the San Francisco Bay Area	Member, Board of Directors
2010 - present	Bay Area Family Support Groups and Mental Health Professional Workshops for Gender Variant/ Transgender Youth and Adolescents	Invited speaker

CONTRIBUTIONS TO DIVERSITY

CONTRIBUTIONS TO DIVERSITY

I began my work with the care of gender nonconforming/transgender youth in January, 2009, and led efforts to create the multi-disciplinary Child and Adolescent Gender Center (CAGC), which formally opened its doors in May, 2012. I serve as Medical Director of the CAGC, serving >1300 gender nonconforming/ transgender youth, and oversee all clinical and research activities of the CAGC.

TEACHING AND MENTORING

TEACHING SUMMARY

In my current role as Emeritus Professor on Recall, I supervise postdoctoral fellows, residents, and medical students during one clinic/week (5-6 hr/wk). In addition, my current teaching responsibilities include: Lecturer in the Medicine/Pediatrics combined Endocrinology Fellows Course (2 hr); In addition to my UCSF teaching responsibilities, my teaching includes lecturing at a number of symposia on transgender health.

FORMAL TEACHING

	Academic Yr	Course No. & Title	Teaching Contribution	School	Class Size
	1986 - 2017	Adolescent Core Seminar Series 180.01C	Lecturer		
	2002 - 2015	Life Cycle, 2nd yr Med. Sch. Curr	Lecturer		Entire 2nd yr class
	2002 - 2007	Life Cycle, 2nd yr Med. Sch. Curr	Small Group Designer and Leader		25
	2003 - 2015	Craniofacial Anomalies CFA 206	Lecturer		
	2007 - 2014	Parnassus Integrated Student Clinical Experiences (PISCES), 3rd yr Med Sch Curr	Preceptor		1 student/ year

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	Academic Yr	Course No. & Title	Teaching Contribution	School	Class Size
	2000 - 2009	Foundations of Patient Care IDS 132A	Preceptor		

INFORMAL TEACHING

1983 - 2015	Clinical: Weekly inpatient Pediatric Endocrine teaching conference: 1.5 hr/week x 48 weeks = 72 hr/year
1994 - present	Clinical: Outpatient: Supervising/teaching: One clinic/week (5-6 hr) is a teaching clinic = 5-6 hr/week (including outpatient follow-up teaching) = 275 hr/year

MENTORING SUMMARY

I mentored Dr. Adi during his NIH K-08 Award in studies focused on understanding the molecular mechanisms through which Insulin-like Growth Factors influence the decision of skeletal myoblasts to proliferate or differentiate.
I mentored Dr. Cheung in clinical/translational studies investigating Aquaporin-2 excretion in the recently described Nephrogenic Syndrome of Inappropriate Antidiuresis.

PREDOCTORAL STUDENTS SUPERVISED OR MENTORED

Dates	Name	Program or School	Mentor Type	Role	Current Position
2003 - 2004	Dandan Liu	University of California, Berkeley		Supervised student for her Senior Honors Thesis	MD, Resident, UCSF
2007 - 2011	Linda Zhou, BS	Pre-doctoral student		Preceptor	Attending graduate school
2012 - 2012	Meaghan Pugh, RN, PNP	UCSF Advanced Practice Pediatric Nurse Practitioner Program		Clinical Preceptor	Clinical Practice
2013 - 2015	Tara Gonzalez	UC Berkeley-UCSF Joint Medical Program PRIME-US Program		Research Mentor	MS Class of 2015; MD Class of 2017

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POSTDOCTORAL FELLOWS AND RESIDENTS MENTORED

Dates	Name	Fellow	Mentor Role	Faculty Role	Current Position
1983 - 1984	Elizabeth Schriock, M.D	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Private Practice, San Francisco, CA
1983 - 1984	David Harris, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Assoc Clin Prof Pediatrics, U. of Utah, Salt Lake City
1983 - 1984	Leona Cuttler, M.D	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Professor and Chief of Pediatric Endocrinology, Case Western Reserve U., Cleveland, OH
1983 - 1984	Berthold Hauffa, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Professor of Pediatrics, Universitat Essen, Germany
1983 - 1984	Robert Lustig, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Professor of Clinical Pediatrics, UCSF
1983 - 1984	Klaus Rodens, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Assoc Prof Pediatrics, U. of Ulm, Germany
1983 - 1984	J. Anthony Hulse, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Consultant Endocrinologist, St. Thomas Hospital, London

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Dates	Name	Fellow	Mentor Role	Faculty Role	Current Position
1983 - 1985	Catherine Egli, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Chief of Pediatric Endocrinology, San Francisco Kaiser Hospital
1984 - 1985	David Stephure, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Assoc Prof Pediatrics and Chief of Pediatric Endocrinology, U. of Calgary, Canada
1984 - 1987	Bernard Silverman, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Former Assoc Prof and Chief of Ped Endo, Northwestern U., now Medical Director, Alkemes Inc.,
1984 - 1987	Jorge Daaboul, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Associate Professor of Pediatrics, U. of Florida, Gainesville, FL
1985 - 1987	Sharyn Solish, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Private Practice
1985 - 1988	Kenneth Attie, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Former Medical Director, Insmed Inc., Glen Allen, VA

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Dates	Name	Fellow	Mentor Role	Faculty Role	Current Position
1986 - 1988	Norbert Albers, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Assoc Prof, Children's Hospital, U. of Bonn, Germany
1986 - 1989	Carol Hart, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Asst Clin Prof Pediatrics, UC, San Diego, CA
1987 - 1989	Nelson Ramirez, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Deceased during fellowship
1987 - 1989	Stephen Gitelman, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Professor of Clinical Pediatrics, UCSF
1988 - 1988	Gregory Glasscock, Ph.D., M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Neonatologist
1988 - 1989	Carol Ishimatsu, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Private Practice, Downey, CA
1988 - 1989	Wen-Yu Tsai, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Assoc Prof of Pediatrics, Director, Pediatric Endocrinology, National Taiwan U.

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Dates	Name	Fellow	Mentor Role	Faculty Role	Current Position
1988 - 1988	Sushma Kaul, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Asst Clin Prof Pediatrics, Hackensack Medical Center, New Jersey
1989 - 1991	Klaus Hartmann, M.D.	Post-Doc Research Fellow		Laboratory Research Preceptor	Asst Prof Pediatrics, U. of Frankfurt, Germany
1989 - 1992	Juan Sanchez, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Assoc Prof Pediatrics, Indiana U. Medical Center, Indianapolis
1990 - 1992	Henry Rodriguez, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Associate Professor
1990 - 1993	David Paul, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Chief of Pediatric Endocrinology, David Grant Medical Center, Travis AFB, Sacramento, CA; Asst Clin Prof Pediatrics, UC, Davis
1990 - 1993	Lawrence Silverman, M.D.	Clinical and Research Fellow		Clinical and Laboratory Preceptor	Asst Prof Pediatrics, RWJ-UMDNJ, Chief of Ped Endo, Morristown Mem. Hosp.

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Dates	Name	Fellow	Mentor Role	Faculty Role	Current Position
1991 - 1994	Floyd Barry, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Training Chief for Pediatrics, McLennan Family Practice Residency Program, Waco, TX
1991 - 1994	Pat Mahachoklertwattana, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Assoc Prof Pediatrics; Chief of Pediatric Endocrinology, Mahidol U., Bangkok, Thailand
1993 - 1996	Debra Devoe, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Asst Clin Prof Pediatrics, U. Southern California and Los Angeles Children's Hospital, CA
1993 - 1996	David Geller, M.D., Ph.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Asst Prof Pediatrics, UCLA Cedars-Sinai Medical Center, Los Angeles, CA
1994 - 1996	Sudha Mootha, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Asst Prof Clin Pediatrics, U. Texas Southwestern Medical Center, Dallas
1994 - 1997	Saleh Adi, M.D.	Clinical and Research Fellow		Clinical and Laboratory Preceptor	H. S. Professor of Pediatrics, UCSF

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Dates	Name	Fellow	Mentor Role	Faculty Role	Current Position
1996 - 1999	Valérie Schwitzgebel, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Professor of Pediatrics, U of Geneva, Switzerland
1996 - 1998	Bassam Bin-Abbas, M.D.	Clinical and Research Fellow		Clinical and Laboratory Preceptor	Asst Prof Pediatrics, King Faisal U, Riyadh, Saudi Arabia
1998 - 1999	Peter Contini, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Private Practice, Moraga, CA
1998 - 2001	Louise Greenspan, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Pediatric Endocrinology, San Francisco Kaiser Hospital; Asst Clin Prof Pediatrics, UCSF
1998 - 2001	Jane Lee, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Clinical Research Scientist, Genentech Inc., South San Francisco, CA
1999 - 2002	Susan Conrad, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Formerly Attending Endocrinologist, Oakland Children's Hospital, Oakland, CA; Now in Private Practice

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Dates	Name	Fellow	Mentor Role	Faculty Role	Current Position
2000 - 2002	Chaluntorn Preeyasombat, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Asst Prof Pediatrics, Ramathibadi Hospital, Mahidol U., Bangkok Thailand
2001 - 2003	Nicola Tiffin, Ph.D.	Post-Doc Research Fellow		Laboratory Research Preceptor	Research Scientist, University of Western Cape, South Africa
2001 - 2004	Heidi Gassner, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Chief of Pediatric Endocrinology, Sacramento Kaiser Hospital
2002 - 2005	Qing Dong, M.D., Ph.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Chief of Pediatric Endocrinology, Chinese Hospital, San Francisco; Clinical Assistant Professor of Pediatrics, UCSF
2003 - 2007	Gary Meyer, Ph.D.	Post-Doc Research Fellow		Laboratory Research Preceptor	Private Industry
2003 - 2006	Eric Huang, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Attending Physician, Pediatric Endocrinology, Morristown Hospital, New Jersey

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Dates	Name	Fellow	Mentor Role	Faculty Role	Current Position
2004 - 2006	Brian J. Feldman, M.D.,Ph.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Assist. Prof of Pediatrics, Stanford U
2004 - 2006	Clement Cheung, M.D., Ph.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Assistant Adjunct Professor of Pediatrics, UCSF
2004 - 2007	Maureen A. Su, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Assistant Professor, Dept. of Pediatrics, U. of North Carolina
2005 - 2007	Andrew Bremer, M.D., Ph.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Assistant Professor of Pediatrics, Vanderbilt University, Nashville, TN
2005 - 2008	Sayali Ranadive, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Attending Formerly Endocrinologist, Oakland Children’s Hospital, Oakland, CA; Now in Private Practice
2005 - 2007	Roger Long, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Asst Clinical Professor, UC Davis Medical Cntr

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Dates	Name	Fellow	Mentor Role	Faculty Role	Current Position
2006 - 2009	Alison Reed, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Attending Pediatric Endocrinologist, California Pacific Medical Center, San Francisco, CA
2007 - 2010	William Charlton, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Attending Physician, Joe DiMaggio Children's Hospital, Broward County, FL
2007 - 2010	Ivy Aslan, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Attending Endocrinologist, Oakland Children’s Hospital, Oakland, CA
2008 - 2009	Jennifer Cordier, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Private Practice
2008 - 2010	Taninee Sahakitrungruang, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Assistant Prof of Pediatrics, Chuylalongkorn U, Bangkok, Thailand
2009 - 2011	Jenise Wong, M.D., Ph.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Instructor, UCSF

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Dates	Name	Fellow	Mentor Role	Faculty Role	Current Position
2009 - 2012	Thu Ho, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Private Practice
2009 - 2012	Anjali Jain, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Private Practice
2010 - 2013	Andrea Gerard Gonzalez, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Assistant Professor of Pediatrics, Barbara Davis Diabetes Center, Denver, CO
2010 - 2013	Lisa Taylor, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Private Practice
2010 - 2016	Stanley Vance, Jr., MD	Resident in Pediatrics; then Clinical Fellow, Adolescent Medicine		Research Mentor	Assistant Professor, UCSF
2011 - 2014	Amy Mugg, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	In Training
2011 - 2014	Sara Moassesfar, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	In Training

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Dates	Name	Fellow	Mentor Role	Faculty Role	Current Position
2012 - 2015	Priya Prahalad, M.D., Ph.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Assistant Professor, Stanford University
2012 - 2015	Joshua Tarkoff, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Clinical practice
2012 - 2015	Paula Jossan, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Clinical practice
2013 - 2014	Vanita Jindal, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Clinical practice
2013 - 2016	Nicholas Heiniger, M.D.	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Clinical practice
2013 - 2016	Stanley Vance, Jr., M.D.	Clinical Fellow, Adolescent Medicine		Research Mentor	Assistant Professor, UCSF
2014 - present	Eric Bomberg, MD	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	In Training
2015 - 2019	Janet Lee, MD, MPH	Clinical Fellow, Pediatric Endocrinology		Clinical and Research Mentor	Instructor, UCSF

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Dates	Name	Fellow	Mentor Role	Faculty Role	Current Position
2015 - 2017	Liat Perl, MD	Clinical Fellow, Pediatric Endocrinology		Clinical and Research Mentor	In Training, Israel
2016 - 2019	Ayca Cakmak, MD	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	In Training
2016 - 2019	Alyssa Huang, MD	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	Assistant Professor, University of Washington
2017 - present	Armaiti Mody, MD	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	In Training
2017 - present	Jenny Zabinsky, MD	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	In Training
2018 - present	Fatema Abdul Hussein, MD	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	In Training
2018 - present	Hannah Chesser, MD	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	In Training
2018 - present	Caroline Schulmeister, MD	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor and Research Mentor	In Training

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Dates	Name	Fellow	Mentor Role	Faculty Role	Current Position
2019 - present	Isabella Niu, MD	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor	In Training
2019 - present	Abby Cobb-Walch, MD	Clinical Fellow, Pediatric Endocrinology		Clinical Preceptor and Research Mentor	In Training

FACULTY MENTORING

Dates	Name	Position while Mentored	Mentor Type	Mentoring Role	Current Position
2010 - 2011	Clement Cheung, M.D., Ph.D.	Assistant Professor		Preceptor/ mentor for Aquaporin-2 research project and manuscript preparation	Assistant Adjunct Professor of Pediatrics, UCSF
2016 - 2017	Ensile Lee, MD	Assistant Professor, Korea		Preceptor/mentor in Child and Adolescent Gender Center	Assistant Professor, Korea
2016 - present	Stanley Vance, Jr., MD	Assistant Professor		Research Mentor	Assistant Professor, UCSF
2019 - present	Janet Lee, MD	Instructor		Research Mentor	Instructor, UCSF

RESEARCH AND CREATIVE ACTIVITIES

RESEARCH AND CREATIVE ACTIVITIES SUMMARY

My current research is focused on optimizing multidisciplinary care for transgender youth. I am currently serving as Principal Investigator (Multiple PI format) of an NIH/NICHD R01 focused on Early Medical Treatment of Transgender Youth, and as co-Investigator on two additional NIH R01's focused on transgender youth.

My prior research has included both basic science and clinical investigation. My laboratory work has focused on two aspects of hormone receptor signaling. First, we extended our work in Insulin-like Growth Factor (IGF)-I receptor signaling to studies in human neuroblastoma (NBL). Specifically, we have explored the role of IGF signaling in the growth, motility, and invasiveness of human NBL cells. In collaborative studies with UCSF investigators from Pediatric Oncology, Neurology, Internal Medicine, and Radiation Oncology, we have observed

that small molecule inhibitors of the IGF-I receptor block growth, survival, and motility of NBL cells, and inhibit NBL growth in vivo in a xenograft model in nude mice. A manuscript summarizing portions of this work has been published in the Journal of Cellular Biochemistry. This work has been supported by a grant from the Thrasher Research Fund with matching funds from the UCSF Cancer Center. I also received, as Principal Investigator, a Basic Research grant for our work regarding IGF-I signaling in neuroblastoma from the John A. Kerner, M.D. Research Foundation. Also as Principal Investigator, I have received a Basic Research grant from ImClone Systems, Inc., to examine the therapeutic potential of a humanized monoclonal anti-IGF-I receptor antibody and radiation in neuroblastoma.

In addition, we have recently identified and characterized novel activating mutations in the vasopressin V2 receptor (V2R) that cause a Syndrome of Inappropriate Antidiuretic Hormone (SIADH)-like phenotype, yet without detectable ADH. We have named this syndrome "Nephrogenic Syndrome of Inappropriate Antidiuresis" (NSIAD), and have reported our findings in New England Journal of Medicine 352:34-40, 2005 (co-first-author). I have been engaged in collaborative studies to extend our characterization of NSIAD, with three specific aims: 1) explore further the molecular mechanisms responsible for the constitutive activity of the vasopressin V2R mutants, 2) further characterize the clinical phenotype of NSIAD patients and heterozygous carriers, and 3) explore the potential role of selective vasopressin V2R "inverse agonists" as a targeted treatment for this condition. This work has been carried out in collaboration with investigators from the Departments of Psychiatry and Cellular and Molecular Pharmacology at UCSF, the Department of Biochemistry, Division of Cell Signaling and Molecular Pharmacology, at the University of Montreal, and the Department of Medicine, University of Colorado School of Medicine. A manuscript summarizing this work with respect to V2R trafficking waspublished in Molecular Pharmacology, 2010, and a manuscript summarizing this work with respect to urinary aquaporin-2 excretion in this syndrome has just been submitted for publication.

With respect to clinical investigation, I have been an investigator in studies related to Type 1 Diabetes, studies related to growth disorders, and studies related to disorders of sex development (DSD). With respect to Type 1 Diabetes, I served as co-Investigator for TrialNet, a multi-center NIH-sponsored study focused on developing therapies to prevent Type 1 Diabetes Mellitus in high risk individuals. I have been co-Investigator on the TrialNet Natural History of Type 1 Diabetes study and on five intervention studies for patients with newly diagnosed Type 1 Diabetes : 1) TrialNet Mycophenolate Mofetil-Dacluzimab (MMF-DZB), 2) TrialNet Rituximab, 3) TrialNet CTLA-4 Ig, 4) Immune Tolerance Network Phase II trial of hOKT3 gamma1 (Ala-Ala), and 5) Immune Tolerance Network trial of thymoglobulin. In addition, I have been Principal Investigator at UCSF for the TrialNet Nutritional Intervention to Prevent (NIP) Type 1 Diabetes study examining the therapeutic potential of docosahexaenoic acid, an omega-3 fatty acid, in individuals at high-risk for developing this disorder, and am co-Investigator in the TrialNet Oral Insulin Prevention Trial.

With respect to growth disorders, I have served as the UCSF-site Principal Investigator for a multi-center trial investigating the therapeutic potential of recombinant human IGF-I for prepubertal children with Growth Hormone (GH) resistance.

With respect to studies of DSD, I have served as co-Principal Investigator for a NIH/ NICHD R01 multi-center study entitled "Disorders of Sex Development: Platform for Basic and Translational Research". The focus of this project has been to develop a multi-site infrastructure to support hypothesis-based research on the mechanisms of sexual development and evidence-based care for patients with DSD and their families.

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Effective April 1, 2011, I completed my basic laboratory work, shifting my research focus exclusively to clinical research. As noted above, my current research is focused on optimizing medical care of transgender youth, with particular emphasis on mental health and skeletal health outcomes of current treatment models.

RESEARCH AWARDS - CURRENT

1. 1R01HD082554-01A1	Principal Investigator (Multiple PI format)	20 % effort	Rosenthal (PI)
NIH/ NICHD		08/01/2015	06/30/2020
The Impact of Early Medical Treatment in Transgender Youth		$ 952,542 direct/yr 1	$ 5,732,531 total
This is a multicenter study which will be the first in the U.S. to evaluate the long-term outcomes of medical treatment for transgender youth. This study will provide essential, evidence-based information on the physiological and psychosocial impact, as well as safety, of hormone blockers and cross-sex hormones use in this population.			
2.	Principal Investigator	5 % effort	Rosenthal (PI)
San Francisco Department of Public Health		07/01/2017	06/30/2022
UCSF Child and Adolescent Gender Center Transgender Youth Support Program		$ 325,000 direct/yr 1	$ 1,625,000 total
To develop outreach and provide multidisciplinary services for transgender youth in the city of San Francisco			
Overall supervisor and consultant			
3. R01MH115349	Co-Investigator	10 % effort	Hong (PI)
NIH/ NIMH		07/01/2018	06/30/2023
Sex Hormone effect on Neurodevelopment: Controlled puberty in transgender adolescents			
This will be the first study of its kind to directly investigate longitudinal brain anatomy in young adolescents with gender dysphoria (GD). The study will utilize an innovative, cross-disciplinary approach that takes advantage of sophisticated imaging modalities to elucidate the interaction between sex hormone therapies and brain anatomy and connectivity in youth. Results from this interdisciplinary proposal will directly impact clinical care for individuals with GD and provide a much-needed empirical foundation for understanding the longitudinal impact of treatments that are already being used in clinical settings.			
Co-Investigator			
4. R01HD097122	Co-Investigator	3 % effort	Ehrensaft (PI)
NIH/ NICHD		03/21/2019	02/29/2024
Gender Nonconformity in Prepubescent Children: A Longitudinal Study			

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This project is a prospective longitudinal observational study of pre-pubertal children who are gender-nonconforming and their care. It is a four-site study involving U.S.-based university affiliated pediatric gender clinics. With a targeted N of 320 subjects, the objective of the proposed research is to provide evidence-based data to inform clinical care for prepubescent transgender and gender-nonconforming children (TGNC).

Co-Investigator

RESEARCH AWARDS - PAST

1. Site Principal investigator

NIH: Clinical Associate Physician, General Clinical Research Center — 1984 — 1987

Growth Hormone Releasing Hormone in Hypopituitarism

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2. Principal investigator

Academic Senate Committee on Research, University of California San Francisco — 1987 — 1988

Insulin-like Growth Factors and Childhood Growth Disorders

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3. Principal Investigator

Grant Award, School of Medicine, Research Evaluation and Allocation Committee, University of California San Francisco — 1987 — 1988

Insulin-like Growth Factors and Childhood Growth Disorders

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4. Principal Investigator

NIH/NICHD: Clinical Investigator Award — 1988 — 1991

Insulin-like Growth Factors and Childhood Growth Disorders

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5. Principal Investigator

March of Dimes: Basil O'Connor Starter Scholar Research Award — 1989 — 1992

Insulin-like Growth Factors and Childhood Growth Disorders

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6. Principal Investigator

Academic Senate Committee on Research, University of California San Francisco — 1991 — 1992

Insulin-like Growth Factors and Skeletal Muscle Differentiation

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7.	Principal Investigator		
	March of Dimes: Basic Research Grant	1992	1994
	Insulin-like Growth Factors and Skeletal Muscle Differentiation		
8.	Principal Investigator		
	NIH/NIDDK: FIRST Award	1992	1997
	Insulin-like Growth Factors and Skeletal Muscle Differentiation		$ 350,000 total
9.	Principal Investigator		
	March of Dimes: Basic Research Grant	1995	1997
	Insulin-like Growth Factors and Skeletal Muscle Differentiation		$ 101,150 total
10.	Principal Investigator		
	March of Dimes: Basic Research Grant	1997	1999
	Insulin-like Growth Factors and Skeletal Muscle Differentiation		$ 106,396 total
11.	R01 DK44181 Principal investigator		
	NIH/NIDDK	1998	2003
	IGFs and Skeletal Muscle Differentiation		$ 659,648 total
12.	HOE 9011/4030 Co-Principal Investigator		
	Aventis	2003	2004
	Morning Lantus vs. Intermediate-Acting Insulin in Adolescents with Type1 DM		$ 58,316 total
13.	Principal Investigator		
	Pfizer: Translational Basic Research Award	2003	2004

Prepared: May 26, 2020

IGFs and Skeletal Muscle: Implications for Myotherapy $ 15,000 total

14. Co-Principal Investigator
Thrasher Research Fund 2005 2009
Targeted agents that synergize with radiation in high risk neuroblastoma $ 300,000 total

15. Principal Investigator
Tercica, Inc. 2005 2009
Recombinant Human Insulin-Like Growth Factor-I (rhIGF-I) Treatment of Short Stature Associated with Primary IGF-I Deficiency: A Multicenter, Open-Label, Randomized Concentration Controlled Trial $ 57,000 total

16. Principal Investigator
John A. Kerner, M.D. Foundation: Basic Research Award 2005 2009
Small Molecule Inhibitors of the IGF-I Receptor as a Potential Treatment for Neuroblastoma $ 41,500 total

17. 556830-26226 co-PI
NIH/NIAID 2005 2013
Thymoglobulin for treatment of new onset Type 1 Diabetes

18. Basic Research Award Principal Investigator
ImClone Systems, Inc. 2009 2011
The Therapeutic Potential of A12 Anti-IGF-IR Antibody and Radiation in Neuroblastoma $ 84,000 direct/yr 1

19. 23988-10 co-PI
NIH/NIDDK 2009 2013
UCSF TrialNet

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20. 1R01HD068138-01A1	Site Principal Investigator	5 % effort	Vilain, Sandberg (PI)
NIH/NICHD		09/26/2111	06/30/2016
Disorders of Sex Development: Platform for Basic and Translational Research		$ 639,688 direct/yr 1	$ 3,198,340 total

21.	Principal Investigator	0 (See description, below) % effort	Rosenthal (PI)
NIH/CTSI; Internal Award UCSF		06/01/2018	05/31/2019

Bone Density, Structure, and Estimated Strength in Transgender Youth Receiving Pubertal Suppression in Early Puberty

Minimal data exist on the skeletal effects of puberty suppression in early pubertal transgender youth. This longitudinal cohort study assessed bone mineral density by dual-energy x-ray absorptiometry and bone microarchitecture and strength by high-resolution peripheral quantitative computed tomography, as well as bone turnover markers, body composition, vitamin D status, weight-bearing exercise, and dietary calcium intake. These data will lead to longer-term studies and investigations of interventions to mitigate the expected lag in skeletal development during pubertal suppression. Ultimately, this research should positively contribute to the clinical care of transgender youth. This funding supported the above-noted studies carried out by postdoctoral fellow, Janet Y. Lee, MD, MPH.

Principal Investigator

PEER REVIEWED PUBLICATIONS

1. Rosenthal SM, Reid IA, Kaplan SL, Grumbach MM: Renin substrate depletion in salt-losing congenital virilizing adrenal hyperplasia: low plasma renin activity despite increased renin concentration.. J Pediatr l02:80-82, l983.
2. Rosenthal SM, Grumbach MM, Kaplan SL: Gonadotropin-independent familial sexual precocity with premature Leydig and germinal cell maturation ("familial testotoxicosis"): effects of a potent luteinizing hormone-releasing factor agonist and medroxyprogesterone acetate therapy in four cases. J Clin Endocrinol Metab 57:57l-579, l983.
3. Rosenthal SM, Schriock EA, Kaplan SL, Guillemin R, Grumbach MM: Synthetic human pancreas growth hormone-releasing factor (hpGRF 1-44-NH2) stimulates growth hormone secretion in normal men. J Clin Endocrinol Metab 57:677-679, l983.
4. Schriock EA, Lustig RH, Rosenthal SM, Kaplan SL, Grumbach MM: Effect of growth hormone (GH)-releasing hormone (GRH) on plasma GH in relation to magnitude and duration of GH deficiency in 26 children and adults with isolated GH deficiency or multiple pituitary hormone deficiencies: evidence for hypothalamic GRH deficiency. J Clin Endocrinol Metab 58:l043-l049, l984.

5. Egli CA, Rosenthal SM, Grumbach MM, Montalvo JM, Gondos B: Pituitary gonadotropin-independent male-limited autosomal dominant sexual precocity in nine generations: familial testotoxicosis. J Pediatr 106:33-40, 1985.

6. Gondos B, Egli CA, Rosenthal SM, Grumbach MM: Testicular changes in gonadotropin-independent familial male sexual precocity. Arch Pathol Lab Med 109:990-995, 1985.

7. Rosenthal SM, Hulse JA, Kaplan SL, Grumbach MM: Exogenous growth hormone inhibits growth hormone-releasing factor-induced growth hormone secretion in normal men. J Clin Invest 77:176-180, 1986.

8. Hulse JA, Rosenthal SM, Cuttler L, Kaplan SL, Grumbach MM: The effect of pulsatile administration, continuous infusion, and diurnal variation on the growth hormone (GH) response to GH-releasing hormone in normal men. J Clin Endocrinol Metab 63:872-878, 1986.

9. Rosenthal SM, Kaplan SL, Grumbach MM: Short-term continuous intravenous infusion of growth hormone (GH) inhibits GH-releasing hormone-induced GH secretion: a time-dependent effect. J Clin Endocrinol Metab 68:1101-1105, 1989.

10. Hartmann K, Papa V, Brown EJ, Rosenthal SM, Goldfine ID: A rapid and simple one-step method for isolation of Poly (A)+ RNA from cells in monolayer. Endocrinology 127:2038-2040, 1990.

11. Rabinovici J, Dandekar P, Angle M, Rosenthal SM, Martin M: Insulin-like growth factor I (IGF-I) levels in follicular fluid from human preovulatory follicles: correlation with serum IGF-I levels. Fertil Steril 54:428-433, 1990.

12. Rosenthal SM, Brunetti A, Brown EJ, Mamula PW, Goldfine ID: Regulation of insulin-like growth factor I (IGF-I) receptor expression during muscle cell differentiation: potential autocrine role of IGF-II. J Clin Invest 87:1212-1219, 1991.

13. Rosenthal SM, Silverman BL, Wehrenberg WB: Exogenous growth hormone (GH) inhibits bovine but not murine pituitary GH secretion in vitro: evidence for a direct effect of GH on the pituitary. Neuroendocrinology 53:597-600, 1991.

14. Rosenthal SM, Brown EJ, Brunetti A, Goldfine ID: Fibroblast growth factor inhibits insulin-like growth factor (IGF)-II gene expression and increases IGF-I receptor expression in BC3H-I myoblasts. Mol Endocrinol 5:678-684, 1991.

15. Papa V, Hartmann K, Rosenthal SM, Maddux BA, Siiteri PK, Goldfine ID: Progestins induce downregulation of insulin-like growth factor I receptors in human breast cancer cells: potential autocrine role of IGF-II. Mol Endocrinol 5:709-717, 1991.

16. Hartmann KKP, Baier TG, Papa V, Kronenwett M, Brown EJ, Goldfine ID, Rosenthal SM: A monoclonal anntibody to the T-cell receptor increases IGF-I receptor content in normal T-lymphocytes: Comparison with phytohemagglutinin. J Cell Biochem 48:81-85, 1992.

17. Brown EJ, Hsiao D, Rosenthal SM: Induction and peak gene expression of insulin-like growth factor II follow that of myogenin during differentiation of BC3H-1 muscle cells. Biochem Biophys Res Commun 183:1084-1089, 1992.

18. Goodman PA, Sbraccia P, Brunetti A, Wong KY, Carter JD, Rosenthal SM, Goldfine ID: Growth factor receptor regulation in the Minn-1 Leprechaun: defects in both insulin receptor and epidermal growth factor receptor gene expression. Metabolism 41:504-509, 1992.

19. Goldfine ID, Papa V, Vigneri R, Siiteri P, Rosenthal SM: Progestin regulation of insulin and insulin-like growth factor I receptors in cultured human breast cancer cells. Breast Cancer Res Treat 22:69-79, 1992.

20. Uyeki T, Barry FL, Rosenthal SM, Mathias RS: Successful treatment with hydrochlorothiazide and amiloride in an infant with congenital nephrogenic diabetes insipidus. Pediatric Nephrology 7:554-556, 1993.

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22. Rosenthal SM, Hsiao D, Silverman LA: An insulin-like growth factor (IGF)-II analog with highly selective affinity for IGF-II receptors stimulates differentiation but not IGF-I receptor down-regulation in muscle cells. Endocrinology 135:38-44, 1994.

23. Silverman LA, Cheng Z-Q, Hsiao D, Rosenthal SM: Skeletal muscle cell-derived insulin-like growth factor (IGF) binding proteins inhibit IGF-I-induced myogenesis in rat L6E9 cells. Endocrinology 136:720-726, 1995.

24. Rosenthal SM, Cheng Z-Q: Opposing early and late effects of insulin-like growth factor-I on differentiation and the cell cycle regulatory retinoblastoma protein in skeletal myoblasts. Proc Natl Acad Sci USA 92:10307-10311, 1995.

25. Burch GH, Bedolli MA, McDonough S, Rosenthal SM, Bristow J: Embryonic expression of Tenascin-X suggests a role in limb, muscle, and heart development. Dev Dyn 203:491-504, 1995.

26. Hernández-Sánchez C, Werner H, Roberts Jr CY, Woo EJ, Hum D, Rosenthal SM, LeRoith D: Differential regulation of insulin-like growth factor-I (IGF-I) receptor gene expression by IGF-I and basic fibroblast growth factor. JBiol Chem 272:4663-4670, 1997.

27. Rabinovici J, Cataldo NA, Dandekar P, Rosenthal SM, Gargosky SE, Gesundheit N, Martin MC: Adjunctive growth hormone during ovarian hyperstimulation increases levels of insulin-like growth factor binding proteins in follicular fluid: A randomized, placebo-controlled, crossover study. J Clin Endocrinol Metab 82:1171-1176, 1997.

28. Devoe DJ, Miller WL, Conte FA, Kaplan SL, Grumbach MM, Rosenthal SM, Wilson CB, Gitelman SE: Long-term outcome in children and adolescents following transsphenoidal surgery for Cushing disease. J Clin Endocrinol Metab 82:3196-3202,1997.

29. Adi S, Cheng Z-Q, Zhang P-L, Wu NY, Mellon SH, Rosenthal SM: Opposing early inhibitory and late stimulatory effects of insulin-like growth factor-I on myogenin gene transcription. J Cell Biochem 78:617-626, 2000.

30. Cheng Z-Q, Adi S, Hsiao D, Woo EJ, Filvaroff EH, Gustafson TA, Rosenthal SM: Functional inactivation of the insulin-like growth factor-I receptor delays differentiation of skeletal muscle cells. J Endocrinology 167:177-184, 2000.

31. Roll U, Turek CW, Gitelman SE, Rosenthal SM, Nolte MS, Masharani U, Ziegler A-G, Baekkeskov S: Peptide mapping and characterization of glycation patterns of the glima 38 antigen recognized by autoantibodies in Type I diabetic patients. Diabetologia 43:598-608, 2000.

32. Adi S, Wu NY, Rosenthal SM: Growth factor-stimulated phosphorylation of Akt and p70S6K is differentially inhibited by LY294002 and wortmannin. Endocrinology 142:498-501, 2001.

33. Adi S, Bin-Abbas B, Wu NY, Rosenthal SM: Early stimulation and late inhibition of Erk ½ phosphorylation by IGF-I: a potential mechanism mediating the switch in IGF-I action on skeletal muscle differentiation. Endocrinology 143:511-516, 2002.

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* Denotes co-first author

37. Huang EA, Feldman BJ, Schwartz ID, Geller DH, Rosenthal SM, Gitelman SE: Oral urea for the treatment of chronic syndromes of inappropriate antidiuresis in children. J Pediatr 148:128-131, 2006.

38. Meyer GE, Chesler L, Liu D, Youngren J, Goldfine ID, Weiss WA, Matthay KK, Rosenthal SM: Nordihydroguaiaretic acid inhibits insulin-like growth factor signaling, growth and survival in human neuroblastoma cells. J Cell Biochem 102:1529-1541, 2007.

39. Bremer AA, Feldman BJ, Clark OH, Rosenthal SM: Report of a Hurthle cell thyroid neoplasm in a peripubertal girl. Thyroid 17:175-178, 2007.

40. Bremer AA, Ranadive S, Conrad SC, Vallette-Kasic S, Rosenthal SM: Isolated adrenocorticotrophin deficiency presenting as an acute neurologic emergency in a prepubertal girl. J Ped Endocrinol Metab 21:799-803, 2008.

41. Cohen P, Rogol AD, Deal CL, Saenger P, Reiter EO, Ross JL, Chernausek SD, Savage MO, Wit JM on behalf of the 2007 ISS Consensus Workshop participants (SM Rosenthal included among named participants in this group): Consensus Guidelines for the Diagnosis and Treatment of Children with Idiopathic Short Stature: A Summary Statement of the Growth Hormone Research Society in Association with the Lawson Wilkins Pediatric Endocrine Society and the European Society for Pediatric Endocrinology. J Clin Endocrinol Metab 93:4210-4217, 2008.

42. Ranadive SA, Ersoy E, Favre H, Cheung CC, Rosenthal SM, Miller WL, Vaisse C: Identification, characterization and rescue of a novel vasopressin-2 receptor mutation causing nephrogenic diabetes insipidus. Clin Endocrinol 71:388-393, 2009.

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Prepared: May 26, 2020

REVIEW ARTICLES

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1. Gitelman SE, Feldman BJ, Rosenthal SM: Nephrogenic syndrome of inappropriate antidiuresis – Reply (Letter). N Engl J Med 355:530, 2005.

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SIGNIFICANT PUBLICATIONS

1. Feldman BJ*, Rosenthal SM*, Vargas GA, Fenwick RG, Huang EA, Matsuda-Abedini M, Lustig RH, Mathias RS, Portale AA, Miller WL, Gitelman SE: Nephrogenic syndrome of inappropriate antidiuresis. N Engl J Med 352:34-40, 2005.
   * Denotes co-first author

   I was co-first author on this publication. I recognized that a child, suspected to have a primary renal salt-losing condition, instead had a problem of disordered water balance, and oversaw an evaluation (clinical and laboratory) which ultimately led to the discovery of a novel activating mutation of the V2 vasopressin receptor (V2R) in one of the first of two patients with this previously undescribed disorder. In addition, I co-supervised the data analysis and co-wrote the manuscript.

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   I co-supervised the study design and data analysis and co-wrote the manuscript.

3. Meyer GE, Chesler L, Liu D, Youngren J, Goldfine ID, Weiss WA, Matthay KK, Rosenthal SM: M Nordihydroguaiaretic acid inhibits insulin-like growth factor signaling, growth and survival in human neuroblastoma cells. J Cell Biochem 102:1529-1541, 2007.

   I co-designed the studies, supervised the experiments in my laboratory, oversaw the data analysis, and co-wrote the manuscript.

4. Rosenthal S, Cohen P, Clayton P, Backeljauw P, Bang P, Ten S: Treatment perspectives in Idiopathic Short Stature with a focus on IGF-I deficiency (Guest Editor: Rosenfeld RG). Pediatr Endocrinol Rev Volume 4, Suppl 2: 251-271, 2007

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5. Ranadive SA, Ersoy E, Favre H, Cheung CC, Rosenthal SM, Miller WL, Vaisse C: Identification, characterization and rescue of a novel vasopressin-2 receptor mutation causing nephrogenic diabetes insipidus. Clin Endocrinol epub ahead of print: 2008, Dec. 18.

   I contributed to experimental study design and co-wrote the manuscript.

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   I proposed the collaboration and contributed to the experimental design and the writing of the manuscript.

7. Cheung CC, Cadnaphaporhornchai MA, Ranadive SA, Gitelman SE, Rosenthal SM. Persistent elevation of urine aquaporin-2 during water loading in a child with Nephrogenic Syndrome of Inappropriate Antidiuresis (NSIAD) caused by a R137L mutation in the V2 vasopressin receptor. /> Int J Pediatr Endocrinol 3:1-6, 2012

   I proposed the study, co-designed the experiments, oversaw the data analysis, and co-wrote the manuscript.

CONFERENCE ABSTRACTS

1. Note: The following are abstracts from the year 2000 onward:

   Wu,NY, Adi S**,** Rosenthal SM: The proliferative and differentiation responses to IGF-I in skeletal myoblasts are influenced by cell density. The Endocrine Society, 2000.

2. Adi S, Wu NY, Rosenthal SM: Early stimulation and late inhibition of Erk1/2 phosphorylation mediate, at least in part, the time-dependent opposing effects of IGF-I on myogenin gene expression. The Endocrine Society, 2001.

3. Adi S, Wu NY, Rosenthal SM: The Role of the MAPK(Erk1/2) Pathway in mediating the switch in IGF-I action from inhibition to stimulation of myogenic differentiation. Sixth Joint Meeting of the European Society for Pediatric Endocrinology and the Lawson Wilkins Pediatric Endocrine Society, Montreal, Canada. 2001.

4. Tiffin N, Rosenthal SM: Upregulation of serum response factor expression by IGF-I is mediated by Erk1/2 phosphorylation in skeletal myoblasts. The Endocrine Society, 2002.

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6. Meyer GE, Gable K, Liu D, Youngren J, Goldfine ID, Rosenthal SM: Small molecule inhibitors of the insulin-like growth factor I receptor block neuroblastome growth, survival, and motility. The Endocrine Society, 2004.

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IN THE UNITED STATES DISTRICT COURT
MIDDLE DISTRICT OF ALABAMA
NORTHERN DIVISION

REV. PAUL A. EKNES-TUCKER; BRIANNA BOE, individually and on behalf of her minor son, MICHAEL BOE; JAMES ZOE, individually and on behalf of his minor son, ZACHARY ZOE; MEGAN POE, individually and on behalf of her minor daughter, ALLISON POE; KATHY NOE, individually and on behalf of her minor son, CHRISTOPHER NOE; JANE MOE, Ph.D.; and RACHEL KOE, M.D.

Plaintiffs,

v.

KAY IVEY, in her official capacity as Governor of the State of Alabama; STEVE MARSHALL, in his official capacity as Attorney General of the State of Alabama; DARYL D. BAILEY, in his official capacity as District Attorney for Montgomery County;; C. WILSON BAYLOCK, in his official capacity as District Attorney for Cullman County; JESSICA VENTIERE, in her official capacity as District Attorney for Lee County TOM ANDERSON, in his official capacity as

Civil Action No. _____

DECLARATION OF JAMES ZOE IN SUPPORT OF PLAINTIFFS' MOTION FOR TEMPORARY RESTRAINING ORDER AND PRELIMINARY INJUNCTION

District Attorney for Coffee County; and DANNY CARR, in his official capacity as District Attorney for Jefferson County.

Defendants.

I, James Zoe,[1] hereby declares as follows:

1. I am a citizen of Alabama and reside with my wife and our son in Jefferson County, Alabama.

2. My son, Zachary Zoe, is a thirteen-year-old transgender boy and is another plaintiff in this action. He is in the seventh grade, a bright boy with a close group of friends, and is interested in video games and art. He hopes to become a mental health professional one day.

3. I was born and raised in Alabama, attended the University of Alabama at Birmingham, and have been living in Birmingham my entire life. My wife resided in Alabama from 2009 to 2011, and she returned in 2018. We met that year and married in 2020. Alabama is our family's home and we want to stay here.

[1] Because of concerns about criminal liability and my child's privacy and safety, I am seeking to proceed in this case under a pseudonym. *See* Motion to Proceed Pseudonymously, filed contemporaneously herewith. In addition, contemporaneous with signing this declaration, I have signed with my legal name a separate copy of this declaration. My attorneys have a copy of that separate declaration.

4. When my wife and I married, my wife became Zachary's stepmother, and she has been his champion ever since they met. We share custody and co-parent with Zachary's biological mother and stepfather who also live in Alabama. They fully support the decision to fight for Zachary in court.

5. Zachary was born in Alabama and, like me, has lived in this state for his entire life. Zachary resides half-time with me and my wife in Jefferson County, and half-time with his biological mother and stepfather in St. Clair County. Alabama is Zachary's home and he too, plans to continue residing here.

6. Zachary was assigned female at birth. As a younger child, Zachary was shy and reserved. Around the age of 8, Zachary began to dislike wearing dresses and bright clothing, especially if the clothing was pink. Over time, Zachary started to prefer dressing in masculine attire more and more strongly. He became distressed if people identified him as a girl.

7. Around a year later when Zachary was 9 years old, he started female puberty. Zachary was distressed that he was developing breasts and had to confront menstrual cycles. This caused him to become withdrawn. Around the age of 10, Zachary became uncomfortable wearing any kind of clothing that revealed his body. For example, he started to wear boys' athletic shorts and t-shirts instead of girls' bathing suits when going to swim. As his parents, we did not initially understand why he was withdrawn or why he was so uncomfortable with his body.

8. When Zachary was 11 years old, he began referring to himself using "he" and "him" pronouns. In response, some of his friends mirrored his use of male pronouns. Identifying with male pronouns brought Zachary a greater sense of self-awareness, self-acceptance, allowing him to feel more at ease and happy. It was also when Zachary was 11 years old that he formally told me, my wife, his biological mother, and his stepfather that he is a transgender boy. He declared to us that he did not want to be identified as female. He told us that he uses he/him pronouns and wants us to call him by his chosen name. We all love our Zachary and were supportive of him.

9. Zachary's social transition has been very positive for him. He uses a chest binder and appears and dresses like other boys his age. His friends and his teachers refer to him using "he" and "him" pronouns. It is important to his mental health and well-being that others around him see him as the boy he is. After he came out, Zachary has blossomed into a happier and more outgoing child.

10. In October 2021, after completing appropriate mental health evaluations, Zachary began taking puberty-blocking medication, prescribed by his pediatrician with the support of both sets of parents. He just recently had an appointment to start the assessment process for hormone therapy at the Children's Hospital of Alabama at Birmingham.

11. Continued access to puberty-blockers is essential to maintain Zachary's current state of mental health. It is also critical that he continues on a steady path of receiving future treatments that are age-appropriate and medically necessary to address gender dysphoria. This law has caused my family enormous anxiety. If it goes into effect, we will be forced to choose between harming our son by denying him medically necessary care or facing criminal prosecution. I know the rates of suicide that run through the transgender population due to discrimination and harassment, and I am terrified that this law will exacerbate my son's anxiety and push him into self-harm.

12. None of the decisions surrounding Zachary's medical care have been easy. But the one decision that has not been difficult is to listen and talk to Zachary and engage in regular conversations with medical professionals to determine what course of treatment would be appropriately tailored for my son.

13. I am concerned for Zachary's mental health and well-being if his gender-affirming treatments are disrupted, suspended, or discontinued. No parent should have to watch their child experience severe, unnecessary distress, and this law will do just that because its enforcement and implementation will cause Zachary to develop irreversible physical traits that are inconsistent with his male identity. I am concerned that being forced to undergo this harmful experience will have a

lasting negative effect on Zachary's future and irreparably jeopardize his chance to lead a healthy, happy life as an adult.

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

Executed this 19th day of April, 2022 in Jefferson County, Alabama.

James Zoe

IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF ALABAMA
NORTHERN DIVISION

REV. PAUL A. EKNES-TUCKER, et al.,

Plaintiffs,

and

UNITED STATES OF AMERICA,

Plaintiff-Intervenor,

v.

KAY IVEY, in her official capacity as Governor of Alabama, et al.

Defendants.

Case No. 2:22-cv-184-LCB-SRW

EXPERT DECLARATION OF ARMAND H. ANTOMMARIA, MD, PhD, FAAP, HEC-C

1. Counsel for the United States have retained me as an expert in connection with the above-captioned litigation.

2. 2022 Alabama Senate Bill 184 (SB 184) singles out for anomalous treatment certain medical interventions when these interventions are used for the purpose of gender transition, which I will refer to as gender-affirming medical care, criminalizing healthcare professionals who provide minors gender-affirming medical care or who refer minors for such care.

3. The legislative findings in SB 184 do not provide a sound medical or ethical basis for criminalizing the provision of gender-affirming medical care to minors with gender dysphoria nor could they because a sound medical or ethical basis for criminalizing such care does not exist.

4. I have actual knowledge of the matters stated in this declaration. In preparing this declaration, I reviewed the materials listed in the attached Bibliography (Exhibit A), as well as SB 184. I may rely on those documents as additional support for my opinions. I have also relied on my years of research and relevant experience, as set out in my curriculum vitae (Exhibit B), and on the materials listed therein. The materials I have relied upon in preparing this declaration are the same types of materials that experts in medicine and bioethics regularly rely upon when forming opinions on the subject. I may wish to supplement these opinions or the bases for them as a result of new scientific research or publications, or in response to statements and issues that may arise in my area of expertise.

BACKGROUND AND QUALIFICATIONS

5. I hold the following positions at Cincinnati Children's Hospital Medical Center: Director of the Ethics Center, Lee Ault Carter Chair of Pediatric Ethics, and Attending Physician in the Division of Hospital Medicine. I am also a

Professor in the Departments of Pediatrics and Surgery at the University of Cincinnati College of Medicine.

6. In 2000, I received both my medical degree from Washington University School of Medicine in St. Louis, Missouri and my PhD in Religious Ethics from The University of Chicago Divinity School. I completed my Pediatrics residency at the University of Utah in 2003.

7. I have been licensed to practice medicine since 2001 and am currently licensed to practice medicine in Ohio. I have been Board Certified in General Pediatrics since 2004 and in Pediatric Hospital Medicine since the inception of this certification in 2019. I have been certified as a Healthcare Ethics Consultant since the inception of this certification in 2019.

8. I have extensive experience as a practicing pediatrician. I have been in clinical practice since 2003 and approximately 30 percent of my current work is dedicated to caring for hospitalized patients.

9. I also have extensive experience as a bioethicist. Bioethicists examine the ethical issues that arise in medicine and the life sciences. I was Chair of the Ethics Committee at Primary Children's Medical Center in Salt Lake City, Utah from 2005 to 2012 and have been Director of the Ethics Center at Cincinnati Children's Hospital Medical Center since 2012. I consult on patients in the Transgender Health Clinic at Cincinnati Children's Hospital Medical Center whose

care presents unique ethical issues and participate in the Clinic's monthly multidisciplinary team meetings. I remain current with the medical and bioethics literature regarding the treatment of minors with gender dysphoria. I am also part of Cincinnati Children's Hospital Medical Center team that cares for patients born with intersex traits, also known as differences or disorders of sex development (DSD). I am also the Chair of Cincinnati Children's Hospital Medical Center Fetal Care Center's Oversight Committee, which provides the Center with recommendations regarding innovation and research.

10. I am a member of the American Academy of Pediatrics (AAP), the American Society for Bioethics and Humanities (ASBH), the Association of Bioethics Program Directors, and the Society for Pediatric Research. I was a member of the AAP's Committee on Bioethics from 2005 to 2011. I served as a member of the ASBH's Clinical Ethics Consultation Affairs Committee from 2009 to 2014 and currently serve on its Healthcare Ethics Consultant Certification Commission.

11. I am the author of 38 peer-reviewed journal articles, 11 non-peer-reviewed journal articles, 6 book chapters, and 26 commentaries. My peer-reviewed journal articles have been published in high-impact journals, including the *Journal of the American Medical Association* and *Annals of Internal Medicine.* I am also an

author of 17 policy statements and technical reports, including 4 as lead author, by the AAP.

12. I am a member of the Executive Editorial Board and the Associate Editor for Ethics Rounds of *Pediatrics*. *Peditrics* is the AAP's flagship journal and Ethics Rounds is a type of article in which commentators analyze cases that raise ethical issues. I am an active peer reviewer for many medical journals, including the *American Journal of Bioethics* and the *Journal of Pediatrics*. I also review abstracts for meetings of professional organizations, including the Pediatric Academic Societies and ABSH. I was previously a member of the editorial boards of the *Journal of Clinical Ethics* and the *Journal of Medical Humanities.*

13. I have prepared declarations as an expert witness in the following cases involving the provision of gender-affirming medical care to adolescents with gender dysphoria: *Brant v. Rutledge*, Case No. 4:21CV450-JM (E.D. Ark.), *Doe v. Abbott*, No. D-1-GN-22-000977, 2022 WL 628912 (Tex. Dist. 353rd Judicial District, March 2, 2022), and *Walker v. Marshall*, No. 2:22-cv-167-ECM-SMD (M.D. Ala.). In *Doe v. Abbott*, I testified in court as an expert witness. I am being compensated at an hourly rate of $250 per hour for preparation of expert declarations and reports, and $400 per hour for time spent preparing for or giving deposition or trial testimony. My compensation does not depend on the outcome of this litigation, the opinions I express, or the testimony I provide.

GENDER-AFFIRMING MEDICAL CARE IS CLINICAL CARE

14. The SB 184 legislative findings claim that the use of gonadotrophin releasing hormone (GnRH) agonists, colloquially known as puberty blockers, to treat gender dysphoria[1] are experimental and not approved by the U.S. Food and Drug Administration (FDA). These claims are inaccurate and irrelevant, respectively.

15. Clinical practice and research are distinguished by their goals and methods. The goal of clinical practice is to benefit individual patients, and its method is individualized decision-making. The goal of research is to contribute to generalizable knowledge, and its method uses formal protocols that describe the research study's objectives and procedures. *See* National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. *The Belmont Report: Ethical Principles and Guidelines for the Protection of Human Subjects of Research.* The Commission; 1978.

16. The clinical use of puberty blockers to treat gender dysphoria is not research or experimentation. The same is true for gender-affirming hormone treatment and mastectomies on transgender males (individuals assigned female at birth who identify as male) referred to at chest surgery. When administering these

[1] Gender dysphoria is "a marked incongruence between one's experienced/expressed gender and their assigned gender" which is "associated with clinically significant distress or impairment in social, occupational, or other important areas of functioning." American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders.* 5th ed. American Psychiatric Publishing; 2013.

treatments, clinicians seek to benefit individual patients and adjust the treatment based on individual patients' responses.

17. To the extent the legislative findings use the term "experimental" to convey an absence of evidence for gender affirming medical care, that suggestion is baseless. Gender affirming medical care is supported by clinical studies, evidence comparable to many other treatments in pediatrics, as detailed below.

18. SB 184 not only criminalizes gender-affirming medical care as clinical care, but also criminalizes the provision of these interventions as research. Such research is necessary, as it is in every area of medicine, to continue to advance treatment.

19. The suggestion that because puberty blockers and gender-affirming hormone treatment are not approved by the FDA for the treatment of gender dysphoria they are therefore experimental or unsafe is misleading. Off-label use of FDA-approved medications is legal, common, and often evidence-based.

20. FDA approval is not required for all uses of a medication. Once the FDA has approved a medication for one indication,[2] thereby agreeing that it is safe

[2] According to the FDA, an indication includes a number of factors: the particular disease or condition or the manifestion or symptoms of the disease or condition for which the drug is approved; whether the drug is approved for treatment, prevention, mitigation, cure, or diagnosis; and the population, including age group, for which the drug is safe and effective. Center for Drug Evaluation and Research and Center for Biologics Evaluation and Research, Food and Drug Administation,

(*i.e.*, its benefits outweigh its potential risks) and effective for this intended use, as is the case with the medications at issue here, prescribers are generally free to prescribe it for other indications. U.S. Food & Drug Administration. Understanding unapproved use of approved drugs "off label." February 5, 2018. Accessed March 23, 2022. https://www.fda.gov/patients/learn-about-expanded-access-and-other-treatment-options/understanding-unapproved-use-approved-drugs-label. The American Academy of Pediatrics (AAP) Committee on Drugs states, "[i]t is important to note that the term 'off-label' does not imply an improper, illegal, contraindicated, or investigational use" and "[t]he administration of an approved drug for a use that is not approved by the FDA is not considered research and does not warrant special consent or review if it is deemed to be in the individual patient's best interest."

21. The AAP Committee on Drugs further states "in no way does a lack of labeling signify that therapy is unsupported by clinical experience or data in children." Frattarelli DA, Galinkin JL, Green TP, et al. Off-label use of drugs in

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U.S. Department of Health and Human Services. Inidcations and Usage Section of Labeling for Human Prescription Drug and Biological Products—Content and Format: Guidance for Industry. July 2018. Accessed April 29, 2022. Available at https://www.fda.gov/files/drugs/published/Indications-and-Usage-Section-of-Labeling-for-Human-Prescription-Drug-and-Biological-Products-%E2%80%94-Content-and-Format-Guidance-for-Industry.pdf. A medication approved for the treatment of asthma in adults whould, for example, be prescribed off label if used to treat a different disease, like pneumonia, or a different age group, like children.

children. *Pediatrics*. 2014;133(3):563-567. Among the reasons for this is that, even if there is substantial evidence of safety and efficacy for a new indication, a sponsor may not seek FDA approval for it because doing so is not economically beneficial. Wittich CM, Burkle CM, Lanier WL. Ten common questions (and their answers) about off-label drug use. *Mayo Clin Proc*. 2012;87(10):982-990.

22. "Off-label" use of drugs is common in many areas of medicine, including pediatrics. For example, nafcillin, an antibiotic commonly used to treat children with invasive staphylococcal infections, such as lung or joint infections, lacks FDA approval in individuals under 18 years of age. *See* Nafcillin Injection, USP. February 2007. Accessed April 5, 2022. Available at https://www.accessdata.fda.gov/drugsatfda_docs/label/2008/050655s017lbl.pdf. A recent study of children's hospitals found that in 28.1% of encounters, at least one off-label drug was prescribed. *See* Yackey K, Stukus K, Cohen D, Kline D, Zhao S, Stanley R. Off-label medication prescribing patterns in pediatrics: An update. *Hosp Pediatr*. 2019;9(3):186-193. Examples of medications used off-label in this study included: albuterol, which is used to treat asthma; morphine, which is used to treat pain; and lansoprazole (Prevacid®), which is used to treat gastrointestinal reflux. The rate of off-label use may be significantly higher in certain age groups, categories of drugs, and clinical settings.

THE SAFETY AND EFFICACY OF GENDER-AFFIRMING MEDICAL CARE IS SUPPORTED BY EVIDENCE

23. The SB 184 legislative findings also incorrectly characterize gender-affirming medical treatment as new, unproven, and poorly studied. Gender-affirming medical care is not new. Hormone treatment for gender dysphoria began soon after estrogen and testosterone became commercially available in the 1930's. Stryker S. *Transgender History*. 2nd ed. Seal Press; 2017. The use of puberty blockers to treat gender dysphoria in adolescents, while more recent, is not new. The first reference to this treatment in the medical literature was in 1998, over twenty years ago. Cohen-Kettenis PT, van Goozen SH. Pubertal delay as an aid in diagnosis and treatment of a transsexual adolescent. *Eur Child Adolesc Psychiatry*. 1998;7(4):246-248. Prospective observational trials of puberty blockers began recruiting participants in 2000. de Vries AL, Steensma TD, Doreleijers TA, Cohen-Kettenis PT. Puberty suppression in adolescents with gender identity disorder: A prospective follow-up study. *J Sex Med*. 2011;8(8):2276-2283

24. Gender-affirming medical care of adolescents with gender dysphoria is also neither poorly studied nor unproven. The major categories of studies used to evaluate innovative treatments are observational studies, which include cross-sectional and longitudinal studies, and randomized trials. In cross-sectional studies, investigators collect data at a single point in time. Cross-sectional design permits investigators to examine potential associations between factors, but it cannot prove

one factor caused the other. In longitudinal studies, researchers follow individuals over time, making continuous or repeated measures. In a randomized trial, participants are randomly assigned to a treatment or a comparison group. Neither the investigators nor the participants know to which group the participant is assigned. The major benefit of a randomized trial is that it decreases the likelihood that any differences in the outcomes between the groups is the result of baseline differences between the groups rather than the result of the intervention. Guyatt G, Rennie D, Meade MO, et al., eds. *Users' Guide to the Medical Literature: A Manual for Evidence-Based Clinical Practice*. 3rd ed. McGraw Hill Education; 2015; Perry-Parrish C, Dodge R. Research and statistics: Validity hierarchy for study design and study type. *Pediatr Rev*. 2010;31(1):27-29.

25. While randomized controlled trials are described in the medical literature as "high quality" evidence and observational studies as "low quality" evidence, randomized controlled trials may not be feasible or ethical, may have intrinsic methodological limitations, or may be unavailable in some contexts. "Low quality" evidence can be sufficient to justify treatment recommendations. *See* Swiglo BA, Murad MH, Schunemann HJ, et al. A case for clarity, consistency, and helpfulness: State-of-the-art clinical practice guidelines in endocrinology using the Grading of Recommendations, Assessment, Development, and Evaluation System. *J Clin Endocrinol Metab*. 2008;93(3):666-673. For example, the Endocrine Society

recommends that "clinicians prescribe and support the reduction of inactivity and also a minimum of 20 minutes of moderate to vigorous physical activity daily, with a goal of 60 minutes, all in the context of a calorie-controlled diet" to treat obesity. This recommendation is based on "low quality" evidence. Styne DM, Arslanian SA, Connor EL, et al. Pediatric obesity-assessment, treatment, and prevention: An Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab*. 2017;102(3):709-757.

26. It may, at times, be unethical to conduct randomized trials. For randomized trials to be ethical, clinical equipoise must exist; that is, there must be uncertainty about whether the efficacy of the intervention or the control is greater. It would be unethical to knowingly expose some trial participants to an inferior intervention. Trials must also be feasible. It would be unethical to expose individuals to the risks of trial participation without the benefit of the trial generating generalizable knowledge. A randomized trial that is unlikely to find enough people to participate because they believe they might be randomized to an inferior intervention would be unethical because it could not generate generalizable knowledge due to an inadequate sample size. *See* Emanuel EJ, Wendler D, Grady C. What makes clinical research ethical? *JAMA*. 2000;283(20):2701-2711.

27. The use of puberty blockers to treat gender dysphoria is supported by prospective observational trials including: Delemarre-van de Waal HA, Cohen-

Kettenis PT. Clinical management of gender identity disorder in adolescents: A protocol on psychological and pediatric endocrinology aspects. *Eur J Endocrinol.* 2006;155(suppl 1):S131–S137; de Vries AL, Steensma TD, Doreleijers TA, Cohen-Kettenis PT. Puberty suppression in adolescents with gender identity disorder: A prospective follow-up study. *J Sex Med*. 2011;8(8):2276-2283; and de Vries AL, McGuire JK, Steensma TD, Wagenaar EC, Doreleijers TA, Cohen-Kettenis PT. Young adult psychological outcome after puberty suppression and gender reassignment. *Pediatrics*. 2014;134(4):696-704.

28. Gender-affirming hormone therapy to treat gender dysphoria is also supported by prospective observational trails. These trials include de Vries AL, McGuire JK, Steensma TD, Wagenaar EC, Doreleijers TA, Cohen-Kettenis PT. Young adult psychological outcome after puberty suppression and gender reassignment. Pediatrics. 2014;134(4):696-704.

29. There are also ongoing federally funded prospective observational trials of gender-affirming healthcare for adolescents with gender dysphoria in the U.S., trials that SB 184 would criminalize in Alabama. *See* National Institutes of Health RePORTER, The impact of early medical treatment in transgender youth. Accessed January 21, 2022. https://reporter.nih.gov/search/lGJnh68uokiic97N2X00kA/project-details/8965408; Olson-Kennedy J, Chan YM, Garofalo R, et al. Impact of early

medical treatment for transgender youth: Protocol for the longitudinal, observational trans youth care study. *JMIR Res Protoc*. 2019;8(7):e14434.

30. Under the applicable ethical standards, randomized, placebo-controlled trials (trials that compare pharmacological treatment to no pharmacological treatment) in gender dysphoria are currently unethical. Potential investigators do not have equipoise between pharmacological treatment and no pharmacological treatment; they believe that pharmacological treatment is superior. It is also highly unlikely that enough participants would enroll in randomized controlled trials for them to be informative. *See* Chew D, Anderson J, Williams K, May T, Pang K. Hormonal treatment in young people with gender dysphoria: A systematic review. *Pediatrics*. 2018;141(4):e20173742; Reisner SL, Deutsch MB, Bhasin S, et al. Advancing methods for US transgender health research. *Curr Opin Endocrinol Diabetes Obes*. 2016;23(2):198-207.

31. Even if randomized, placebo-controlled trials of gender-affirming health care were ethical, they would provide a lower quality of evidence because of intrinsic limitations in their design. For example, it would be impossible to "blind" the investigators or the participants to whether the participants were receiving the active treatment or a placebo. They would know if they were in the intervention or control arm of the study due to the physical changes in their bodies, or the lack thereof, over time. This might bias their perception of the outcomes. Atkins D, Best

D, Briss PA, et al. Grading quality of evidence and strength of recommendations. *BMJ*. 2004;328(7454):1490.

32. In the field of pediatrics, parents and their children often must make decisions about medical care without the benefit of randomized trials. Clinical research focusing on children is less likely to use randomized trials than is clinical research for adults. Reasons for this disparity include the low prevalence of childhood disease or conditions, small market share for therapeutic agents in children, low level of National Institutes of Health funding, and difficulty enrolling children in research. *See* Martinez-Castaldi C, Silverstein M, Baucher H. Child versus adult research: The gap in high-quality study design. *Pediatrics*. 2008;122(1):52-57.

33. One directly relevant example of a widely accepted treatment based on prospective observational trials is the use of puberty blockers to treat central precocious puberty. Central precocious puberty is the premature initiation of puberty, before age 8 in people assigned female at birth and before age 9 in people assigned male, by the central nervous system. Its negative effects include impairment of final adult height as well as antisocial behavior and lower academic achievement. There are no randomized trials evaluating the adult height of treated and untreated individuals. Most studies are observational and compare pretreatment predicted and actual final height. These studies have additional limitations including

small sample sizes. This "low quality" evidence is nonetheless sufficiently strong to support the use of GnRH agonists as the standard of care for treatment of central precocious puberty. *See* Mul D, Hughes IA. The use of GnRH agonists in precocious puberty. *Eur J Endocrinol*. 2008;159(Suppl 1):S3-8.

34. Professional medical organizations develop evidence-based clinical practice guidelines to provide clinicians with helpful, evidence-based recommendations and improve patient care and outcomes. Organizations develop guidelines using systematic processes to select and review scientific evidence. Guidelines typically rate the quality of the evidence and grade the strength of recommendations. American Academy of Pediatrics Steering Committee on Quality Improvement and Management. Classifying recommendations for clinical practice guidelines. *Pediatrics*. 2004;114(3):874-877; Atkins D, Best D, Briss PA, et al. Grading quality of evidence and strength of recommendations, *BMJ*. 2004;328(7454):1490.

35. The Endocrine Society, an international medical organization of over 18,000 endocrinology researchers and clinicians, has published a clinical practice guideline for the treatment of gender-dysphoric (GD)/gender-incongruent persons, which may include pubertal suppression, gender-affirming hormone therapy, and gender-affirming surgery. The guideline both rates the quality of the supporting evidence and grades the strength of its recommendations. It recommends both the

use of puberty blockers and gender-affirming hormone therapy to treat gender dysphoria in adolescents based on the best available evidence. The guideline recommends delaying gender-affirming genital surgery that removes the testicles, ovaries, and/or uterus until adulthood. *See* Hembree WC, Cohen-Kettenis PT, Gooren L, et al. Endocrine treatment of gender-dysphoric/gender-incongruent persons: An Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab*. 2017;102(11):3869-3903; *see also* World Professional Organization for Transgender Health. *Standards of Care for the Health of Transsexual, Transgender, and Gender-Nonconforming People*, Version 7. World Professional Association for Transgender Health (WPATH); 2012.

36. Recommendations for pediatric care made by professional associations in guidelines are seldom based on well-designed and conducted randomized controlled trials due to their rarity and are frequently based on observational studies or, if such studies are unavailable, expert opinion. The medical use of the term "expert opinion" in this context differs from what I understand to be the use of this term in legal contexts. It refers to the consensus of experts in the field when studies are not available.

37. For example, none of the Endocrine Society's 84 recommendations in two of its other guidelines that focus on the pediatric population—guidelines on pediatric obesity and congenital adrenal hyperplasia—is based on "high quality"

evidence. Twenty-four (29%) of the recommendations are based on "moderate," and 49 (58%) on "low" or "very low quality" evidence. The remaining recommendations (11, 13%) are Ungraded Good Practice Statements. Table 1 (Exhibit C). See Speiser PW, Arlt W, Auchus RJ, et al. Congenital adrenal hyperplasia due to steroid 21-hydroxylase deficiency: An Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab*. 2018;103(11):4043-88; Styne DM, Arslanian SA, Connor EL, et al. Pediatric obesity-assessment, treatment, and prevention: An Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab*. 2017;102(3):709-757.

38. Guidelines issued by other professional associations concerning pediatric medical care are similar. For example, of the 130 recommendations in the American Heart Association's guideline for Pediatric Basic and Advanced Life Support, only 1 (1%) is based on "high-quality evidence from more than 1 [randomized clinical trial]" and 3 (3%) on "moderate-quality evidence from 1 or more [randomized clinical trials]." The remainder of the recommendations were based on lower quality evidence. Topjian AA, Raymond TT, Atkins D, et al. Part 4: Pediatric basic and advanced life support: 2020 American Heart Association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care. *Circulation*. 2020;142(16_suppl_2):S469-S523. As reflected in medical professional associations' guidelines, medical treatment in pediatrics is infrequently

based on "high" quality evidence and commonly based on lower quality evidence, including observational studies.

PARENTS AND LEGAL GUARDIANS ARE CAPABLE OF PROVIDING INFORMED CONSENT FOR GENDER-AFFIRMING MEDICAL CARE

39. SB 184 also incorrectly asserts that minors and their parents are unable to comprehend and fully appreciate the risks and life implications of gender-affirming health care.

40. First and foremost, parents or legal guardians generally must provide informed consent for medical treatment for minors, including gender-affirming medical care. There is no evidence cited in support of the assertion that parents of adolescents with gender dysphoria are unable to comprehend and fully appreciate the implications of gender-affirming medical care. Parents or legal guardians are frequently asked to consent to medical treatments for minors with comparable risks, uncertainty, or levels of evidence. Limitations in adults' ability to predict what will contribute to satisfaction in the future, called affective forecasting, is not unique to decisions regarding gender-affirming medical care. And there are approaches healthcare providers use to improve affective forecasting. Wilson TD, Gilbert DT. Affective forecasting: Knowing what to want. *Curr Dir Psychol Sci.* 2005;14(3):131-134; Halpern J, Arnold RM. Affective forecasting: An unrecognized challenge in making serious health decisions. *J Gen Intern Med*. 2008;23(10):1708-1712.

41. Adolescents generally possess comparable medical decision-making capacity to adults. Louis A. Weithorn and Susan B. Campbell, for example, found that 14-year-olds performed similarly to adults with respect to their ability to understand and reason about treatment information. Weithorn LA, Campbell SB. The competency of children and adolescents to make informed treatment decisions. *Child Dev*. 1982;53(6):1589-1598. There is evidence that most adolescents with gender dysphoria have sufficient medical decision-making capacity to make decisions regarding puberty blockers. Vrouenraets L, de Vries ALC, de Vries MC, van der Miesen AIR, Hein IM. Assessing medical decision-making competence in transgender youth. *Pediatrics*. 2021;148(6): e2020049643. Similar to the aforementioned approaches to improve adult's affective forecasting, there are steps that healthcare providers take to promote adolescents' decision-making capacity. Katz AL, Webb SA, Committee on Bioethics. Informed consent in decision-making in pediatric practice. *Pediatrics*. 2016;138(2):e20161485.

42. The current standard of care for treating gender dysphoria in minors is consistent with general ethical principles instantiated in the practices of informed consent and shared decision-making. The Endocrine Society clinical practice guideline extensively discusses the potential benefits, risks, and alternatives to gender-affirming medical care, and its recommendations regarding the timing of interventions are based in part on the treatment's potential risks and the adolescent's

decision-making capacity. The guideline recommends that informed consent for pubertal blockers and gender-affirming hormones include a discussion of the implications for fertility and options for fertility preservation. The Endocrine Society clinical guideline also advises delaying gender-affirming hormone treatment, which results in partly irreversible physical changes until an adolescent has has developed sufficient medical decision-making capacity. The guideline states clinicians should individualize decision-making for breast or chest surgery in transgender males and that chest surgery may be considered in individuals under 18 years old. *See* Hembree WC, Cohen-Kettenis PT, Gooren L, et al. Endocrine treatment of gender-dysphoric/gender-incongruent persons: An Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab*. 2017;102(11):3869-3903.

SB 184 SINGLES OUT GENDER-AFFIRMING MEDICAL CARE FOR ANOMALOUS TREATMENT

43. SB 184's legislative findings do not provide a sufficient basis for criminalizing and singling out for anamolous treatment the provision of gender-affirming healthcare to adolescents with gender dysphoria. For example, as previously mentioned, SB 184 permits the use of puberty blockers to treat central precocious puberty, but criminalizes the use of puberty blockers to treat gender dysphoria, even though using puberty blockers in connection with both conditions has comparable risks and is supported by comparable types of evidence.

44. Additionally, while SB 184 would prohibit chest surgery on transgender males, minors are permitted to undergo many comparable surgeries, such as those for gynecomastia, pectus excavatum or carinatum, and breast reconstruction. Gynecomastia is the proliferation of ductal or glandular breast tissue, as opposed to adipose tissue or fat, in individuals whose sex assigned at birth is male. Pectus excavatum and carinatum are chest wall anomalies in which the sternum is depressed or protrudes, respectively. While surgeries to treat these conditions, as well as breast reduction and augmentation for individuals whose sex assigned at birth and gender identity are female, may at times be performed to lessen physical symptoms, such as pain or exercise intolerance, they are commonly performed to reduce psychosocial distress. Gynecomastia and breast augmentation surgery affirm patients' gender identity, that is, to respectively help someone assigned male at birth feel more typically masculine and someone assigned female at birth feel more typically feminine. Risks of these procedures include bleeding, infection, scarring and poor cosmetic outcome, loss of sensation, and impaired breast/chest feeding. Some surgeries have unique risks such as catastrophic perforations of the heart or lungs in some forms of pectus repair, or capsule formation around a breast implant causing hardening and pain. *See* Buziashvili D, Gopman JM, Weissler H, et al. An evidence-based approach to management of pectus excavatum and carinatum. *Ann Plast Surg.* 2019;82(3):352-358; Nordt CA,

DiVasta AD. Gynecomastia in adolescents. *Curr Opin Pediatr*. 2008;20(4):375-382; Zuckerman D, Abraham A. Teenagers and cosmetic surgery: Focus on breast augmentation and liposuction. *J Adolesc Health*. 2008;43(4):318-324.

45. As these examples of chest surgeries in adolescents illustrate, surgeries for minors can require weighing short- and long-term effects, benefits, and risks in the face of uncertainty. Individual needs shape these evaluations and, therefore, the adolescents' participation is essential. There is nothing unique about chest surgery for gender dysphoria that justifies singling out this and other medical treatments for gender dysphoria for a criminal prohibition based on a concern for adolescents' inability to assent or parents or guardians' inability to consent. As with other medical decisions for adolescents, medical decisions regarding treatment for gender dysphoria should continue to be left to the discretion of transgender adolescents, their parents or guardians, and their healthcare providers.

46. Ironically, while SB 184 criminalizes gender-affirming medical care for youth with gender dysphoria in the name of protecting vulnerable children, the statute expressly allows doctors to perform irreversible surgeries on infants and children with intersex conditions or differences or disorders of sex development (DSD) at ages when they are unable to meaningfully participate in medical decision making. Such surgeries are highly controversial when performed at such an early age and can result in life-long complications and side effects. *See* Frader J, Alderson

P, Asch A, et al. Health care professionals and intersex conditions, *Arch Pediatr Adolesc Med*. 2004;158(5):426-428.

CONCLUSIONS

47. The Endocrine Society's recommendations for treating adolescents with gender dysphoria with pubertal suppression, gender-affirming hormones, and chest surgery are well within the range of other decisions that adolescents and their parents or guardians in Alabama have the discretion to make. Based on my research and experience as a pediatrician and bioethicist, there is no sound medical or ethical basis to criminalize this care. Doing so puts clinicians in the untenable position of having to either follow state law and knowingly harm their patients, or face penalties including imprisonment and loss of their medical licenses.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed: April 29, 2022 

ARMAND H. MATHENY ANTOMMARIA, MD, PhD

EXHIBIT A

BIBLIOGRAPHY

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EXHIBIT B

Curriculum Vitae

Last Updated: March 22, 2022

PERSONAL DATA

Armand H. Matheny Antommaria, MD, PhD, FAAP, HEC-C
Birth Place: Pittsburgh, Pennsylvania
Citizenship: United States of America

CONTACT INFORMATION

Address: 3333 Burnet Ave, ML 15006, Cincinnati, OH 45229
Telephone Number: (513) 636-4939
Electronic Mail Address: armand.antommaria@cchmc.org

EDUCATION

1983-1987	BSEE	Valparaiso University, with High Distinction Valparaiso, IN
1983-1987	BS	Valparaiso University (Chemistry), with High Distinction Valparaiso, IN
1987-1989	MD	Washington University School of Medicine
1998-2000		Saint Louis, MO
1989-2000	PhD	The University of Chicago Divinity School (Religious Ethics) Chicago, IL
2000-2003	Resident	University of Utah (Pediatrics) Salt Lake City, UT
2005-2006	Certificate	Conflict Resolution Certificate Program, University of Utah Salt Lake City, UT

BOARD CERTIFICATION

2019 Pediatric Hospital Medicine, American Board of Pediatrics
2019 Healthcare Ethics Consultant-Certified, Healthcare Ethics Consultation Certification Commission
2004 General Pediatrics, American Board of Pediatrics

PROFESSIONAL LICENSES

2012-Present Doctor of Medicine, Ohio
2006-2010 Alternative Dispute Resolution Provider—Mediator, Utah
2001-2014 Physician and Surgeon, Utah
2001-2014 Physician and Surgeon Controlled Substance, Utah

PROFESSIONAL EXPERIENCE

Full Time Positions

2019-Present *Professor*
Cincinnati Children's Hospital Medical Center, Cincinnati, OH
Department of Surgery

2019-Present *Professor of Clinical-Affiliated*
University of Cincinnati, Cincinnati, OH
Department of Surgery

2017-Present *Professor*
Cincinnati Children's Hospital Medical Center, Cincinnati, OH

	Division of Pediatric Hospital Medicine
2017-Present	*Professor of Clinical-Affiliated*
	University of Cincinnati, Cincinnati, OH
	Department of Pediatrics
2016-2017	*Associate Professor of Clinical-Affiliated*
	University of Cincinnati, Cincinnati, OH
	Department of Pediatrics
2012-2017	*Associate Professor*
	Cincinnati Children's Hospital Medical Center, Cincinnati, OH
	Division of Pediatric Hospital Medicine
2012-Present	*Lee Ault Carter Chair in Pediatric Ethics*
	Cincinnati Children's Hospital Medical Center
2012-2016	*Associate Professor-Affiliated*
	University of Cincinnati, Cincinnati, OH
	Department of Pediatrics
2010-2012	*Associate Professor of Pediatrics* (with Tenure)
	University of Utah School of Medicine, Salt Lake City, UT
	Divisions of Inpatient Medicine and Medical Ethics
2010-2012	*Adjunct Associate Professor of Medicine*
	University of Utah School of Medicine, Salt Lake City, UT
	Division of Medical Ethics and Humanities
2004-2010	*Assistant Professor of Pediatrics* (Tenure Track)
	University of Utah School of Medicine, Salt Lake City, UT
	Divisions of Inpatient Medicine and Medical Ethics
2004-2010	*Adjunct Assistant Professor of Medicine*
	University of Utah School of Medicine, Salt Lake City, UT
	Division of Medical Ethics and Humanities
2003-2004	*Instructor of Pediatrics* (Clinical Track)
	University of Utah School of Medicine, Salt Lake City, UT
	Divisions of Inpatient Medicine and Medical Ethics
2003-2004	*Adjunct Instructor of Medicine*
	University of Utah School of Medicine, Salt Lake City, UT
	Division of Medical Ethics

Part Time Positions

2021	*Consultant*
	Proctor & Gamble, Cincinnati, OH
2019	*Consultant*
	Sanofi Genzyme, Cambridge, MA
2018-Present	*Consultant*
	Center for Conflict Resolution in Healthcare, Memphis, TN
2017-2020	*Consultant*
	Amicus Therapeutics, Cranbury, NJ

2017	*Expert Witness* Robert J. Klickovich, MD, PLLC v. Tristate Arthritis & Rheumatology, PSC, *et al.,* Commonwealth of Kentucky, Boone Circuit Court, Division III, Civil Action No. 16-CI-01690
2017	*Consultant* Sarepta Therapeutics, Cambridge, MA
2014	*Consultant* Genzyme, A Sanofi Company, Cambridge, MA

Editorial Experience

Editorial Board

2020-Present	*Pediatrics,* Associate Editor for Ethics Rounds and Member of the Executive Editorial Board
2015-2020	*Journal of Clinical Ethics*
2009-2020	*Journal of Medical Humanities*

Guest Academic Editor

2017	*PLOS|ONE*

Ad Hoc Reviewer: *Academic Medicine, Academic Pediatrics, AJOB Primary Research, American Journal of Bioethics, American Journal of Law & Medicine, American Journal of Medical Genetics, American Journal of Transplantation, BMC Medical Ethics, BMJ Open, Canadian Journal of Bioethics, CHEST, Clinical Transplantation, European Journal of Human Genetics, Frontiers in Genetics, Hospital Medicine, International Journal of Health Policy and Management, International Journal of Nursing Studies, Journal of Adolescent and Young Adult Oncology, Journal of Clinical Ethics, Journal of Empirical Research on Human Research Ethics, Journal of General Internal Medicine, Journal of Healthcare Leadership, Journal of Hospital Medicine, Journal of the Kennedy Institute of Ethics, Journal of Law, Medicine & Ethics, Journal of Medical Ethics, Journal of Medical Humanities, Journal of Medicine and Life, Journal of Palliative Care, Journal of Pediatrics, Journal of Pediatric Surgery, Mayo Clinic Proceedings, Medicine, Healthcare and Philosophy, Molecular Diagnosis & Therapy, New England Journal of Medicine, Patient Preference and Adherence, Pediatrics, Pediatrics in Review, Personalized Medicine, PLOS\|ONE, Risk Management and Healthcare Policy, Saudi Medical Journal, SSM - Qualitative Research in Health,* and *Theoretical Medicine and Bioethics*

SCHOLASTIC AND PROFESSIONAL HONORS

2021	*Hidden Gem Award,* Cincinnati Children's Hospital Medical Center, Cincinnati, OH
2019-2021	*Presidential Citation,* American Society for Bioethics and Humanities, Chicago, IL
2016	*Laura Mirkinson, MD, FAAP Lecturer,* Section on Hospital Medicine, American Academy of Pediatrics, Elk Grove Village, IL
2016, 2018	*Certificate of Excellence*, American Society for Bioethics and Humanities, Glenview, IL
2013, 2016	*Senior Resident Division Teaching Award,* Cincinnati Children's Hospital Medical Center, Cincinnati, OH
2012	*Role Model*, Quality Review Committee, Primary Children's Medical Center, Salt Lake City, UT
2011	*Member*, Society for Pediatric Research, The Woodlands, TX
2011	*Presidential Citation*, American Society for Bioethics and Humanities, Glenview, IL
2009	*Role Model*, Quality Review Committee, Primary Children's Medical Center, Salt Lake City, UT
2008	*Nominee,* Physician of the Year, Primary Children's Medical Center, Salt Lake City, UT
2005-2006	*Fellow,* Medical Scholars Program, University of Utah School of Medicine, Salt Lake City, UT

1995-1997 *Doctoral Scholar*, Crossroads, A Program of Evangelicals for Social Action, Philadelphia PA
1989-1992 *Fellow*, The Pew Program in Medicine, Arts, and the Social Sciences, University of Chicago, Chicago, IL

ADMINISTRATIVE EXPERIENCE

Administrative Duties

2019-Present *Chair,* Oversight Committee, Cincinnati Fetal Center, Cincinnati, OH
2014-Present *Chair*, Ethics Committee, Cincinnati Children's Hospital Medical Center, Cincinnati, OH
2012-Present *Director*, Ethics Center, Cincinnati Children's Hospital Medical Center, Cincinnati, OH
2012-Present *Chair,* Ethics Consultation Subcommittee, Cincinnati Children's Hospital Medical Center, Cincinnati, OH
2010 *Co-Chair,* Ethics Subcommittee, Work Group for Emergency Mass Critical Care in Pediatrics, Centers for Disease Control and Prevention, Atlanta, GA
2009 *Chair*, Ethics Working Group, H1N1 and Winter Surge, Primary Children's Medical Center, Salt Lake City, UT
2005-2012 *Chair*, Ethics Committee, Primary Children's Medical Center, Salt Lake City, UT
2005-2012 *Chair*, Ethics Consultation Subcommittee, Primary Children's Medical Center, Salt Lake City, UT
2003-4 *Chair*, Clinical Pertinence Committee, Primary Children's Medical Center, Salt Lake City, UT

Professional & Scientific Committees

Committees

2021 *Member*, EMCO Capacity Collaboration, Ohio Hospital Association, Columbus, OH
2020-2021 *Member*, Allocation of Scarce Resources Work Group, Ohio Hospital Association, Columbus, OH
2020-Present *Member,* Literature Selection Technical Review Committee, National Library of Medicine, Bethesda, MD
2020 *Member*, Crisis Standards of Care Workgroup, The Health Collaborative, Cincinnati, OH
2019-Present *Member,* Healthcare Ethics Consultant Certification Commission, Oak Park, IL
2019 *Member,* Expert Panel, Pediatric Oncology End-of-Life Care Quality Markers, Institute for Cancer Outcomes & Survivorship, University of Alabama at Birmingham, Birmingham, AL
2018 *Member,* Resource Planning and Allocation Team Implementation Task Force, Ohio Department of Health, Columbus, OH
2012-Present *Member*, Gaucher Initiative Medical Expert Committee, Project HOPE, Millwood, VA
2009-2014 *Member,* Clinical Ethics Consultation Affairs Committee, American Society for Bioethics and Humanities, Glenview, IL
2005-2011 *Member,* Committee on Bioethics, American Academy of Pediatrics, Oak Park, IL

Data Safety and Monitoring Boards

2019-Present *Member,* Data and Safety Monitoring Board, Sickle Cell Domestic Trials, National Heart, Lung, and Blood Institute, Bethesda, MD
2018-2019 *Member,* Standing Safety Committee for P-188-NF (Carmeseal-MD™) in Duchenne Muscular Dystrophy, Phrixus Pharmaceuticals, Inc., Ann Arbor, MI
2017-Present *Member*, Observational Study Monitoring Board, Sickle Cell Disease Observational Monitoring Board, National Heart, Lung, and Blood Institute, Bethesda, MD
2016-2018 *Member,* Observational Study Monitoring Board, Long Term Effects of Hydroxyurea in Children with Sickle Cell Anemia, National Heart, Lung, and Blood Institute, Bethesda, MD

Reviewer

2020-Present	*Abstract Reviewer*, American Society for Bioethics and Humanities Annual Meeting
2020	*Grant Reviewer,* The Croatian Science Foundation, Hvatska zaklada za znanost (HRZZ)
2018	*Book Proposal Reviewer*, Elsevier
2018-2019	*Category Leader,* Religion, Culture, and Social Sciences, American Society for Bioethics and Humanities Annual Meeting
2017	*Timekeeper,* American Society for Bioethics and Humanities Annual Meeting
2017-Present	*Abstract Reviewer,* Pediatric Academic Societies Annual Meeting
2016-2021	*Workshop Reviewer*, Pediatric Academic Societies Annual Meeting
2016	*Grant Reviewer*, Innovation Research Incentives Scheme, The Netherlands Organisation for Health Research and Development
2016-2017	*Abstract Reviewer*, American Society for Bioethics and Humanities Annual Meeting
2014, 2016	*External Peer Reviewer*, PSI Foundation, Toronto, Ontario, Canada
2014	*Member,* Scientific Committee, International Conference on Clinical Ethics and Consultation
2013	*Abstract Reviewer*, American Society for Bioethics and Humanities Annual Meeting
2013	*Reviewer*, Open Research Area Plus, Agence Nationale de la Research, Deutsche Forschungsgemeinschaft, Economic and Social Research Council, National Science Foundation, and Organization for Scientific Research
2011-2012	*Abstract Reviewer,* Pediatric Academic Societies Annual Meeting
2011-2013	*Workshop Reviewer*, Pediatric Academic Societies Annual Meeting
2011-2014	*Abstract Reviewer*, Pediatric Hospital Medicine Annual Meeting
2011-2012	*Religious Studies Subcommittee Leader,* Program Committee, American Society for Bioethics and Humanities Annual Meeting
2010	*Abstract Reviewer*, American Society for Bioethics and Humanities Annual Meeting

Other

2021	*Timekeeper,* American Society for Bioethics and Humanities Annual Meeting
2021	*Mentor,* Early Career Advisor Professional Development Track, American Society for Bioethics and Humanities.
2021	*Mentor,* Early Career Advisor Paper or Project Track, American Society for Bioethics and Humanities.
2109	*Mentor*, Early Career Advising Program, American Society for Bioethics and Humanities
2018	*Passing Point Determination*, Healthcare Ethics Consultant-Certified Examination, Healthcare Ethics Consultant Certification Commission
2018	*Member*, Examination Committee, Healthcare Ethics Consultant-Certified Examination, Healthcare Ethics Consultant Certification Commission
2018	*Item Writer*, Healthcare Ethics Consultant-Certified Examination, Healthcare Ethics Consultant Certification Commission

UNIVERSITY COMMUNITY ACTIVITIES

Cincinnati Children's Hospital Medical Center

2020-Present *Member*, Faculty Diversity and Inclusion Steering Committee
2020-Present *Member*, Medical Management of COVID-19 Committee
2020-2021 *Member,* Caregiver Refusal Team
2020-2021 *Member,* COVID-19 Vaccine Allocation Committee
2020 *Member*, Personal Protective Equipment Subcommittee of the COVID-19 Steering. Committee
2018-2019 *Member,* Planning Committee, Center for Clinical & Translational Science & Training Research Ethics Conference
2017-Present *Member*, Donor Selection Committee
2017-2020 *Member,* Employee Emergency Fund Review Committee
2017 *Member,* Root Cause Analysis Team
2016-2017 *Member,* Planning Committee, Center for Clinical & Translational Science & Training Research Ethics Conference
2015-2019 *Member,* Destination Excellence Medical Advisory Committee
2015-Present *Member,* Disorders of Sexual Development Case Review Committee
2015-2019 *Member,* Destination Excellence Case Review Committee
2014-2018 *Member,* Genomics Review Group, Institutional Review Board
2014-2017 *Member,* Center for Pediatric Genomics Leadership Committee
2013-2017 *Member,* Genetic Testing Subcommittee, Health Network
2013-2016 *Member,* Schwartz Center Rounds Planning Committee
2013-2014 *Member*, Genomics Ad Hoc Subcommittee, Board of Directors
2012-Present *Member,* Cincinnati Fetal Center Oversight Committee
2012-Present *Member,* Ethics Committee
2012-Present *Member,* G-23
2012-2016 *Member,* Integrated Solid Organ Transplant Steering Committee

University of Utah

2009-2012 *Member,* Consolidated Hearing Committee

University of Utah School of Medicine

2010-2012 *Member,* Medical Ethics, Humanities, and Cultural Competence Thread Committee
2008-2010 *Member,* Fourth Year Curriculum Committee

University of Utah Department of Pediatrics

2010-2011 *Member,* Planning Committee, 25th Annual Biological Basis of Children's Health Conference, "Sex, Gender, and Sexuality"
2009-2012 *Member,* Medical Executive Committee
2005-2012 *Member,* Retention, Promotion, and Tenure Committee
2004-2012 *Interviewer,* Residency Program
2003-2012 *Member,* Education Committee

Intermountain Healthcare

2009-2012 *Member,* System-Wide Bioethics Resource Service
2009-2012 *Member,* Pediatric Guidance Council

Primary Children's Medical Center

2012-2012 *Member,* Shared Accountability Organization Steering Committee
2009 *Member*, H1N1 and Winter Surge Executive Planning Team
2005-2010 *Member,* Continuing Medical Education Committee
2005-2010 *Member*, Grand Rounds Planning Committee
2003-2012 *Member*, Ethics Committee

ACTIVE MEMBERSHIPS IN PROFESSIONAL SOCIETIES

2012-Present Association of Bioethics Program Directors
2011-Present Society for Pediatric Research
2000-Present American Academy of Pediatrics
1999-Present American Society of Bioethics and Humanities

FUNDING

Past Grants

2015-2019 "Better Outcomes for Children: Promoting Excellence in Healthcare Genomics to Inform Policy."
Percent Effort: 9%
National Human Genome Research Institute
Grant Number: 1U01 HG008666-01
Role: Investigator

2015-2016 "Ethics of Informed Consent for Youth in Foster Care"
Direct Costs: $10,000
Ethics Grant, Center for Clinical and Translational Science and Training
University of Cincinnati Academic Health Center
Role: Co-Investigator

2014-2015 "Extreme Personal Exposure Biomarker Levels: Engaging Community Physicians and Ethicists for Guidance"
Direct Costs: $11,640
Center for Environmental Genetics
University of Cincinnati College of Medicine
Role: Investigator

2014-2015 "Child, Adolescent, and Parent Opinions on Disclosure Policies for Incidental Findings in Clinical Whole Exome Sequencing"
Direct Costs: $4,434
Ethics Grant, Center for Clinical and Translational Science and Training, University of Cincinnati Academic Health Center
Role: Principal Investigator

2013-2014 "Better Outcomes for Children: GWAS & PheWAS in eMERGEII
Percent Effort: 5%
National Human Genome Research Institute
Grant Number: 3U01HG006828-0251
Role: Investigator

2004-2005 "Potential Patients' Knowledge, Attitudes, and Beliefs Regarding Participating in Medical Education: Can They be Interpreted in Terms of Presumed Consent?"
Direct Costs: $8,000

Interdisciplinary Research in Applied Ethics and Human Values, University Research Committee, University of Utah
Role: Principal Investigator

TEACHING RESPONSIBILITIES/ASSIGNMENTS

Course and Curriculum Development

2003-2012 Medical Ethics, Internal Medicine 7560, University of Utah School of Medicine, Taught 1 time per year, Taken by medical students, Enrollment 100

Course Lectures

2018, 2021 Introduction to Biotechnology, "Ethics and Biotechnology" and "Clinical Ethics," BIOL 3027, University of Cincinnati, Taught 1 time per year, Taken by undergraduate students, Enrollment 25.

2018-Present Biomedical Ethics, "Conscientious Objection in Healthcare" and "Ethical Issues in the Care of Transgender Adolescents," MEDS 4035 & MEDS 4036, University of Cincinnati College of Medicine, Taught 1 time per year, Taken by senior undergraduate students, Enrollment 52.

2016 Foundations of Healthcare Ethics and Law, "Clinical Ethics," HESA 390, Xavier University.

2014-Present Physicians and Society, "Transfusion and the Jehovah's Witness Faith," "Obesity Management: Ethics, Policy, and Physician Implicit Bias," "Embryos and Ethics: The Ethics of Designer Babies," "Ethics and Genetic Testing," and "Ethics and Direct to Consumer Genetic Testing," 26950112 and 26950116, University of Cincinnati School of Medicine, Taken by first and second year medical students, Enrollment 100.

2014-Present Ethical Issues in Health Care, "Ethical Issues in Managing Drug Shortages: The Macro, Meso, and Micro Levels," HESA 583, College of Social Sciences, Health, and Education Health Services Administration, Xavier University, Taken by health services administration students, Enrollment 25.

2009 Physical Diagnosis II, Internal Medicine 7160, University of Utah School of Medicine, Taught 1 time per year, Taken by medical students, Enrollment 100

2003-2012 Medical Ethics, Internal Medicine 7560, University of Utah School of Medicine, Taught 1 time per year, Taken by fourth year medical students, Enrollment 100

Small Group Teaching

2018-Present Ethics in Research, GNTD 7003-001, University of Cincinnati School of Medicine, Taught 1 time per year, Taken by fellows, MS, and PhD students, Enrollment 110.

2007 Physical Diagnosis I, Internal Medicine 7150, University of Utah School of Medicine, Taught 1 time per year, Taken by medical students, Enrollment 100

2003-2012 Medical Ethics, Internal Medicine 7560, University of Utah School of Medicine, Taught 1 time per year, Taken by fourth medical students, Enrollment 100

2003 Pediatric Organ System, Pediatrics 7020, University of Utah School of Medicine, Taught 1 time per year, Taken by medical students, Enrollment 100

Graduate Student Committees

2018-Present *Chair,* Scholarship Oversight Committee, William Sveen, Pediatric Critical Care Fellowship, Cincinnati Children's Hospital Medical Center, Cincinnati, OH

2018-2020 *Member*, Scholarship Oversight Committee, Anne Heueman, Genetic Counseling, University of Cincinnati, Cincinnati, OH

2017-2019 *Chair*, Scholarship Oversight Committee, Bryana Rivers, Genetic Counseling, University of Cincinnati, Cincinnati, OH

2013-2015 *Mentor*, Sophia Hufnagel, Combined Pediatrics/Genetics Residency, Cincinnati Children's Hospital Medical Center, Cincinnati, OH
2013-2015 *Co-Chair,* Scholarship Oversight Committee, Andrea Murad, Genetic Counseling, University of Cincinnati, Cincinnati, OH
2013-2014 *Member*, Scholarship Oversight Committee, Grace Tran, Genetic Counseling, University of Cincinnati, Cincinnati, OH
2011-2012 *Chair,* Scholarship Oversight Committee, Kevin E. Nelson, MD, PhD, Pediatric Inpatient Medicine Fellowship, University of Utah, Salt Lake City, UT

Continuing Education Lectures

2008 Choosing Healthplans All Together (CHAT) Exercise Facilitator, 18th Annual Intermountain Medical Ethics Conference, "Setting Priorities for Healthcare in Utah: What Choices are We Ready to Make?," Salt Lake City, Utah, October 3.
2007 *Speaker*, Infant Medical Surgical Unit, Primary Children's Medical Center, "Withholding and Withdrawing Artificial Nutrition and Hydration: Can It Be Consistent With Care?," Salt Lake City, Utah, September 6.
2007 *Faculty Scholar-in Residence,* Summer Seminar, "The Role of Religion in Bioethics," Utah Valley State College, Orem, Utah, May 1.
2006 *Workshop Leader,* Faculty Education Retreat, "Publications and Publishing in Medical Education," University of Utah School of Medicine, Salt Lake City, Utah, September 15.
2006 *Breakout Session,* 16th Annual Intermountain Medical Ethics Conference, "Donation after Cardiac Death: Evolution of a Policy," Salt Lake City, Utah, March 28.

Other Educational Activities

2008 *Instructor*, Contemporary Ethical Issues in Medicine and Medical Research, Osher Lifelong Learning Institute, University of Utah, "Religion and Bioethics: Religiously Based Demands for and Refusals of Treatment," Salt Lake City, Utah, February 7.
2007 *Speaker*, Biology Seminar, Utah Valley State College, "Is He Dead?: Criteria of the Determination of Death and Their Implications for Withdrawing Treatment and Recovering Organs for Transplant," Orem, Utah, September 21.

PEER-REVIEWED JOURNAL ARTICLES

1. Anne C Heuerman, Danielle Bessett, Armand H. Matheny Antommaria, Leandra. K. Tolusso, Nicki Smith, Alison H. Norris and Michelle L. McGowan (2021). "Experiences of reproductive genetic counselors with abortion regulations in Ohio." *Journal of Genetic Counseling*. Online ahead of print. PMID: 34755409.
2. Armand H. Matheny Antommaria and Ndidi I. Unaka. (2021) "Counterpoint: Prioritizing Health Care Workers for Scarce Critical Care Resources is Impractical and Unjust. *Journal of Hospital Medicine.* 16: 182-3. PMID 33617445.
3. Gregory A. Grabowski, Armand H. Matheny Antommaria, Edwin H. Kolodny, and Pramod K. Mistry. (2021) "Gaucher Disease: Basic and Translational Science Needs for More Complete Therapy and Management." *Molecular Genetics and Metabolism*. 132: 59-75. PMID: 33419694.
4. Armand H. Matheny Antommaria, Laura Monhollen, and Joshua K. Schaffzin. (2021) "An Ethical Analysis of Hospital Visitor Restrictions and Masking Requirements During the COVID-19." *Journal of Clinical Ethics.* 32(1): 35-44. PMID 33416516.
5. Armand H. Matheny Antommaria (2020) "The Pediatric Hospital Medicine Core Competencies: 4.05 Ethics." *Journal of Hospital Medicine.* 15(S1): 120-121.
6. Armand H. Matheny Antommaria, Tyler S. Gibb, Amy L. McGuire, Paul Root Wolpe, Matthew K. Wynia, Megan K. Applewhite, Arthur Caplan, Douglas S. Diekema, D. Micah Hester, Lisa Soleymani Lehmann, Renee McLeod-Sordjan, Tamar Schiff, Holly K. Tabor, Sarah E. Wieten, and Jason T. Eberl for a Task Force of the Association of Bioethics Program Directors (2020) "Ventilator

Triage Policies During the COVID-19 Pandemic at U.S. Hospitals Associated With Members of the Association of Bioethics Program Directors." *Annals of Internal Medicine.* 173(3): 188-194. PMID: 32330224.

7. Armand H. Matheny Antommaria (2020) "Conflicting Duties and Reciprocal Obligations During a Pandemic." *Journal of Hospital Medicine.* 5:284-286. PMID: 32379030.
8. Mary V. Greiner, Sarah J. Beal, and Armand H. Matheny Antommaria (2020) "Perspectives on Informed Consent Practices for Minimal-Risk Research Involving Foster Youth." *Pediatrics*. 45:e20192845. PMID: 32156772.
9. Jennifer deSante-Bertkau, Michelle McGowan, and Armand H. Matheny Antommaria (2018) "Systematic Review of Typologies Used to Characterize Clinical Ethics Consultations." *Journal of Clinical Ethics.* 29:291-304. PMID: 30605439.
10. Andrew J. Redmann, Melissa Schopper, Armand H. Matheny Antommaria, Judith Ragsdale, Alessandro de Alarcon, Michael J. Jutter, Catherine K. Hart, and Charles M. Myer. (2018) "To Transfuse or Not to Transfuse? Jehovah's Witnesses and PostOperative Hemorrhage in Pediatric Otolaryngology." *International Journal of Pediatric Otorhinolaryngology*. 115:188-192. PMID: 30368384.
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1. Benjamin S. Wilfond, David Magnus, Armand H Matheny Antommaria, Paul Appelbaum, Judy Aschner, Keith J. Barrington, Tom Beauchamp, Renee D. Boss, Wylie Burke, Arthur L. Caplan, Alexander M. Capron, Mildred Cho, Ellen Wright Clayton, F. Sessions Cole, Brian A. Darlow, Douglas Diekema, Ruth R. Faden, Chris Feudtner, Joseph J. Fins, Norman C. Fost, Joel Frader, D. Micah Hester, Annie Janvier, Steven Joffe, Jeffrey Kahn, Nancy E. Kass, Eric Kodish, John D. Lantos, Laurence McCullough, Ross McKinney, Jr., William Deadow, P. Pearl O'Rourke, Kathleen E. Powderly, DeWayne M. Pursley, Lainie Friedman Ross, Sadath Sayeed, Richard R. Sharp, Jeremy Sugarman, William O. Tarnow-Mordi, Holly Taylor, Tom Tomlison, Robert D. Truog, Yoram T. Unguru, Kathryn L. Weise, David Woodrum, Stuart Youngner (2013) "The OHRP and SUPPORT," *New England Journal of Medicine,* 368: e36. PMID: 23738513.
2. Lainie Friedman Ross and Armand H. Matheny Antommaria (2011) "In Further Defense of the American Academy of Pediatrics Committee on Bioethics 'Children as Hematopoietic Stem Cell Donors' Statement." *Pediatric Blood & Cancer*. 57: 1088-9.
3. Armand H. Matheny Antommaria (2011) "Growth Attenuation: Health Outcomes and Social Services." *Hastings Center Report*, 41(5): 4. PMID: 21980886.
4. Susan Bratton and Armand H. Matheny Antommaria (2010) "Dead Donor Rule and Organ Procurement: The Authors Reply." *Pediatric Critical Care Medicine*, 11: 314-5.
5. Armand H. Matheny Antommaria and Joel Frader (2009) "Policies of Children's Hospitals on Donation After Cardiac Death—Reply." *Journal of the American Medical Association*, 302: 845.

Case Reports

Armand H. Matheny Antommaria (2002) "Case 4.9: Inappropriate Access to a Celebrity's Medical Records." In *Ethics and Information Technology: A Case-Based Approach to a Health Care System in Transition*, James G. Anderson and Kenneth W. Goodman, 79-80. New York: Springer-Verlag.

Book Reviews

1. Armand H. Matheny Antommaria (2021) Review of *When Harry Became Sally: Responding to the Transgender Moment,* by Ryan T. Anderson. *Journal of Medical Humanities* 42: 195-9. PMID 31808021.
2. Armand H. Matheny Antommaria (2012) Review of *The Ethics of Organ Transplantation*, by Steven J. Jensen, ed., *Journal of the American Medical Association* 308: 1482-3.
3. Armand H Matheny Antommaria (2012) Review of *The Soul of Medicine: Spiritual Perspectives and Clinical Practice*, by John R. Peteet and Michael N. D'Ambra, ed., *Journal of the American Medical Association* 308: 87.
4. Armand H. Matheny Antommaria (2009) Review of *Conflicts of Conscience in Health Care: An Institutional Compromise,* by Holly Fernandez Lynch. *American Journal of Bioethics* 9: 63-4.
5. Armand H. Matheny Antommaria (2008) Review of *A Practical Guide to Clinical Ethics Consulting: Expertise, Ethos, and Power*, by Christopher Meyers. *American Journal of Bioethics* 8: 72-3.
6. Armand H. Matheny Antommaria (2004) Review of *Children, Ethics, and Modern Medicine*, by Richard B. Miller. *American Journal of Bioethics* 4: 127-8.
7. Armand H. Matheny Antommaria (2002) Review of *Ward Ethics: Dilemmas for Medical Students and Doctors in Training*, by Thomasine Kushner and David Thomasma, ed. *American Journal of Bioethics* 2: 70-1. PMID: 22494193.
8. Armand H. Matheny Antommaria (1999) Review of *Human Cloning: Religious Responses*, by Ronald Cole-Turner, ed. *Prism* 6 (March/April): 21.
9. Armand H. Matheny Antommaria (1999) Review of *Christian Theology and Medical Ethics: Four Contemporary Approaches*, by James B. Tubbs, Jr. *Journal of Religion* 79 (April): 333-5.
10. Armand H. Matheny Antommaria (1997) Review of *Body, Soul, and Bioethics*, by Gilbert C. Meilaender. *Prism* 4 (May/June): 28.

Newspaper Articles

1. W. Bradley Poss and Armand H. Matheny Antommaria (2010) "Mass casualty planning must incorporate needs of children." *AAP News* 31 (July): 38.
2. Robert Murray and Armand H. Matheny Antommaria (2010) "Pediatricians should work with school nurses to develop action plans for children with DNAR orders." *AAP News* 31 (May): 30..
3. Armand H. Matheny Antommaria (2009) "Addressing physicians' conscientious objections in health care." *AAP News* 30 (December): 32.

UNPUBLISHED POSTER PRESENTATIONS

1. Armand H. Matheny Antommaria. (2018) "Ethical Issues in the Care of International Patients: A Case Study." International Conference on Clinical Ethics and Consultation, Oxford, United Kingdom.
1. Jill S Sweney, Brad Poss, Colin Grissom, Brent Wallace, and Armand H Matheny Antommaria, (2010) "Development of a Statewide Pediatric Pandemic Triage Plan in Utah." Pediatric Academic Societies Annual Meeting, Vancouver, Canada. E-PAS20103713.147.
2. Christopher G. Maloney, Armand H. Matheny Antommaria, James F. Bale, Thomas Greene, Jian Ying, Gena Fletcher, and Rajendu Srivastava (2010) "Why Do Pediatric Interns Violate the 30 Hour Work Rule?" Pediatric Academic Societies Annual Meeting, Vancouver, Canada. E-PAS20101500.596
3. Armand H. Matheny Antommaria and Edward B. Clark (2007) "Resolving Conflict through Bioethics Mediation." 3rd International Conference on Ethics Consultation and Clinical Ethics, Toronto, Canada.
4. Elizabeth Tyson, Tracy Hill, Armand Antommaria, Gena Fletcher, and Flory Nkoy (2007) "Physician Practice Patterns Regarding Nasogastric Feeding Supplementation and Intravenous Fluids in Bronchiolitis Patients." Pediatrics Academic Societies Annual Meeting, Toronto, Canada. E-PAS2007:61300.

ORAL PRESENTATIONS

Keynote/Plenary Lectures

International

1. 2021, *Panelist*, Partnership for Quality Medical Donations, Charitable Access Programming for Rare Diseases, "Ethical Issues," Webinar, April 6.
2. 2017, *Invited Speaker*, Spina Bifida Fetoscopic Repair Study Group and Consortium, "Ethics of Innovation and Research in Fetal Surgery," Cincinnati, Ohio, October 26.
3. 2014, *Invited Speaker,* CIC 2013 CCI: Canadian Immunization Conference, "Condition-of-Service Influenza Prevention in Health Care Settings," Ottawa, Canada, December 2.
4. 2014, *Invited Speaker*, National Conference of the Chinese Pediatric Society, "A Brief Introduction to Pediatric Research and Clinical Ethics," Chongqing, China, September 12.

National

1. 2020, *Panelist*, Children's Mercy Bioethics Center, "Ethical Issues in the COVID Pandemic at Children's Hospitals," Webinar, March 2.
2. 2019, *Invited Speaker*, North American Fetal Therapy Network (NAFTnet), "Ethics of Innovation," Chicago, Illinois, October 12.
3. 2019, *Panelist,* National Society of Genetic Counselors Prenatal Special Interest Group, "Fetal Intervention Ethics," Webinar, September 12.
4. 2017, *Invited Participant,* American College of Epidemiology Annual Meeting, Preconference Workshop, "Extreme Personal Exposure Biomarker Levels: Guidance for Study Investigators," New Orleans, Louisiana, September 24.
5. 2016, *Invited Speaker,* American Academy of Pediatrics National Conference & Exhibition, Joint Program: Section on Hospital Medicine and Section on Bioethics, "Resource Allocation: Do We Spend Money to Save One Patient with Ebola or Over a 1,000?" San Francisco, California, October 23.
6. 2016, *Invited Speaker*, 26th Annual Specialist Education in Extracorporeal Membrane Oxygenation (SEECHMO) Conference, "Ethical Issues in ECMO: The Bridge to Nowhere," Cincinnati, Ohio, June 5.
7. 2015, *Invited Speaker,* Extracorporeal Life Support Organization (ELSO) 26th Annual Conference, "ECMO-Supported Donation after Circulatory Death: An Ethical Analysis," Atlanta, Georgia, September 20.
8. 2014, *Invited Speaker*, Pediatric Evidence-Based Practice 2014 Conference: Evidence Implementation for Changing Models of Pediatric Health Care, "Ethical Issues in Evidence-Based Practice," Cincinnati, Ohio, September 19.
9. 2014, *Invited Speaker,* 6th Annual David Kline Symposium on Public Philosophy: Exploring the Synergy Between Pediatric Bioethics and Child Rights, "Does Predictive Genetic Testing for Adult Onset Conditions that Are Not Medically Actionable in Childhood Violate Children's Rights?" Jacksonville, Florida, March 6.
10. 2010, *Invited Speaker,* Quest for Research Excellence: The Intersection of Standards, Culture and Ethics in Childhood Obesity, "Research Integrity and Religious Issues in Childhood Obesity Research," Denver, Colorado, April 21.
11. 2010, *Invited Speaker*, Symposium on the Future of Rights of Conscience in Health Care: Legal and Ethical Perspectives, J. Reuben Clark Law School at Brigham Young University and the Ave Maria School of Law, "Conscientious Objection in Clinical Practice: Disclosure, Consent, Referral, and Emergency Treatment," Provo, Utah, February 26.
12. 2009, *Invited Speaker*, Pediatric Organ Donation Summit, "Research Findings Regarding Variations in Pediatric Hospital Donation after Cardiac Death Policies," Chicago, Illinois, August 18.
13. 2008, *Meet-the-Experts*, American Academy of Pediatrics National Conference & Exhibition, "Physician Refusal to Provide Treatment: What are the ethical issues?" Boston, Massachusetts, October 11.

14. 2008, *Invited Conference Faulty*, Conscience and Clinical Practice: Medical Ethics in the Face of Moral Controversy, The MacLean Center for Clinical Medical Ethics at the University of Chicago, "Defending Positions or Identifying Interests: The Uses of Ethical Argumentation in the Debate over Conscience in Clinical Practice," Chicago, IL, March 18.
15. 2007, *Symposium Speaker*, Alternative Dispute Resolution Strategies in End-of-Life Decisions, The Ohio State University Mortiz College of Law, "The Representation of Children in Disputes at the End-of-Life," Columbus, Ohio, January 18.
16. 2005, *Keynote Speaker*, Decisions and Families, *Journal of Law and Family Studies* and The University of Utah S.J. Quinney College of Law, "Jehovah's Witnesses, Roman Catholicism, and Calvinism: Religion and State Intervention in Parental, Medical Decision-Making," Salt Lake City, Utah, September 23.

Regional/Local

1. 2021, *Panelist*, Pediatric Residency Noon Conference, University of Tennessee Health Science Center, "Bioethics Rounds—Ethical Issues in the Care of Transgender Adolescents," Memphis, Tennessee, September 21.
2. 2020, *Keynote Speaker*, 53rd Annual Clinical Advances in Pediatrics, "Referral to a Fetal Care Center: How You Can Help Patients' Mothers Address the Ethical Issues," Kansas City, Kansas, September 16.
3. 2019, *Speaker,* Patient and Family Support Services, Primary Children's Hospital, "Ethical Issues in the Care of Trans Adolescents," Salt Lake City, Utah, December 5.
4. 2019, *Speaker,* Evening Ethics, Program in Medical Ethics and Humanities, University of Utah School of Medicine, "Patients, Parents, and Professionals: Ethical Issues in the Treatment of Trans Adolescents," Salt Lake City, Utah, December 4.
5. 2019, *Speaker,* Pediatric Hospital Medicine Board Review Course, "Ethics, Legal Issues, and Human Rights including Ethics in Research," Cincinnati, Ohio, September 8.
6. 2019, *Speaker,* Advances in Fetology, "Evolving Attitudes Toward the Treatment of Children with Trisomies," Cincinnati, Ohio, September 6.
7. 2019, *Speaker,* Half-Day Ethics Training: Ethics Consultation & Ethics Committees, "Navigating the Rapids of Clinical Ethics Consultation: Intake, Recommendations, and Documentation," Salt Lake City, Utah, June 1.
8. 2019, *Speaker*, Scientific and Ethical Underpinnings of Gene Transfer/Therapy in Vulnerable Populations: Considerations Supporting Novel Treatments, BioNJ, "What Next? An Ethical analysis of Prioritizing Conditions and Populations for Developing Novel Therapies," Cranbury, New Jersey, March 7.
9. 2018, *Panelist*, Periviability, 17th Annual Regional Perinatal Summit, Cincinnati, Ohio, October 12.
10. 2018, *Speaker,* Regional Advance Practice Registered Nurse (APRN) Conference, "Adults are Not Large Children: Ethical Issues in Caring for Adults in Children's Hospitals," Cincinnati, Ohio, April 26.
11. 2018, *Speaker*, Southern Ohio/Northern Kentucky Sigma Theta Tau International Annual Conference, "Between Hope and Hype: Ethical Issues in Precision Medicine," Sharonville, Ohio, March 2.
12. 2017, *Speaker*, Advances in Fetology 2017, "Ethics of Innovation and Research: Special Considerations in Fetal Therapy Centers," Cincinnati, Ohio, October 27.
13. 2016, *Speaker*, End-of-Life Pediatric Palliative Care Regional Conference, "Ethical/Legal Issues in Pediatric Palliative Care," Cincinnati, Ohio, September 15.
14. 2016, *Speaker*, 26th Annual Bioethics Network of Ohio (BENO) Conference, "When Does Parental Refusal of Medical Treatment for Religious Reasons Constitute Neglect?" Dublin, Ohio, May 29.
15. 2014, *Speaker,* Cincinnati Comprehensive Sickle Cell Center Symposium: Research Ethics of Hydroxyurea Therapy for Sickle Cell Disease During Pregnancy and Lactation, "Ethical Issues in Research with Pregnant and Lactating Women," Cincinnati, Ohio, October 30.

16. 2014, *Speaker,* Advances in Fetology 2014, "The 'Miracle Baby' and Other Cases for Discussion," Cincinnati, Ohio, September 26.
17. 2014, *Speaker,* Advances in Fetology 2014, "'Can you tell me …?': Achieving Informed Consent Given the Prevalence of Low Health Literacy," Cincinnati, Ohio, September 26.
18. 2014, *Panelist*, Center for Clinical & Translational Science & Training, Secrets of the Dead: The Ethics of Sharing their Data, Cincinnati, Ohio, August 28.
19. 2014, *Speaker,* Office for Human Research Protections Research Community Forum: Clinical Research … and All That Regulatory Jazz, "Research Results and Incidental Findings: Do Investigators Have a Duty to Return Results to Participants," Cincinnati, Ohio, May 21.
20. 2013, *Opening Presentation*, Empirical Bioethics: Emerging Trends for the 21st Century, University of Cincinnati Center for Clinical & Translational Science & Training, "Empirical vs. Normative Ethics: A Comparison of Methods," Cincinnati, Ohio, February 21.
21. 2012, *Videoconference,* New York State Task Force on Life and the Law, "Pediatric Critical Care Triage," New York, New York, March 1.
22. 2011, *Presenter,* Fall Faculty Development Workshop, College of Social Work, University of Utah, "Teaching Ethics to Students in the Professions, " Salt Lake City, Utah, November 14.
23. 2011, *Speaker,* 15th Annual Conference, Utah Chapter of the National Association of Pediatric Nurse Practitioners, "Ethical Issues in Pediatric Practice," Salt Lake City, Utah, September 22.
24. 2011, *Speaker*, Code Silver! Active Shooter in the Hospital, Utah Hospitals & Health Systems Association, Salt Lake City, Utah, March 21.
25. 2009, *Speaker,* Medical Staff Leadership Conference, Intermountain Healthcare, "The Ethics of Leadership," Park City, Utah, October 30.
26. 2008, *Speaker*, The Art and Medicine of Caring: Supporting Hope for Children and Families, Primary Children's Medical Center, "Medically Provided Hydration and Nutrition: Ethical Considerations," Salt Lake City, Utah, February 25.
27. 2005, *Speaker*, Utah NAPNAP (National Association of Pediatric Nurse Practitioners) Chapter Pharmacology and Pediatric Conference, "Immunization Update," Salt Lake City, Utah, August 18.
28. 2005, *Keynote Speaker,* 17th Annual Conference, Utah Society for Social Work Leadership in Health Care, "Brain Death: Accommodation and Consultation," Salt Lake City, March 18.
29. 2004, *Continuing Education Presentation*, Utah NAPNAP (National Association of Pediatric Nurse Practitioners), "Febrile Seizures," Salt Lake City, Utah, April 22.
30. 2004, *Speaker,* Advocacy Workshop for Primary Care Providers, "Ethics of Advocacy," Park City, Utah, April 3.
31. 2002, *Speaker,* 16th Annual Biologic Basis of Pediatric Practice Symposium, "Stem Cells: Religious Perspectives," Deer Valley, Utah, September 14.

Meeting Presentations

International

1. 2018, *Speaker*, International Conference on Clinical Ethics and Consultation, "A Systematic Review of Typologies Used to Characterize Clinical Ethics Consultations," Oxford, United Kingdom, June 21.

National

1. 2021, *Panelist,* Pediatric Endocrine Society Annual Meeting, Difference of Sex Development Special Interest Group, Virtual Conference, April 29.
2. 2020, *Speaker,* American Society for Bioethics and Humanities Annual Meeting, "Is This Child Dead? Controversies Regarding the Neurological Criteria for Death," Virtual Conference, October 17.
3. 2020, *Speaker,* American Society for Bioethics and Humanities Annual Meeting, "Contemporary Ethical Controversy in Fetal Therapy: Innovation, Research, Access, and Justice," Virtual Conference, October 15.
4. 2020, *Speaker,* American Society for Bioethics and Humanities Annual Meeting, "K-12 Schools and Mandatory Public Health Programs During the COVID-19 Pandemic," Virtual Conference, October 15.
5. 2019, *Speaker,* American Society for Bioethics and Humanities Annual Meeting, "Ethical Issues in Translating Gene Transfer Studies Involving Children with Neurodegenerative Disorders," Pittsburgh, Pennsylvania, October 26.
6. 2019, *Moderator,* Pediatric Academic Societies Annual Meeting, Clinical Bioethics, Baltimore, Maryland, April 28.
7. 2018, *Presenter,* American Society for Bioethics and Humanities Annual Meeting, "Looking to the Past, Understanding the Present, and Imaging the Future of Bioethics and Medical Humanities' Engagement with Transgender Health," Anaheim, California, October 19.
8. 2018, *Speaker,* American Society for Bioethics and Humanities Annual Meeting, "Should Vaccination Be a Prerequisite for Sold Organ Transplantation?" Anaheim, California, October 18.
9. 2018, Lindsey Douglas, Armand H. Matheny Antommaria, Derek Williams. *Workshop Presenter*, Pediatric Hospital Medicine Annual Meeting, "IRB Approved! Tips and Tricks to Smooth Sailing through the Institutional Review Board (IRB)." Atlanta, Georgia, July 20.
10. 2018, Alan Schroeder, Armand H. Matheny Antommaria, Hannah Bassett, Kevin Chi, Shawn Ralston, Rebecca Blankenburg. *Workshop Speaker,* Pediatric Hospital Medicine Annual Meeting, "When You Don't Agree with the Plan: Balancing Diplomacy, Value, and Moral Distress," Atlanta, Georgia, July 20.
11. 2018, Alan Schroeder, Hannah Bassett, Rebecca Blankenburg, Kevin Chi, Shawn Ralston, Armand H. Matheny Antommaria. *Workshop Speaker,* Pediatric Academic Societies Annual Meeting, "When You Don't Agree with the Plan: Balancing Diplomacy, Value, and Moral Distress," Toronto, Ontario, Canada, May 7.
12. 2017, *Speaker,* American Society for Bioethics and Humanities Annual Meeting, "Tensions in Informed Consent for Gender Affirming Hormone Therapy and Fertility Preservation in Transgender Adolescents," Kansas City, Missouri, October 19.
13. Lindsey Douglas, Armand H. Matheny Antommaria, and Derek Williams. 2017, *Workshop Leader,* PHM[Pediatric Hospital Medicine]2017, "IRB Approved! Tips and Tricks to Smooth Sailing through the Institutional Review Board (IRB) Process," Nashville, Tennessee, July 21.
14. 2016, *Speaker*, American Society for Bioethics and Humanities Annual Meeting, "Ethical Challenges in the Care of International Patients: Organization, Justice, and Cultural Considerations," Washington, DC, October 9.
15. 2015, *Coauthor,* The American Society of Human Genetics Annual Meeting, "Adolescents' Opinions on Disclosure of Non-Actionable Secondary Findings in Whole Exome Sequencing," Baltimore, Maryland, October 9.
16. 2012, *Speaker*, American Society for Bioethics and Humanities Annual Meeting, "A Public Health Ethics Analysis of the Mandatory Immunization of Healthcare Personnel: Minimizing Burdens and Increasing Fairness," Washington, DC, October 21.
17. Armand H. Matheny Antommaria, Valerie Gutmann Koch, Susie A. Han, Carrie S. Zoubul. 2012, *Moderator*, American Society for Bioethics and Humanities Annual Meeting, "Representing the

Underrepresented in Allocating Scarce Resources in a Public Health Emergency: Ethical and Legal Considerations," Washington, DC, October 21.

18. 2012, *Platform Presentation,* Pediatric Academic Societies Annual Meeting, "Qualitative Analysis of International Variation in Donation after Circulatory Death Policies and Rates," Boston, Massachusetts, April 30. Publication 3150.4.
19. 2011, *Speaker*, American Society for Bioethics and Humanities Annual Meeting, "The Intersection of Policy, Medicine, and Ethics during a Public Health Disaster: Special Considerations for Children and Families," Minneapolis, Minnesota, October 13.
20. Armand H. Matheny Antommaria and Joel Frader. 2010, *Workshop Leader,* Pediatric Academic Societies Annual Meeting, "Conscientious Objection in Health Care: Respecting Conscience and Providing Access," Vancouver, British Columbia, Canada. May 1. Session 1710.
21. 2009, *Workshop Leader,* American Society for Bioethics and Humanities Annual Meeting, "Advanced Clinical Ethics Consultation Skills Workshop: Process and Interpersonal Skills," Washington, DC, October 15.
22. 2009, *Platform Presentation*, Pediatric Academic Societies Annual Meeting, "Qualitative Analysis of Donation after Cardiac Death Policies at Children's Hospitals," Baltimore, Maryland, May 2. Publication 2120.6.
23. 2008, *Speaker*, American Society for Bioethics and Humanities Annual Meeting, "Qualitative Analysis of Donation After Cardiac Death (DCD) Policies at Children's Hospitals," Cleveland, Ohio, October 26.
24. 2007, *Participant,* Hamline University School of Law Biennial Symposium on Advanced Issues in Dispute Resolution, "An Intentional Conversation About Conflict Resolution in Health Care," Saint Paul, Minnesota, November 8-10.
25. *2007*, *Speaker,* American Society of Bioethics and Humanities Annual Meeting, "Bioethics Consultation and Alternative Dispute Resolution: Opportunities for Collaboration," Washington, DC, October 21.
26. 2007, *Speaker,* American Society of Bioethics and Humanities Annual Meeting, "DNAR Orders in Schools: Collaborations Beyond the Hospital," Washington, DC, October 18.
27. Armand H. Matheny Antommaria and Jeannie DePaulis. 2007, *Speaker,* National Association of Children's Hospitals and Related Institutions Annual Meeting, "Using Mediation to Address Conflict and Form Stronger Therapeutic Alliances," San Antonio, Texas, October 9.
28. 2006, *Speaker,* American Society of Bioethics and Humanities Annual Meeting, "Bioethics Mediation: A Critique," Denver, Colorado, October 28.
29. 2005, *Panelist,* American Society of Bioethics and Humanities Annual Meeting, "How I See This Case: 'He Is Not His Brain,'" Washington, DC, October 20.
30. 2005, *Paper Presentation,* Pediatric Ethics: Setting an Agenda for the Future, The Cleveland Clinic, "'He Is Not His Brain:' Accommodating Objections to 'Brain Death,'" Cleveland, Ohio, September 9.
31. 2004, *Speaker,* American Society for Bioethics and Humanities Spring Meeting, "Verification and Balance: Reporting Within the Constraints of Patient Confidentiality," San Antonio, Texas, March 13.
32. 2002, *Panelist*, American Society for Bioethics and Humanities Annual Meeting, "'Who Should Survive?:' Mental Retardation and the History of Bioethics," Baltimore, Maryland, October 24.

Invited/Visiting Professor Presentations

1. 2013, Visiting Professor, "How to Listen, Speak and Think Ethically: A Multidisciplinary Approach," Norton Suburban Hospital and Kosair Children's Hospital, Louisville, Kentucky, May 22.
2. 2010, Visiting Professor, Program in Bioethics and Humanities and Department of Pediatrics, "What to Do When Parents Want Everything Done: 'Futility' and Ethics Facilitation," University of Iowa Carver College of Medicine, Iowa City, Iowa, September 10.

Grand Round Presentations

1. 2019, David Green Lectureship, "Establishing Goals of Care and Ethically Limiting Treatment," Primary Children's Hospital, Salt Lake City, Utah, December 5.
2. 2018, "The Ethics of Medical Intervention for Transgender Youth," El Rio Health, Tucson, Arizona, September 29.
3. 2018, Pediatrics, "Patient Selection, Justice, and Cultural Difference: Ethical Issues in the Care of International Patients," Cleveland Clinic, Cleveland, Ohio, April 10.
4. 2018, Bioethics, "Reversibility, Fertility, and Conflict: Ethical Issues in the Care of Transgender and Gender Nonconforming Children and Adolescents," Cleveland Clinic, Cleveland, Ohio, April 9.
5. 2017, Heart Institute, "'Have you ever thought about what you would want—if god forbid—you became sicker?': Talking with adult patients about advance directives," Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, October 16.
6. 2017, Pediatrics, "Respectful, Effective Treatment of Jehovah's Witnesses," with Judith R. Ragsdale, PhD, MDiv and David Morales, MD, Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, March 14.
7. 2017, Pediatrics, "Ethical Dilemmas about Discharging Patients When There Are Disagreements Concerning Safety," Seattle Children's Hospital, Seattle, Washington, January 19.
8. 2015, Pediatrics, "'Nonbeneficial' Treatment: What must providers offer and what can they withhold?," Greenville Health System, Greenville, South Carolina, May 10.
9. 2014, Advance Practice Providers, "Common Ethical Issues," Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, August 13.
10. 2014, Respiratory Therapy, "Do-Not-Resuscitate (DNR) Orders," Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, July 15.
11. 2013, Heart Institute, "No Not Months. Twenty-Two *Years*-Old: Transiting Patients to an Adult Model of Care." Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, October 21.
12. 2013, Division of Neonatology, "This Premature Infant Has a *BRCA1* Mutation!?: Ethical Issues in Clinical Whole Exome Sequencing for Neonatologists." Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, October 11.
13. 2013, Department of Pediatrics, "Adults are Not Large Children: Ethical Issues in Caring for Adults in Children's Hospitals," Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, February 26.
14. 2012, "Mandate or Moratorium?: Persisting Ethical Controversies in Donation after Circulatory Death," Cedars-Sinai Medical Center, Los Angeles, California, May 16.
15. 2011, Division of Pediatric Neurology Friday Lecture Series, "Inducing or Treating 'Seizures' with Placebos: Is It Ever Ethical?," University of Utah, Salt Lake City, Utah, October 7.
16. 2011, Department of Surgery, "DNR Orders in the OR and other Ethical Issues in Pediatric Surgery: Case Discussions," Primary Children's Medical Center, Salt Lake City, Utah, October 3.
17. 2009, Department of Pediatrics, "What to Do When Parents Want Everything Done: 'Futility' and Bioethical Mediation," Primary Children's Medical Center, Salt Lake City, Utah, September 17.
18. 2008, Division of Pulmonology and Critical Care, "Futility: May Clinicians Ever Unilaterally Withhold or Withdraw Medical Treatment?" Utah Valley Regional Medical Center, Provo, Utah, April 17.
19. 2007, Division of Otolaryngology-Head and Neck Surgery, "Advance Directives, Durable Powers of Attorney for Healthcare, and Do Not Attempt Resuscitation Orders: Oh My!," University of Utah School of Medicine, Salt Lake City, Utah, June 20.

Outreach Presentations

1. 2019, *Panelist*, Cincinnati Edition, WVXU, "The Ethics of Human Gene Editing," Cincinnati, Ohio, June 13.
2. 2019, *Speaker,* Adult Forum, Indian Hill Church, "Medical Ethics," Indian Hill, Ohio, March 24.

3. 2016, *Speaker,* Conversations in Bioethics: The Intersection of Biology, Technology, and Faith, Mt. Washington Presbyterian Church, "Genetic Testing," Cincinnati, Ohio, October 12.
4. 2008, *Speaker,* Science in Society, Co-sponsored by KCPW and the City Library, "Death—Choices," Salt Lake City, Utah, November 20.
5. 2003, *Panelist,* Utah Symposium in Science and Literature, "The Goodness Switch: What Happens to Ethics if Behavior is All in Our Brains?" Salt Lake City, Utah, October 10.
6. 2002, *Respondent*, H. Tristram Englehardt, Jr. "The Culture Wars in Bioethics," Salt Lake Community College, Salt Lake City, Utah, March 29.

Podcasts

1. 2021, "Ethics of COVID Vaccines in Kids," PHM from Pittsburgh, August 12.
2. 2020, COVID Quandaries: Episode 1, "Is Getting Sick Just Part of the Job?" Hard Call, October 6.

EXHIBIT C

EXHIBIT C

TABLE 1: Strength of Recommendation and Quality of Evidence in Recommendations Made by the Endocrine Society

Strength of the Recommendation/ Quality of the Evidence[1]	Endocrine Treatment of Gender-Dysphoric/Gender-Incongruent Persons	Pediatric Obesity-Assessment, Treatment, and Prevention	Congenital Adrenal Hyperplasia Due to Steroid 21-Hydroxylase Deficiency
Strong|High	0 (0)[2]	0 (0)	0 (0)
Strong|Moderate	3 (11)	4 (13)	18 (33)
Strong|Low	5 (18)	6 (20)	13 (25)
Strong|Very Low	2 (7)	1 (3)	1 (2)
Weak|High	0 (0)	0 (0)	0 (0)
Weak|Moderate	0 (0)	0 (0)	2 (4)
Weak|Low	9 (32)	5 (17)	4 (7)
Weak|Very Low	3 (11)	12 (40)	7 (13)
Ungraded Good Practice Statement[3]	6 (21)	2 (7)	9 (17)
Either Low or Very Low	19 (68)	24 (80)	25 (46)
Total	28	30	54

[1] Quality of the Evidence
High: "Consistent evidence from well-performed RCTs [Randomized Controlled Trials] or exceptionally strong evidence from unbiased observational studies"
Moderate: "Evidence from RCTs with important limitations (inconsistent results, methodological flaws, indirect or imprecise evidence), or unusually strong evidence from unbiased observational studies"
Low: "Evidence for at least one critical outcomes from observational studies, from RCTs with serious flaws, or indirect evidence"
Very Low: "Evidence for at least one of the critical outcomes from unsystematic clinical observations or very indirect evidence"
See Swiglo BA, Murad MH, Schunemann HJ, et al. A case for clarity, consistency, and helpfulness: State-of-the-art clinical practice guidelines in endocrinology using the grading of recommendations, assessment, development, and evaluation system. *J Clin Endocrinol Metab*. 2008;93(3):666-73.

[2] n (%)

[3]Ungraded Good Practice Statement: "Direct evidence for these statements was either unavailable or not systematically appraised and considered out of the scope of this guideline. The intention of these statements is to draw attention to these principles." See Hembree WC, Cohen-Kettenis PT, Gooren L, et al. Endocrine treatment of gender-dysphoric/gender-incongruent persons: An Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab*. 2017;102(11):3869-3903.

Guidelines:

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Endocrine Treatment of Gender-Dysphoric/ Gender-Incongruent Persons: An Endocrine Society* Clinical Practice Guideline

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Objective: To update the "Endocrine Treatment of Transsexual Persons: An Endocrine Society Clinical Practice Guideline," published by the Endocrine Society in 2009.

Participants: The participants include an Endocrine Society–appointed task force of nine experts, a methodologist, and a medical writer.

Evidence: This evidence-based guideline was developed using the Grading of Recommendations, Assessment, Development, and Evaluation approach to describe the strength of recommendations and the quality of evidence. The task force commissioned two systematic reviews and used the best available evidence from other published systematic reviews and individual studies.

Consensus Process: Group meetings, conference calls, and e-mail communications enabled consensus. Endocrine Society committees, members and cosponsoring organizations reviewed and commented on preliminary drafts of the guidelines.

Conclusion: Gender affirmation is multidisciplinary treatment in which endocrinologists play an important role. Gender-dysphoric/gender-incongruent persons seek and/or are referred to endocrinologists to develop the physical characteristics of the affirmed gender. They require a safe and effective hormone regimen that will (1) suppress endogenous sex hormone secretion determined by the person's genetic/gonadal sex and (2) maintain sex hormone levels within the normal range for the person's affirmed gender. Hormone treatment is not recommended for prepubertal gender-dysphoric/gender-incongruent persons. Those clinicians who recommend gender-affirming endocrine treatments—appropriately trained diagnosing clinicians (required), a mental health provider for adolescents (required) and mental health

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Abbreviations: BMD, bone mineral density; DSD, disorder/difference of sex development; DSM, Diagnostic and Statistical Manual of Mental Disorders; GD, gender dysphoria; GnRH, gonadotropin-releasing hormone; ICD, International Statistical Classification of Diseases and Related Health Problems; MHP, mental health professional; VTE, venous thromboembolism.

professional for adults (recommended)—should be knowledgeable about the diagnostic criteria and criteria for gender-affirming treatment, have sufficient training and experience in assessing psychopathology, and be willing to participate in the ongoing care throughout the endocrine transition. We recommend treating gender-dysphoric/gender-incongruent adolescents who have entered puberty at Tanner Stage G2/B2 by suppression with gonadotropin-releasing hormone agonists. Clinicians may add gender-affirming hormones after a multidisciplinary team has confirmed the persistence of gender dysphoria/gender incongruence and sufficient mental capacity to give informed consent to this partially irreversible treatment. Most adolescents have this capacity by age 16 years old. We recognize that there may be compelling reasons to initiate sex hormone treatment prior to age 16 years, although there is minimal published experience treating prior to 13.5 to 14 years of age. For the care of peripubertal youths and older adolescents, we recommend that an expert multidisciplinary team comprised of medical professionals and mental health professionals manage this treatment. The treating physician must confirm the criteria for treatment used by the referring mental health practitioner and collaborate with them in decisions about gender-affirming surgery in older adolescents. For adult gender-dysphoric/gender-incongruent persons, the treating clinicians (collectively) should have expertise in transgender-specific diagnostic criteria, mental health, primary care, hormone treatment, and surgery, as needed by the patient. We suggest maintaining physiologic levels of gender-appropriate hormones and monitoring for known risks and complications. When high doses of sex steroids are required to suppress endogenous sex steroids and/or in advanced age, clinicians may consider surgically removing natal gonads along with reducing sex steroid treatment. Clinicians should monitor both transgender males (female to male) and transgender females (male to female) for reproductive organ cancer risk when surgical removal is incomplete. Additionally, clinicians should persistently monitor adverse effects of sex steroids. For gender-affirming surgeries in adults, the treating physician must collaborate with and confirm the criteria for treatment used by the referring physician. Clinicians should avoid harming individuals (via hormone treatment) who have conditions other than gender dysphoria/gender incongruence and who may not benefit from the physical changes associated with this treatment. (***J Clin Endocrinol Metab*** **102: 3869–3903, 2017)**

Summary of Recommendations

1.0 Evaluation of youth and adults

1.1. We advise that only trained mental health professionals (MHPs) who meet the following criteria should diagnose gender dysphoria (GD)/gender incongruence in adults: (1) competence in using the Diagnostic and Statistical Manual of Mental Disorders (DSM) and/or the International Statistical Classification of Diseases and Related Health Problems (ICD) for diagnostic purposes, (2) the ability to diagnose GD/gender incongruence and make a distinction between GD/gender incongruence and conditions that have similar features (*e.g.*, body dysmorphic disorder), (3) training in diagnosing psychiatric conditions, (4) the ability to undertake or refer for appropriate treatment, (5) the ability to psychosocially assess the person's understanding, mental health, and social conditions that can impact gender-affirming hormone therapy, and (6) a practice of regularly attending relevant professional meetings. (Ungraded Good Practice Statement)

1.2. We advise that only MHPs who meet the following criteria should diagnose GD/gender incongruence in children and adolescents: (1) training in child and adolescent developmental psychology and psychopathology, (2) competence in using the DSM and/or the ICD for diagnostic purposes, (3) the ability to make a distinction between GD/gender incongruence and conditions that have similar features (*e.g.*, body dysmorphic disorder), (4) training in diagnosing psychiatric conditions, (5) the ability to undertake or refer for appropriate treatment, (6) the ability to psychosocially assess the person's understanding and social conditions that can impact gender-affirming hormone therapy, (7) a practice of regularly attending relevant professional meetings, and (8) knowledge of the criteria for puberty blocking and gender-affirming hormone treatment in adolescents. (Ungraded Good Practice Statement)

1.3. We advise that decisions regarding the social transition of prepubertal youths with GD/gender incongruence are made with the assistance of an MHP or another experienced professional. (Ungraded Good Practice Statement).

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1.4. We recommend against puberty blocking and gender-affirming hormone treatment in prepubertal children with GD/gender incongruence. (1 |⊕⊕◯◯)

1.5. We recommend that clinicians inform and counsel all individuals seeking gender-affirming medical treatment regarding options for fertility preservation prior to initiating puberty suppression in adolescents and prior to treating with hormonal therapy of the affirmed gender in both adolescents and adults. (1 |⊕⊕⊕◯)

2.0 Treatment of adolescents

2.1. We suggest that adolescents who meet diagnostic criteria for GD/gender incongruence, fulfill criteria for treatment, and are requesting treatment should initially undergo treatment to suppress pubertal development. (2 |⊕⊕◯◯)

2.2. We suggest that clinicians begin pubertal hormone suppression after girls and boys first exhibit physical changes of puberty. (2 |⊕⊕◯◯)

2.3. We recommend that, where indicated, GnRH analogues are used to suppress pubertal hormones. (1 |⊕⊕◯◯)

2.4. In adolescents who request sex hormone treatment (given this is a partly irreversible treatment), we recommend initiating treatment using a gradually increasing dose schedule after a multidisciplinary team of medical and MHPs has confirmed the persistence of GD/gender incongruence and sufficient mental capacity to give informed consent, which most adolescents have by age 16 years. (1 |⊕⊕◯◯).

2.5. We recognize that there may be compelling reasons to initiate sex hormone treatment prior to the age of 16 years in some adolescents with GD/gender incongruence, even though there are minimal published studies of gender-affirming hormone treatments administered before age 13.5 to 14 years. As with the care of adolescents ≥16 years of age, we recommend that an expert multidisciplinary team of medical and MHPs manage this treatment. (1 |⊕◯◯◯)

2.6. We suggest monitoring clinical pubertal development every 3 to 6 months and laboratory parameters every 6 to 12 months during sex hormone treatment. (2 |⊕⊕◯◯)

3.0 Hormonal therapy for transgender adults

3.1. We recommend that clinicians confirm the diagnostic criteria of GD/gender incongruence and the criteria for the endocrine phase of gender transition before beginning treatment. (1 |⊕⊕⊕◯)

3.2. We recommend that clinicians evaluate and address medical conditions that can be exacerbated by hormone depletion and treatment with sex hormones of the affirmed gender before beginning treatment. (1 |⊕⊕⊕◯)

3.3. We suggest that clinicians measure hormone levels during treatment to ensure that endogenous sex steroids are suppressed and administered sex steroids are maintained in the normal physiologic range for the affirmed gender. (2 |⊕⊕◯◯)

3.4. We suggest that endocrinologists provide education to transgender individuals undergoing treatment about the onset and time course of physical changes induced by sex hormone treatment. (2 |⊕◯◯◯)

4.0 Adverse outcome prevention and long-term care

4.1. We suggest regular clinical evaluation for physical changes and potential adverse changes in response to sex steroid hormones and laboratory monitoring of sex steroid hormone levels every 3 months during the first year of hormone therapy for transgender males and females and then once or twice yearly. (2 |⊕⊕◯◯)

4.2. We suggest periodically monitoring prolactin levels in transgender females treated with estrogens. (2 |⊕⊕◯◯)

4.3. We suggest that clinicians evaluate transgender persons treated with hormones for cardiovascular risk factors using fasting lipid profiles, diabetes screening, and/or other diagnostic tools. (2 |⊕⊕◯◯)

4.4. We recommend that clinicians obtain bone mineral density (BMD) measurements when risk factors for osteoporosis exist, specifically in those who stop sex hormone therapy after gonadectomy. (1 |⊕⊕◯◯)

4.5. We suggest that transgender females with no known increased risk of breast cancer follow breast-screening guidelines recommended for non-transgender females. (2 |⊕⊕◯◯)

4.6. We suggest that transgender females treated with estrogens follow individualized screening according to personal risk for prostatic disease and prostate cancer. (2 |⊕◯◯◯)

4.7. We advise that clinicians determine the medical necessity of including a total hysterectomy and oophorectomy as part of gender-affirming surgery. (Ungraded Good Practice Statement)

5.0 Surgery for sex reassignment and gender confirmation

5.1. We recommend that a patient pursue genital gender-affirming surgery only after the MHP and the clinician responsible for endocrine transition therapy both agree that surgery is medically necessary and would benefit the patient's overall health and/or well-being. (1 ⊕⊕◯◯)

5.2. We advise that clinicians approve genital gender-affirming surgery only after completion of at least 1 year of consistent and compliant hormone treatment, unless hormone therapy is not desired or medically contraindicated. (Ungraded Good Practice Statement)

5.3. We advise that the clinician responsible for endocrine treatment and the primary care provider ensure appropriate medical clearance of transgender individuals for genital gender-affirming surgery and collaborate with the surgeon regarding hormone use during and after surgery. (Ungraded Good Practice Statement)

5.4. We recommend that clinicians refer hormone-treated transgender individuals for genital surgery when: (1) the individual has had a satisfactory social role change, (2) the individual is satisfied about the hormonal effects, and (3) the individual desires definitive surgical changes. (1 ⊕◯◯◯)

5.5. We suggest that clinicians delay gender-affirming genital surgery involving gonadectomy and/or hysterectomy until the patient is at least 18 years old or legal age of majority in his or her country. (2 ⊕⊕◯◯).

5.6. We suggest that clinicians determine the timing of breast surgery for transgender males based upon the physical and mental health status of the individual. There is insufficient evidence to recommend a specific age requirement. (2 ⊕◯◯◯)

Changes Since the Previous Guideline

Both the current guideline and the one published in 2009 contain similar sections. Listed here are the sections contained in the current guideline and the corresponding number of recommendations: Introduction, Evaluation of Youth and Adults (5), Treatment of Adolescents (6), Hormonal Therapy for Transgender Adults (4), Adverse Outcomes Prevention and Long-term Care (7), and Surgery for Sex Reassignment and Gender Confirmation (6). The current introduction updates the diagnostic classification of "gender dysphoria/gender incongruence." It also reviews the development of "gender identity" and summarizes its natural development. The section on clinical evaluation of both youth and adults, defines in detail the professional qualifications required of those who diagnose and treat both adolescents and adults. We advise that decisions regarding the social transition of prepubertal youth are made with the assistance of a mental health professional or similarly experienced professional. We recommend against puberty blocking followed by gender-affirming hormone treatment of prepubertal children. Clinicians should inform pubertal children, adolescents, and adults seeking gender-confirming treatment of their options for fertility preservation. Prior to treatment, clinicians should evaluate the presence of medical conditions that may be worsened by hormone depletion and/or treatment. A multidisciplinary team, preferably composed of medical and mental health professionals, should monitor treatments. Clinicians evaluating transgender adults for endocrine treatment should confirm the diagnosis of persistent gender dysphoria/gender incongruence. Physicians should educate transgender persons regarding the time course of steroid-induced physical changes. Treatment should include periodic monitoring of hormone levels and metabolic parameters, as well as assessments of bone density and the impact upon prostate, gonads, and uterus. We also make recommendations for transgender persons who plan genital gender-affirming surgery.

Method of Development of Evidence-Based Clinical Practice Guidelines

The Clinical Guidelines Subcommittee (CGS) of the Endocrine Society deemed the diagnosis and treatment of individuals with GD/gender incongruence a priority area for revision and appointed a task force to formulate evidence-based recommendations. The task force followed the approach recommended by the Grading of Recommendations, Assessment, Development, and Evaluation group, an international group with expertise in the development and implementation of evidence-based guidelines (1). A detailed description of the grading scheme has been published elsewhere (2). The task force used the best available research evidence to develop the recommendations. The task force also used consistent language and graphical descriptions of both the strength of a recommendation and the quality of evidence. In terms of the strength of the recommendation, strong recommendations use the phrase "we recommend" and the number 1, and weak recommendations use the phrase "we suggest" and the number 2. Cross-filled circles indicate the quality of the evidence, such that ⊕◯◯◯ denotes very low–quality evidence; ⊕⊕◯◯, low quality; ⊕⊕⊕◯, moderate quality; and ⊕⊕⊕⊕, high quality. The task force has confidence that persons who receive care according to the strong recommendations will derive, on average, more benefit than harm. Weak recommendations require more careful consideration of the person's circumstances, values, and preferences to determine the best course of action. Linked to each recommendation is a description of the evidence and the

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values that the task force considered in making the recommendation. In some instances, there are remarks in which the task force offers technical suggestions for testing conditions, dosing, and monitoring. These technical comments reflect the best available evidence applied to a typical person being treated. Often this evidence comes from the unsystematic observations of the task force and their preferences; therefore, one should consider these remarks as suggestions.

In this guideline, the task force made several statements to emphasize the importance of shared decision-making, general preventive care measures, and basic principles of the treatment of transgender persons. They labeled these "Ungraded Good Practice Statement." Direct evidence for these statements was either unavailable or not systematically appraised and considered out of the scope of this guideline. The intention of these statements is to draw attention to these principles.

The Endocrine Society maintains a rigorous conflict-of-interest review process for developing clinical practice guidelines. All task force members must declare any potential conflicts of interest by completing a conflict-of-interest form. The CGS reviews all conflicts of interest before the Society's Council approves the members to participate on the task force and periodically during the development of the guideline. All others participating in the guideline's development must also disclose any conflicts of interest in the matter under study, and most of these participants must be without any conflicts of interest. The CGS and the task force have reviewed all disclosures for this guideline and resolved or managed all identified conflicts of interest.

Conflicts of interest are defined as remuneration in any amount from commercial interests; grants; research support; consulting fees; salary; ownership interests [*e.g.*, stocks and stock options (excluding diversified mutual funds)]; honoraria and other payments for participation in speakers' bureaus, advisory boards, or boards of directors; and all other financial benefits. Completed forms are available through the Endocrine Society office.

The Endocrine Society provided the funding for this guideline; the task force received no funding or remuneration from commercial or other entities.

Commissioned Systematic Review

The task force commissioned two systematic reviews to support this guideline. The first one aimed to summarize the available evidence on the effect of sex steroid use in transgender individuals on lipids and cardiovascular outcomes. The review identified 29 eligible studies at moderate risk of bias. In transgender males (female to male), sex steroid therapy was associated with a statistically significant increase in serum triglycerides and low-density lipoprotein cholesterol levels. High-density lipoprotein cholesterol levels decreased significantly across all follow-up time periods. In transgender females (male to female), serum triglycerides were significantly higher without any changes in other parameters. Few myocardial infarction, stroke, venous thromboembolism (VTE), and death events were reported. These events were more frequent in transgender females. However, the quality of the evidence was low. The second review summarized the available evidence regarding the effect of sex steroids on bone health in transgender individuals and identified 13 studies. In transgender males, there was no statistically significant difference in the lumbar spine, femoral neck, or total hip BMD at 12 and 24 months compared with baseline values before initiating masculinizing hormone therapy. In transgender females, there was a statistically significant increase in lumbar spine BMD at 12 months and 24 months compared with baseline values before initiation of feminizing hormone therapy. There was minimal information on fracture rates. The quality of evidence was also low.

Introduction

Throughout recorded history (in the absence of an endocrine disorder) some men and women have experienced confusion and anguish resulting from rigid, forced conformity to sexual dimorphism. In modern history, there have been numerous ongoing biological, psychological, cultural, political, and sociological debates over various aspects of gender variance. The 20th century marked the emergence of a social awakening for men and women with the belief that they are "trapped" in the wrong body (3). Magnus Hirschfeld and Harry Benjamin, among others, pioneered the medical responses to those who sought relief from and a resolution to their profound discomfort. Although the term transsexual became widely known after Benjamin wrote "The Transsexual Phenomenon" (4), it was Hirschfeld who coined the term "transsexual" in 1923 to describe people who want to live a life that corresponds with their experienced gender vs their designated gender (5). Magnus Hirschfeld (6) and others (4, 7) have described other types of trans phenomena besides transsexualism. These early researchers proposed that the gender identity of these people was located somewhere along a unidimensional continuum. This continuum ranged from all male through "something in between" to all female. Yet such a classification does not take into account that people may have gender identities outside this continuum. For instance, some experience themselves as having both a male and female gender identity, whereas others completely renounce any gender classification (8, 9). There are also reports of individuals experiencing a continuous and rapid involuntary alternation between a male and female identity (10) or men who do not experience themselves as men but do not want to live as women (11, 12). In some countries, (*e.g.*, Nepal, Bangladesh, and Australia), these nonmale or nonfemale genders are officially recognized (13). Specific treatment protocols, however, have not yet been developed for these groups.

Instead of the term transsexualism, the current classification system of the American Psychiatric Association uses the term gender dysphoria in its diagnosis of persons who are not satisfied with their designated gender (14). The current version of the World Health Organization's ICD-10 still uses the term transsexualism when diagnosing adolescents and adults. However, for the ICD-11, the World Health Organization has proposed using the term "gender incongruence" (15).

Treating persons with GD/gender incongruence (15) was previously limited to relatively ineffective elixirs or creams. However, more effective endocrinology-based treatments became possible with the availability of testosterone in 1935 and diethylstilbestrol in 1938. Reports of individuals with GD/gender incongruence who were treated with hormones and gender-affirming surgery appeared in the press during the second half of the 20th century. The Harry Benjamin International Gender Dysphoria Association was founded in September 1979 and is now called the World Professional Association for Transgender Health (WPATH). WPATH published its first Standards of Care in 1979. These standards have since been regularly updated, providing guidance for treating persons with GD/gender incongruence (16).

Prior to 1975, few peer-reviewed articles were published concerning endocrine treatment of transgender persons. Since then, more than two thousand articles about various aspects of transgender care have appeared.

It is the purpose of this guideline to make detailed recommendations and suggestions, based on existing medical literature and clinical experience, that will enable treating physicians to maximize benefit and minimize risk when caring for individuals diagnosed with GD/gender incongruence.

In the future, we need more rigorous evaluations of the effectiveness and safety of endocrine and surgical protocols. Specifically, endocrine treatment protocols for GD/gender incongruence should include the careful assessment of the following: (1) the effects of prolonged delay of puberty in adolescents on bone health, gonadal function, and the brain (including effects on cognitive, emotional, social, and sexual development); (2) the effects of treatment in adults on sex hormone levels; (3) the requirement for and the effects of progestins and other agents used to suppress endogenous sex steroids during treatment; and (4) the risks and benefits of gender-affirming hormone treatment in older transgender people.

To successfully establish and enact these protocols, a commitment of mental health and endocrine investigators is required to collaborate in long-term, large-scale studies across countries that use the same diagnostic and inclusion criteria, medications, assay methods, and response assessment tools (*e.g.*, the European Network for the Investigation of Gender Incongruence) (17, 18).

Terminology and its use vary and continue to evolve. Table 1 contains the definitions of terms as they are used throughout this guideline.

Biological Determinants of Gender Identity Development

One's self-awareness as male or female changes gradually during infant life and childhood. This process of cognitive and affective learning evolves with interactions with parents, peers, and environment. A fairly accurate timetable exists outlining the steps in this process (19). Normative psychological literature, however, does not address if and when gender identity becomes crystallized and what factors contribute to the development of a gender identity that is not congruent with the gender of rearing. Results of studies from a variety of biomedical disciplines—genetic, endocrine, and neuroanatomic—support the concept that gender identity and/or gender expression (20) likely reflect a complex interplay of biological, environmental, and cultural factors (21, 22).

With respect to endocrine considerations, studies have failed to find differences in circulating levels of sex steroids between transgender and nontransgender individuals (23). However, studies in individuals with a disorder/difference of sex development (DSD) have informed our understanding of the role that hormones may play in gender identity outcome, even though most persons with GD/gender incongruence do not have a DSD. For example, although most 46,XX adult individuals with virilizing congenital adrenal hyperplasia caused by mutations in *CYP21A2* reported a female gender identity, the prevalence of GD/gender incongruence was much greater in this group than in the general population without a DSD. This supports the concept that there is a role for prenatal/postnatal androgens in gender development (24–26), although some studies indicate that prenatal androgens are more likely to affect gender behavior and sexual orientation rather than gender identity *per se* (27, 28).

Researchers have made similar observations regarding the potential role of androgens in the development of gender identity in other individuals with DSD. For example, a review of two groups of 46,XY persons, each with androgen synthesis deficiencies and female raised, reported transgender male (female-to-male) gender role changes in 56% to 63% and 39% to 64% of patients, respectively (29). Also, in 46,XY female-raised individuals with cloacal

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Table 1. Definitions of Terms Used in This Guideline

Biological sex, biological male or female: These terms refer to physical aspects of maleness and femaleness. As these may not be in line with each other (*e.g.*, a person with XY chromosomes may have female-appearing genitalia), the terms biological sex and biological male or female are imprecise and should be avoided.

Cisgender: This means not transgender. An alternative way to describe individuals who are not transgender is "non-transgender people."

Gender-affirming (hormone) treatment: See "gender reassignment"

Gender dysphoria: This is the distress and unease experienced if gender identity and designated gender are not completely congruent (see Table 2). In 2013, the American Psychiatric Association released the fifth edition of the DSM-5, which replaced "gender identity disorder" with "gender dysphoria" and changed the criteria for diagnosis.

Gender expression: This refers to external manifestations of gender, expressed through one's name, pronouns, clothing, haircut, behavior, voice, or body characteristics. Typically, transgender people seek to make their gender expression align with their gender identity, rather than their designated gender.

Gender identity/experienced gender: This refers to one's internal, deeply held sense of gender. For transgender people, their gender identity does not match their sex designated at birth. Most people have a gender identity of man or woman (or boy or girl). For some people, their gender identity does not fit neatly into one of those two choices. Unlike gender expression (see below), gender identity is not visible to others.

Gender identity disorder: This is the term used for GD/gender incongruence in previous versions of DSM (see "gender dysphoria"). The ICD-10 still uses the term for diagnosing child diagnoses, but the upcoming ICD-11 has proposed using "gender incongruence of childhood."

Gender incongruence: This is an umbrella term used when the gender identity and/or gender expression differs from what is typically associated with the designated gender. Gender incongruence is also the proposed name of the gender identity–related diagnoses in ICD-11. Not all individuals with gender incongruence have gender dysphoria or seek treatment.

Gender variance: See "gender incongruence"

Gender reassignment: This refers to the treatment procedure for those who want to adapt their bodies to the experienced gender by means of hormones and/or surgery. This is also called gender-confirming or gender-affirming treatment.

Gender-reassignment surgery (gender-confirming/gender-affirming surgery): These terms refer only to the surgical part of gender-confirming/gender-affirming treatment.

Gender role: This refers to behaviors, attitudes, and personality traits that a society (in a given culture and historical period) designates as masculine or feminine and/or that society associates with or considers typical of the social role of men or women.

Sex designated at birth: This refers to sex assigned at birth, usually based on genital anatomy.

Sex: This refers to attributes that characterize biological maleness or femaleness. The best known attributes include the sex-determining genes, the sex chromosomes, the H-Y antigen, the gonads, sex hormones, internal and external genitalia, and secondary sex characteristics.

Sexual orientation: This term describes an individual's enduring physical and emotional attraction to another person. Gender identity and sexual orientation are not the same. Irrespective of their gender identity, transgender people may be attracted to women (gynephilic), attracted to men (androphilic), bisexual, asexual, or queer.

Transgender: This is an umbrella term for people whose gender identity and/or gender expression differs from what is typically associated with their sex designated at birth. Not all transgender individuals seek treatment.

Transgender male (also: trans man, female-to-male, transgender male): This refers to individuals assigned female at birth but who identify and live as men.

Transgender woman (also: trans woman, male-to female, transgender female): This refers to individuals assigned male at birth but who identify and live as women.

Transition: This refers to the process during which transgender persons change their physical, social, and/or legal characteristics consistent with the affirmed gender identity. Prepubertal children may choose to transition socially.

Transsexual: This is an older term that originated in the medical and psychological communities to refer to individuals who have permanently transitioned through medical interventions or desired to do so.

exstrophy and penile agenesis, the occurrence of transgender male changes was significantly more prevalent than in the general population (30, 31). However, the fact that a high percentage of individuals with the same conditions did not change gender suggests that cultural factors may play a role as well.

With respect to genetics and gender identity, several studies have suggested heritability of GD/gender incongruence (32, 33). In particular, a study by Heylens *et al.* (33) demonstrated a 39.1% concordance rate for gender identity disorder (based on the DSM-IV criteria) in 23 monozygotic twin pairs but no concordance in 21 same-sex dizygotic or seven opposite-sex twin pairs. Although numerous investigators have sought to identify specific genes associated with GD/gender incongruence, such studies have been inconsistent and without strong statistical significance (34–38).

Studies focusing on brain structure suggest that the brain phenotypes of people with GD/gender incongruence differ in various ways from control males and females, but that there is not a complete sex reversal in brain structures (39).

In summary, although there is much that is still unknown with respect to gender identity and its expression, compelling studies support the concept that biologic factors, in addition to environmental factors, contribute to this fundamental aspect of human development.

Natural History of Children With GD/Gender Incongruence

With current knowledge, we cannot predict the psychosexual outcome for any specific child. Prospective follow-up studies show that childhood GD/gender incongruence does not invariably persist into adolescence and adulthood (so-called "desisters"). Combining all outcome studies to date, the GD/gender incongruence of a minority of prepubertal children appears to persist in adolescence (20, 40). In adolescence, a significant number of these desisters identify as homosexual or bisexual. It may be that children who only showed some gender nonconforming characteristics have been included in the follow-up studies, because the DSM-IV text revision criteria for a diagnosis were rather broad. However, the persistence of GD/gender incongruence into adolescence is more likely if it had been extreme in childhood (41, 42). With the newer, stricter criteria of the DSM-5 (Table 2), persistence rates may well be different in future studies.

1.0 Evaluation of Youth and Adults

Gender-affirming treatment is a multidisciplinary effort. After evaluation, education, and diagnosis, treatment may include mental health care, hormone therapy, and/or surgical therapy. Together with an MHP, hormone-prescribing clinicians should examine the psychosocial impact of the potential changes on people's lives, including mental health, friends, family, jobs, and their role in society. Transgender individuals should be encouraged to experience living in the new gender role and assess whether this improves their quality of life. Although the focus of this guideline is gender-affirming hormone therapy, collaboration with appropriate professionals responsible for each aspect of treatment maximizes a successful outcome.

Diagnostic assessment and mental health care

GD/gender incongruence may be accompanied with psychological or psychiatric problems (43–51). It is therefore necessary that clinicians who prescribe hormones and are involved in diagnosis and psychosocial assessment meet the following criteria: (1) are competent in using the DSM and/or the ICD for diagnostic purposes, (2) are able to diagnose GD/gender incongruence and make a distinction between GD/gender incongruence and conditions that have similar features (*e.g.*, body dysmorphic disorder), (3) are trained in diagnosing psychiatric conditions, (4) undertake or refer for appropriate treatment, (5) are able to do a psychosocial assessment of the patient's understanding, mental health, and social conditions that can impact gender-affirming hormone therapy, and (6) regularly attend relevant professional meetings.

Because of the psychological vulnerability of many individuals with GD/gender incongruence, it is important that mental health care is available before, during, and sometimes also after transitioning. For children and adolescents, an MHP who has training/experience in child and adolescent gender development (as well as child and adolescent psychopathology) should make the diagnosis, because assessing GD/gender incongruence in children and adolescents is often extremely complex.

During assessment, the clinician obtains information from the individual seeking gender-affirming treatment. In the case

Table 2. DSM-5 Criteria for Gender Dysphoria in Adolescents and Adults

A. A marked incongruence between one's experienced/expressed gender and natal gender of at least 6 mo in duration, as manifested by at least two of the following:
   1. A marked incongruence between one's experienced/expressed gender and primary and/or secondary sex characteristics (or in young adolescents, the anticipated secondary sex characteristics)
   2. A strong desire to be rid of one's primary and/or secondary sex characteristics because of a marked incongruence with one's experienced/expressed gender (or in young adolescents, a desire to prevent the development of the anticipated secondary sex characteristics)
   3. A strong desire for the primary and/or secondary sex characteristics of the other gender
   4. A strong desire to be of the other gender (or some alternative gender different from one's designated gender)
   5. A strong desire to be treated as the other gender (or some alternative gender different from one's designated gender)
   6. A strong conviction that one has the typical feelings and reactions of the other gender (or some alternative gender different from one's designated gender)

B. The condition is associated with clinically significant distress or impairment in social, occupational, or other important areas of functioning.

Specify if:
   1. The condition exists with a disorder of sex development.
   2. The condition is posttransitional, in that the individual has transitioned to full-time living in the desired gender (with or without legalization of gender change) and has undergone (or is preparing to have) at least one sex-related medical procedure or treatment regimen—namely, regular sex hormone treatment or gender reassignment surgery confirming the desired gender (*e.g.*, penectomy, vaginoplasty in natal males; mastectomy or phalloplasty in natal females).

Reference: American Psychiatric Association (14).

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of adolescents, the clinician also obtains information from the parents or guardians regarding various aspects of the child's general and psychosexual development and current functioning. On the basis of this information, the clinician:

- decides whether the individual fulfills criteria for treatment (see Tables 2 and 3) for GD/gender incongruence (DSM-5) or transsexualism (DSM-5 and/or ICD-10);
- informs the individual about the possibilities and limitations of various kinds of treatment (hormonal/surgical and nonhormonal), and if medical treatment is desired, provides correct information to prevent unrealistically high expectations;
- assesses whether medical interventions may result in unfavorable psychological and social outcomes.

In cases in which severe psychopathology, circumstances, or both seriously interfere with the diagnostic work or make satisfactory treatment unlikely, clinicians should assist the adolescent in managing these other issues. Literature on postoperative regret suggests that besides poor quality of surgery, severe psychiatric comorbidity and lack of support may interfere with positive outcomes (52–56).

For adolescents, the diagnostic procedure usually includes a complete psychodiagnostic assessment (57) and an assessment of the decision-making capability of the youth. An evaluation to assess the family's ability to endure stress, give support, and deal with the complexities of the adolescent's situation should be part of the diagnostic phase (58).

Social transitioning

A change in gender expression and role (which may involve living part time or full time in another gender role that is consistent with one's gender identity) may test the person's resolve, the capacity to function in the affirmed gender, and the adequacy of social, economic, and psychological supports. It assists both the individual and the clinician in their judgments about how to proceed (16). During social transitioning, the person's feelings about the social transformation (including coping with the responses of others) is a major focus of the counseling. The optimal timing for social transitioning may differ between individuals. Sometimes people wait until they start gender-affirming hormone treatment to make social transitioning easier, but individuals increasingly start social transitioning long before they receive medically supervised, gender-affirming hormone treatment.

Criteria

Adolescents and adults seeking gender-affirming hormone treatment and surgery should satisfy certain criteria before proceeding (16). Criteria for gender-affirming hormone therapy for adults are in Table 4, and criteria for gender-affirming hormone therapy for adolescents are in Table 5. Follow-up studies in adults meeting these criteria indicate a high satisfaction rate with treatment (59). However, the quality of evidence is usually low. A few follow-up studies on adolescents who fulfilled these criteria also indicated good treatment results (60–63).

Recommendations for Those Involved in the Gender-Affirming Hormone Treatment of Individuals With GD/Gender Incongruence

1.1. We advise that only trained MHPs who meet the following criteria should diagnose GD/gender incongruence in adults: (1) competence in using the DSM and/or the ICD for diagnostic purposes, (2) the ability to diagnose GD/gender incongruence and make a distinction between GD/gender incongruence and conditions that have similar features (*e.g.*, body dysmorphic disorder), (3) training in diagnosing psychiatric conditions, (4) the ability to undertake or refer for appropriate treatment, (5) the ability to psychosocially assess the person's understanding, mental health, and social conditions that can impact gender-affirming hormone therapy, and (6) a practice of regularly attending relevant professional meetings. (Ungraded Good Practice Statement)

1.2. We advise that only MHPs who meet the following criteria should diagnose GD/gender incongruence in children and adolescents: (1) training in child and adolescent developmental psychology and psychopathology, (2) competence in using the DSM and/or ICD for diagnostic

Table 3. ICD-10 Criteria for Transsexualism

Transsexualism (F64.0) has three criteria:
1. The desire to live and be accepted as a member of the opposite sex, usually accompanied by the wish to make his or her body as congruent as possible with the preferred sex through surgery and hormone treatments.
2. The transsexual identity has been present persistently for at least 2 y.
3. The disorder is not a symptom of another mental disorder or a genetic, DSD, or chromosomal abnormality.

Table 4. Criteria for Gender-Affirming Hormone Therapy for Adults

1. Persistent, well-documented gender dysphoria/gender incongruence
2. The capacity to make a fully informed decision and to consent for treatment
3. The age of majority in a given country (if younger, follow the criteria for adolescents)
4. Mental health concerns, if present, must be reasonably well controlled

Reproduced from World Professional Association for Transgender Health (16).

purposes, (3) the ability to make a distinction between GD/gender incongruence and conditions that have similar features (*e.g.*, body dysmorphic disorder), (4) training in diagnosing psychiatric conditions, (5) the ability to undertake or refer for appropriate treatment, (6) the ability to psychosocially assess the person's understanding and social conditions that can impact gender-affirming hormone therapy, (7) a practice of regularly attending relevant professional meetings, and (8) knowledge of the criteria for puberty blocking and gender-affirming hormone treatment in adolescents. (Ungraded Good Practice Statement)

Evidence

Individuals with gender identity issues may have psychological or psychiatric problems (43–48, 50, 51, 64, 65). It is therefore necessary that clinicians making the diagnosis are able to make a distinction between GD/gender incongruence and conditions that have similar features. Examples of conditions with similar features are body dysmorphic disorder, body identity integrity disorder (a condition in which individuals have a sense that their anatomical configuration as an able-bodied person is somehow wrong or inappropriate) (66), or certain forms of eunuchism (in which a person is preoccupied with or engages in castration and/or penectomy for

Table 5. Criteria for Gender-Affirming Hormone Therapy for Adolescents

Adolescents are eligible for GnRH agonist treatment if:

1. A qualified MHP has confirmed that:
- the adolescent has demonstrated a long-lasting and intense pattern of gender nonconformity or gender dysphoria (whether suppressed or expressed),
- gender dysphoria worsened with the onset of puberty,
- any coexisting 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,
- the adolescent has sufficient mental capacity to give informed consent to this (reversible) treatment,

2. And the adolescent:
- has been informed of the effects and side effects of treatment (including potential loss of fertility if the individual subsequently continues with sex hormone treatment) and options to preserve fertility,
- has given informed consent and (particularly when the adolescent has not reached the age of legal medical consent, depending on applicable legislation) the parents or other caretakers or guardians have consented to the treatment and are involved in supporting the adolescent throughout the treatment process,

3. And a pediatric endocrinologist or other clinician experienced in pubertal assessment
- agrees with the indication for GnRH agonist treatment,
- has confirmed that puberty has started in the adolescent (Tanner stage ≥G2/B2),
- has confirmed that there are no medical contraindications to GnRH agonist treatment.

Adolescents are eligible for subsequent sex hormone treatment if:

1. A qualified MHP has confirmed:
- the persistence of gender dysphoria,
- any coexisting 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 sex hormone treatment,
- the adolescent has sufficient mental capacity (which most adolescents have by age 16 years) to estimate the consequences of this (partly) irreversible treatment, weigh the benefits and risks, and give informed consent to this (partly) irreversible treatment,

2. And the adolescent:
- has been informed of the (irreversible) effects and side effects of treatment (including potential loss of fertility and options to preserve fertility),
- has given informed consent and (particularly when the adolescent has not reached the age of legal medical consent, depending on applicable legislation) the parents or other caretakers or guardians have consented to the treatment and are involved in supporting the adolescent throughout the treatment process,

3. And a pediatric endocrinologist or other clinician experienced in pubertal induction:
- agrees with the indication for sex hormone treatment,
- has confirmed that there are no medical contraindications to sex hormone treatment.

Reproduced from World Professional Association for Transgender Health (16).

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reasons that are not gender identity related) (11). Clinicians should also be able to diagnose psychiatric conditions accurately and ensure that these conditions are treated appropriately, particularly when the conditions may complicate treatment, affect the outcome of gender-affirming treatment, or be affected by hormone use.

Values and preferences

The task force placed a very high value on avoiding harm from hormone treatment in individuals who have conditions other than GD/gender incongruence and who may not benefit from the physical changes associated with this treatment and placed a low value on any potential benefit these persons believe they may derive from hormone treatment. This justifies the good practice statement.

1.3. We advise that decisions regarding the social transition of prepubertal youths with GD/gender incongruence are made with the assistance of an MHP or another experienced professional. (Ungraded Good Practice Statement).

1.4. We recommend against puberty blocking and gender-affirming hormone treatment in prepubertal children with GD/gender incongruence. (1 |⊕⊕◯◯)

Evidence

In most children diagnosed with GD/gender incongruence, it did not persist into adolescence. The percentages differed among studies, probably dependent on which version of the DSM clinicians used, the patient's age, the recruitment criteria, and perhaps cultural factors. However, the large majority (about 85%) of prepubertal children with a childhood diagnosis did not remain GD/gender incongruent in adolescence (20). If children have completely socially transitioned, they may have great difficulty in returning to the original gender role upon entering puberty (40). Social transition is associated with the persistence of GD/gender incongruence as a child progresses into adolescence. It may be that the presence of GD/gender incongruence in prepubertal children is the earliest sign that a child is destined to be transgender as an adolescent/adult (20). However, social transition (in addition to GD/gender incongruence) has been found to contribute to the likelihood of persistence.

This recommendation, however, does not imply that children should be discouraged from showing gender-variant behaviors or should be punished for exhibiting such behaviors. In individual cases, an early complete social transition may result in a more favorable outcome, but there are currently no criteria to identify the GD/gender-incongruent children to whom this applies. At the present time, clinical experience suggests that persistence of GD/gender incongruence can only be reliably assessed after the first signs of puberty.

Values and preferences

The task force placed a high value on avoiding harm with gender-affirming hormone therapy in prepubertal children with GD/gender incongruence. This justifies the strong recommendation in the face of low-quality evidence.

1.5. We recommend that clinicians inform and counsel all individuals seeking gender-affirming medical treatment regarding options for fertility preservation prior to initiating puberty suppression in adolescents and prior to treating with hormonal therapy of the affirmed gender in both adolescents and adults. (1 |⊕⊕⊕◯)

Remarks

Persons considering hormone use for gender affirmation need adequate information about this treatment in general and about fertility effects of hormone treatment in particular to make an informed and balanced decision (67, 68). Because young adolescents may not feel qualified to make decisions about fertility and may not fully understand the potential effects of hormonal interventions, consent and protocol education should include parents, the referring MHP(s), and other members of the adolescent's support group. To our knowledge, there are no formally evaluated decision aids available to assist in the discussion and decision regarding the future fertility of adolescents or adults beginning gender-affirming treatment.

Treating early pubertal youth with GnRH analogs will temporarily impair spermatogenesis and oocyte maturation. Given that an increasing number of transgender youth want to preserve fertility potential, delaying or temporarily discontinuing GnRH analogs to promote gamete maturation is an option. This option is often not preferred, because mature sperm production is associated with later stages of puberty and with the significant development of secondary sex characteristics.

For those designated male at birth with GD/gender incongruence and who are in early puberty, sperm production and the development of the reproductive tract are insufficient for the cryopreservation of sperm. However, prolonged pubertal suppression using GnRH analogs is reversible and clinicians should inform these individuals that sperm production can be initiated following prolonged gonadotropin suppression. This can be accomplished by spontaneous gonadotropin recovery after

cessation of GnRH analogs or by gonadotropin treatment and will probably be associated with physical manifestations of testosterone production, as stated above. Note that there are no data in this population concerning the time required for sufficient spermatogenesis to collect enough sperm for later fertility. In males treated for precocious puberty, spermarche was reported 0.7 to 3 years after cessation of GnRH analogs (69). In adult men with gonadotropin deficiency, sperm are noted in seminal fluid by 6 to 12 months of gonadotropin treatment. However, sperm numbers when partners of these patients conceive are far below the "normal range" (70, 71).

In girls, no studies have reported long-term, adverse effects of pubertal suppression on ovarian function after treatment cessation (72, 73). Clinicians should inform adolescents that no data are available regarding either time to spontaneous ovulation after cessation of GnRH analogs or the response to ovulation induction following prolonged gonadotropin suppression.

In males with GD/gender incongruence, when medical treatment is started in a later phase of puberty or in adulthood, spermatogenesis is sufficient for cryopreservation and storage of sperm. *In vitro* spermatogenesis is currently under investigation. Restoration of spermatogenesis after prolonged estrogen treatment has not been studied.

In females with GD/gender incongruence, the effect of prolonged treatment with exogenous testosterone on ovarian function is uncertain. There have been reports of an increased incidence of polycystic ovaries in transgender males, both prior to and as a result of androgen treatment (74–77), although these reports were not confirmed by others (78). Pregnancy has been reported in transgender males who have had prolonged androgen treatment and have discontinued testosterone but have not had genital surgery (79, 80). A reproductive endocrine gynecologist can counsel patients before gender-affirming hormone treatment or surgery regarding potential fertility options (81). Techniques for cryopreservation of oocytes, embryos, and ovarian tissue continue to improve, and oocyte maturation of immature tissue is being studied (82).

2.0 Treatment of Adolescents

During the past decade, clinicians have progressively acknowledged the suffering of young adolescents with GD/gender incongruence. In some forms of GD/gender incongruence, psychological interventions may be useful and sufficient. However, for many adolescents with GD/gender incongruence, the pubertal physical changes are unbearable. As early medical intervention may prevent psychological harm, various clinics have decided to start treating young adolescents with GD/gender incongruence with puberty-suppressing medication (a GnRH analog). As compared with starting gender-affirming treatment long after the first phases of puberty, a benefit of pubertal suppression at early puberty may be a better psychological and physical outcome.

In girls, the first physical sign of puberty is the budding of the breasts followed by an increase in breast and fat tissue. Breast development is also associated with the pubertal growth spurt, and menarche occurs ~2 years later. In boys, the first physical change is testicular growth. A testicular volume ≥4 mL is seen as consistent with the initiation of physical puberty. At the beginning of puberty, estradiol and testosterone levels are still low and are best measured in the early morning with an ultrasensitive assay. From a testicular volume of 10 mL, daytime testosterone levels increase, leading to virilization (83). Note that pubic hair and/or axillary hair/odor may not reflect the onset of gonadarche; instead, it may reflect adrenarche alone.

2.1. We suggest that adolescents who meet diagnostic criteria for GD/gender incongruence, fulfill criteria for treatment (Table 5), and are requesting treatment should initially undergo treatment to suppress pubertal development. (2 ⊕⊕◯◯)

2.2. We suggest that clinicians begin pubertal hormone suppression after girls and boys first exhibit physical changes of puberty (Tanner stages G2/B2). (2 ⊕⊕◯◯)

Evidence

Pubertal suppression can expand the diagnostic phase by a long period, giving the subject more time to explore options and to live in the experienced gender before making a decision to proceed with gender-affirming sex hormone treatments and/or surgery, some of which is irreversible (84, 85). Pubertal suppression is fully reversible, enabling full pubertal development in the natal gender, after cessation of treatment, if appropriate. The experience of full endogenous puberty is an undesirable condition for the GD/gender-incongruent individual and may seriously interfere with healthy psychological functioning and well-being. Treating GD/gender-incongruent adolescents entering puberty with GnRH analogs has been shown to improve psychological functioning in several domains (86).

Another reason to start blocking pubertal hormones early in puberty is that the physical outcome is improved compared with initiating physical transition after puberty has been completed (60, 62). Looking like a man or woman when living as the opposite sex creates difficult

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barriers with enormous life-long disadvantages. We therefore advise starting suppression in early puberty to prevent the irreversible development of undesirable secondary sex characteristics. However, adolescents with GD/gender incongruence should experience the first changes of their endogenous spontaneous puberty, because their emotional reaction to these first physical changes has diagnostic value in establishing the persistence of GD/gender incongruence (85). Thus, Tanner stage 2 is the optimal time to start pubertal suppression. However, pubertal suppression treatment in early puberty will limit the growth of the penis and scrotum, which will have a potential effect on future surgical treatments (87).

Clinicians can also use pubertal suppression in adolescents in later pubertal stages to stop menses in transgender males and prevent facial hair growth in transgender females. However, in contrast to the effects in early pubertal adolescents, physical sex characteristics (such as more advanced breast development in transgender boys and lowering of the voice and outgrowth of the jaw and brow in transgender girls) are not reversible.

Values and preferences

These recommendations place a high value on avoiding an unsatisfactory physical outcome when secondary sex characteristics have become manifest and irreversible, a higher value on psychological well-being, and a lower value on avoiding potential harm from early pubertal suppression.

Remarks

Table 6 lists the Tanner stages of breast and male genital development. Careful documentation of hallmarks of pubertal development will ensure precise timing when initiating pubertal suppression once puberty has started. Clinicians can use pubertal LH and sex steroid levels to confirm that puberty has progressed sufficiently before starting pubertal suppression (88). Reference ranges for sex steroids by Tanner stage may vary depending on the assay used. Ultrasensitive sex steroid and gonadotropin assays will help clinicians document early pubertal changes.

Irreversible and, for GD/gender-incongruent adolescents, undesirable sex characteristics in female puberty are breasts, female body habitus, and, in some cases, relative short stature. In male puberty, they are a prominent Adam's apple; low voice; male bone configuration, such as a large jaw, big feet and hands, and tall stature; and male hair pattern on the face and extremities.

2.3. We recommend that, where indicated, GnRH analogues are used to suppress pubertal hormones. (1 ⊕⊕◯◯)

Evidence

Clinicians can suppress pubertal development and gonadal function most effectively via gonadotropin suppression using GnRH analogs. GnRH analogs are long-acting agonists that suppress gonadotropins by GnRH receptor desensitization after an initial increase of gonadotropins during ~10 days after the first and (to a lesser degree) the second injection (89). Antagonists immediately suppress pituitary gonadotropin secretion (90, 91). Long-acting GnRH analogs are the currently preferred treatment option. Clinicians may consider long-acting GnRH antagonists when evidence on their safety and efficacy in adolescents becomes available.

During GnRH analog treatment, slight development of secondary sex characteristics may regress, and in a later phase of pubertal development, it will stop. In girls, breast tissue will become atrophic, and menses will stop. In boys, virilization will stop, and testicular volume may decrease (92).

An advantage of using GnRH analogs is the reversibility of the intervention. If, after extensive exploration of his/her transition wish, the individual no longer desires transition, they can discontinue pubertal suppression. In subjects with

Table 6. Tanner Stages of Breast Development and Male External Genitalia

The description of Tanner stages for breast development:
1. Prepubertal
2. Breast and papilla elevated as small mound; areolar diameter increased
3. Breast and areola enlarged, no contour separation
4. Areola and papilla form secondary mound
5. Mature; nipple projects, areola part of general breast contour

For penis and testes:
1. Prepubertal, testicular volume <4 mL
2. Slight enlargement of penis; enlarged scrotum, pink, texture altered, testes 4–6 mL
3. Penis longer, testes larger (8–12 mL)
4. Penis and glans larger, including increase in breadth; testes larger (12–15 mL), scrotum dark
5. Penis adult size; testicular volume > 15 ml

Adapted from Lawrence (56).

precocious puberty, spontaneous pubertal development has been shown to resume after patients discontinue taking GnRH analogs (93).

Recommendations 2.1 to 2.3 are supported by a prospective follow-up study from The Netherlands. This report assessed mental health outcomes in 55 transgender adolescents/young adults (22 transgender females and 33 transgender males) at three time points: (1) before the start of GnRH agonist (average age of 14.8 years at start of treatment), (2) at initiation of gender-affirming hormones (average age of 16.7 years at start of treatment), and (3) 1 year after "gender-reassignment surgery" (average age of 20.7 years) (63). Despite a decrease in depression and an improvement in general mental health functioning, GD/gender incongruence persisted through pubertal suppression, as previously reported (86). However, following sex hormone treatment and gender-reassignment surgery, GD/gender incongruence was resolved and psychological functioning steadily improved (63). Furthermore, well-being was similar to or better than that reported by age-matched young adults from the general population, and none of the study participants regretted treatment. This study represents the first long-term follow-up of individuals managed according to currently existing clinical practice guidelines for transgender youth, and it underscores the benefit of the multidisciplinary approach pioneered in The Netherlands; however, further studies are needed.

Side effects

The primary risks of pubertal suppression in GD/gender-incongruent adolescents may include adverse effects on bone mineralization (which can theoretically be reversed with sex hormone treatment), compromised fertility if the person subsequently is treated with sex hormones, and unknown effects on brain development. Few data are available on the effect of GnRH analogs on BMD in adolescents with GD/gender incongruence. Initial data in GD/gender-incongruent subjects demonstrated no change of absolute areal BMD during 2 years of GnRH analog therapy but a decrease in BMD *z* scores (85). A recent study also suggested suboptimal bone mineral accrual during GnRH analog treatment. The study reported a decrease in areal BMD *z* scores and of bone mineral apparent density *z* scores (which takes the size of the bone into account) in 19 transgender males treated with GnRH analogs from a mean age of 15.0 years (standard deviation = 2.0 years) for a median duration of 1.5 years (0.3 to 5.2 years) and in 15 transgender females treated from 14.9 (±1.9) years for 1.3 years (0.5 to 3.8 years), although not all changes were statistically significant (94). There was incomplete catch-up at age 22 years after sex hormone treatment from age 16.6 (±1.4) years for a median duration of 5.8 years (3.0 to 8.0 years) in transgender females and from age 16.4 (±2.3) years for 5.4 years (2.8 to 7.8 years) in transgender males. Little is known about more prolonged use of GnRH analogs. Researchers reported normal BMD *z* scores at age 35 years in one individual who used GnRH analogs from age 13.7 years until age 18.6 years before initiating sex hormone treatment (65).

Additional data are available from individuals with late puberty or GnRH analog treatment of other indications. Some studies reported that men with constitutionally delayed puberty have decreased BMD in adulthood (95). However, other studies reported that these men have normal BMD (96, 97). Treating adults with GnRH analogs results in a decrease of BMD (98). In children with central precocious puberty, treatment with GnRH analogs has been found to result in a decrease of BMD during treatment by some (99) but not others (100). Studies have reported normal BMD after discontinuing therapy (69, 72, 73, 101, 102). In adolescents treated with growth hormone who are small for gestational age and have normal pubertal timing, 2-year GnRH analog treatments did not adversely affect BMD (103). Calcium supplementation may be beneficial in optimizing bone health in GnRH analog–treated individuals (104). There are no studies of vitamin D supplementation in this context, but clinicians should offer supplements to vitamin D–deficient adolescents. Physical activity, especially during growth, is important for bone mass in healthy individuals (103) and is therefore likely to be beneficial for bone health in GnRH analog–treated subjects.

GnRH analogs did not induce a change in body mass index standard deviation score in GD/gender-incongruent adolescents (94) but caused an increase in fat mass and decrease in lean body mass percentage (92). Studies in girls treated for precocious puberty also reported a stable body mass index standard deviation score during treatment (72) and body mass index and body composition comparable to controls after treatment (73).

Arterial hypertension has been reported as an adverse effect in a few girls treated with GnRH analogs for precocious/early puberty (105, 106). Blood pressure monitoring before and during treatment is recommended.

Individuals may also experience hot flashes, fatigue, and mood alterations as a consequence of pubertal suppression. There is no consensus on treatment of these side effects in this context.

It is recommended that any use of pubertal blockers (and subsequent use of sex hormones, as detailed below) include a discussion about implications for fertility (see recommendation 1.3). Transgender adolescents may

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want to preserve fertility, which may be otherwise compromised if puberty is suppressed at an early stage and the individual completes phenotypic transition with the use of sex hormones.

Limited data are available regarding the effects of GnRH analogs on brain development. A single cross-sectional study demonstrated no compromise of executive function (107), but animal data suggest there may be an effect of GnRH analogs on cognitive function (108).

Values and preferences

Our recommendation of GnRH analogs places a higher value on the superior efficacy, safety, and reversibility of the pubertal hormone suppression achieved (as compared with the alternatives) and a relatively lower value on limiting the cost of therapy. Of the available alternatives, depot and oral progestin preparations are effective. Experience with this treatment dates back prior to the emergence of GnRH analogs for treating precocious puberty in papers from the 1960s and early 1970s (109–112). These compounds are usually safe, but some side effects have been reported (113–115). Only two recent studies involved transgender youth (116, 117). One of these studies described the use of oral lynestrenol monotherapy followed by the addition of testosterone treatment in transgender boys who were at Tanner stage B4 or further at the start of treatment (117). They found lynestrenol safe, but gonadotropins were not fully suppressed. The study reported metrorrhagia in approximately half of the individuals, mainly in the first 6 months. Acne, headache, hot flashes, and fatigue were other frequent side effects. Another progestin that has been studied in the United States is medroxyprogesterone. This agent is not as effective as GnRH analogs in lowering endogenous sex hormones either and may be associated with other side effects (116). Progestin preparations may be an acceptable treatment for persons without access to GnRH analogs or with a needle phobia. If GnRH analog treatment is not available (insurance denial, prohibitive cost, or other reasons), postpubertal, transgender female adolescents may be treated with an antiandrogen that directly suppresses androgen synthesis or action (see adult section).

Remarks

Measurements of gonadotropin and sex steroid levels give precise information about gonadal axis suppression, although there is insufficient evidence for any specific short-term monitoring scheme in children treated with GnRH analogs (88). If the gonadal axis is not completely suppressed—as evidenced by (for example) menses, erections, or progressive hair growth—the interval of GnRH analog treatment can be shortened or the dose increased. During treatment, adolescents should be monitored for negative effects of delaying puberty, including a halted growth spurt and impaired bone mineral accretion. Table 7 illustrates a suggested clinical protocol.

Anthropometric measurements and X-rays of the left hand to monitor bone age are informative for evaluating growth. To assess BMD, clinicians can perform dual-energy X-ray absorptiometry scans.

2.4. In adolescents who request sex hormone treatment (given this is a partly irreversible treatment), we recommend initiating treatment using a gradually increasing dose schedule (see Table 8) after a multidisciplinary team of medical and MHPs has confirmed the persistence of GD/gender incongruence and sufficient mental capacity to give informed consent, which most adolescents have by age 16 years (Table 5). (1 |⊕⊕◯◯)

2.5. We recognize that there may be compelling reasons to initiate sex hormone treatment prior to the age of 16 years in some adolescents with GD/gender incongruence, even though there are minimal published studies of gender-affirming hormone treatments administered before age 13.5 to 14 years. As with the care of adolescents ≥16 years of age, we recommend that an expert multidisciplinary team of medical and MHPs manage this treatment. (1 |⊕◯◯◯)

2.6. We suggest monitoring clinical pubertal development every 3 to 6 months and laboratory parameters every 6 to 12 months during sex hormone treatment (Table 9). (2 |⊕⊕◯◯)

Table 7. Baseline and Follow-Up Protocol During Suppression of Puberty

Every 3–6 mo
Anthropometry: height, weight, sitting height, blood pressure, Tanner stages
Every 6–12 mo
Laboratory: LH, FSH, E2/T, 25OH vitamin D
Every 1–2 y
Bone density using DXA
Bone age on X-ray of the left hand (if clinically indicated)

Adapted from Hembree *et al.* (118).

Abbreviations: DXA, dual-energy X-ray absorptiometry; E2, estradiol; FSH, follicle stimulating hormone; LH, luteinizing hormone; T, testosterone;

Table 8. Protocol Induction of Puberty

Induction of female puberty with oral 17β-estradiol, increasing the dose every 6 mo:
- 5 μg/kg/d
- 10 μg/kg/d
- 15 μg/kg/d
- 20 μg/kg/d
- Adult dose = 2–6 mg/d
- *In postpubertal transgender female adolescents, the dose of 17β-estradiol can be increased more rapidly:*
  - 1 mg/d for 6 mo
  - 2 mg/d

Induction of female puberty with transdermal 17β-estradiol, increasing the dose every 6 mo (new patch is placed every 3.5 d):
- 6.25–12.5 μg/24 h (cut 25-μg patch into quarters, then halves)
- 25 μg/24 h
- 37.5 μg/24 h
- Adult dose = 50–200 μg/24 h
- *For alternatives once at adult dose, see Table 11.*
- *Adjust maintenance dose to mimic physiological estradiol levels (see Table 15).*

Induction of male puberty with testosterone esters increasing the dose every 6 mo (IM or SC):
- 25 mg/m^2/2 wk (or alternatively, half this dose weekly, or double the dose every 4 wk)
- 50 mg/m^2/2 wk
- 75 mg/m^2/2 wk
- 100 mg/m^2/2 wk
- Adult dose = 100–200 mg every 2 wk
- *In postpubertal transgender male adolescents the dose of testosterone esters can be increased more rapidly:*
  - 75 mg/2 wk for 6 mo
  - 125 mg/2 wk
- *For alternatives once at adult dose, see Table 11.*
- *Adjust maintenance dose to mimic physiological testosterone levels (see Table 14).*

Adapted from Hembree *et al.* (118).

Abbreviations: IM, intramuscularly; SC, subcutaneously.

Evidence

Adolescents develop competence in decision making at their own pace. Ideally, the supervising medical professionals should individually assess this competence, although no objective tools to make such an assessment are currently available.

Many adolescents have achieved a reasonable level of competence by age 15 to 16 years (119), and in many countries 16-year-olds are legally competent with regard to medical decision making (120). However, others believe that although some capacities are generally achieved before age 16 years, other abilities (such as good risk assessment) do not develop until well after 18 years (121). They suggest that health care procedures should be divided along a matrix of relative risk, so that younger adolescents can be allowed to decide about low-risk procedures, such as most diagnostic tests and common therapies, but not about high-risk procedures, such as most surgical procedures (121).

Currently available data from transgender adolescents support treatment with sex hormones starting at age 16 years (63, 122). However, some patients may incur potential risks by waiting until age 16 years. These include the potential risk to bone health if puberty is suppressed

Table 9. Baseline and Follow-up Protocol During Induction of Puberty

Every 3–6 mo
- •Anthropometry: height, weight, sitting height, blood pressure, Tanner stages

Every 6–12 mo
- •In transgender males: hemoglobin/hematocrit, lipids, testosterone, 25OH vitamin D
- •In transgender females: prolactin, estradiol, 25OH vitamin D

Every 1–2 y
- •BMD using DXA
- •Bone age on X-ray of the left hand (if clinically indicated)

BMD should be monitored into adulthood (until the age of 25–30 y or until peak bone mass has been reached).
For recommendations on monitoring once pubertal induction has been completed, see Tables 14 and 15.

Adapted from Hembree *et al.* (118).

Abbreviation: DXA, dual-energy X-ray absorptiometry.

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for 6 to 7 years before initiating sex hormones (*e.g.*, if someone reached Tanner stage 2 at age 9-10 years old). Additionally, there may be concerns about inappropriate height and potential harm to mental health (emotional and social isolation) if initiation of secondary sex characteristics must wait until the person has reached 16 years of age. However, only minimal data supporting earlier use of gender-affirming hormones in transgender adolescents currently exist (63). Clearly, long-term studies are needed to determine the optimal age of sex hormone treatment in GD/gender-incongruent adolescents.

The MHP who has followed the adolescent during GnRH analog treatment plays an essential role in assessing whether the adolescent is eligible to start sex hormone therapy and capable of consenting to this treatment (Table 5). Support of the family/environment is essential. Prior to the start of sex hormones, clinicians should discuss the implications for fertility (see recommendation 1.5). Throughout pubertal induction, an MHP and a pediatric endocrinologist (or other clinician competent in the evaluation and induction of pubertal development) should monitor the adolescent. In addition to monitoring therapy, it is also important to pay attention to general adolescent health issues, including healthy life style choices, such as not smoking, contraception, and appropriate vaccinations (*e.g.*, human papillomavirus).

For the induction of puberty, clinicians can use a similar dose scheme for hypogonadal adolescents with GD/gender incongruence as they use in other individuals with hypogonadism, carefully monitoring for desired and undesired effects (Table 8). In transgender female adolescents, transdermal 17β-estradiol may be an alternative for oral 17β-estradiol. It is increasingly used for pubertal induction in hypogonadal females. However, the absence of low-dose estrogen patches may be a problem. As a result, individuals may need to cut patches to size themselves to achieve appropriate dosing (123). In transgender male adolescents, clinicians can give testosterone injections intramuscularly or subcutaneously (124, 125).

When puberty is initiated with a gradually increasing schedule of sex steroid doses, the initial levels will not be high enough to suppress endogenous sex steroid secretion. Gonadotropin secretion and endogenous production of testosterone may resume and interfere with the effectiveness of estrogen treatment, in transgender female adolescents (126, 127). Therefore, continuation of GnRH analog treatment is advised until gonadectomy. Given that GD/gender-incongruent adolescents may opt not to have gonadectomy, long-term studies are necessary to examine the potential risks of prolonged GnRH analog treatment. Alternatively, in transgender male adolescents, GnRH analog treatment can be discontinued once an adult dose of testosterone has been reached and the individual is well virilized. If uterine bleeding occurs, a progestin can be added. However, the combined use of a GnRH analog (for ovarian suppression) and testosterone may enable phenotypic transition with a lower dose of testosterone in comparison with testosterone alone. If there is a wish or need to discontinue GnRH analog treatment in transgender female adolescents, they may be treated with an antiandrogen that directly suppresses androgen synthesis or action (see section 3.0 "Hormonal Therapy for Transgender Adults").

Values and preferences

The recommendation to initiate pubertal induction only when the individual has sufficient mental capacity (roughly age 16 years) to give informed consent for this partly irreversible treatment places a higher value on the ability of the adolescent to fully understand and oversee the partially irreversible consequences of sex hormone treatment and to give informed consent. It places a lower value on the possible negative effects of delayed puberty. We may not currently have the means to weigh adequately the potential benefits of waiting until around age 16 years to initiate sex hormones vs the potential risks/harm to BMD and the sense of social isolation from having the timing of puberty be so out of sync with peers (128).

Remarks

Before starting sex hormone treatment, effects on fertility and options for fertility preservation should be discussed. Adult height may be a concern in transgender adolescents. In a transgender female adolescent, clinicians may consider higher doses of estrogen or a more rapid tempo of dose escalation during pubertal induction. There are no established treatments yet to augment adult height in a transgender male adolescent with open epiphyses during pubertal induction. It is not uncommon for transgender adolescents to present for clinical services after having completed or nearly completed puberty. In such cases, induction of puberty with sex hormones can be done more rapidly (see Table 8). Additionally, an adult dose of testosterone in transgender male adolescents may suffice to suppress the gonadal axis without the need to use a separate agent. At the appropriate time, the multidisciplinary team should adequately prepare the adolescent for transition to adult care.

3.0 Hormonal Therapy for Transgender Adults

The two major goals of hormonal therapy are (1) to reduce endogenous sex hormone levels, and thus reduce

the secondary sex characteristics of the individual's designated gender, and (2) to replace endogenous sex hormone levels consistent with the individual's gender identity by using the principles of hormone replacement treatment of hypogonadal patients. The timing of these two goals and the age at which to begin treatment with the sex hormones of the chosen gender is codetermined in collaboration with both the person pursuing transition and the health care providers. The treatment team should include a medical provider knowledgeable in transgender hormone therapy, an MHP knowledgeable in GD/gender incongruence and the mental health concerns of transition, and a primary care provider able to provide care appropriate for transgender individuals. The physical changes induced by this sex hormone transition are usually accompanied by an improvement in mental well-being (129, 130).

3.1. We recommend that clinicians confirm the diagnostic criteria of GD/gender incongruence and the criteria for the endocrine phase of gender transition before beginning treatment. (1 |⊕⊕⊕◯)

3.2. We recommend that clinicians evaluate and address medical conditions that can be exacerbated by hormone depletion and treatment with sex hormones of the affirmed gender before beginning treatment (Table 10). (1 |⊕⊕⊕◯)

3.3. We suggest that clinicians measure hormone levels during treatment to ensure that endogenous sex steroids are suppressed and administered sex steroids are maintained in the normal physiologic range for the affirmed gender. (2 |⊕⊕◯◯)

Evidence

It is the responsibility of the treating clinician to confirm that the person fulfills criteria for treatment. The treating clinician should become familiar with the terms and criteria presented in Tables 1–5 and take a thorough history from the patient in collaboration with the other members of the treatment team. The treating clinician must ensure that the desire for transition is appropriate; the consequences, risks, and benefits of treatment are well understood; and the desire for transition persists. They also need to discuss fertility preservation options (see recommendation 1.3) (67, 68).

Transgender males

Clinical studies have demonstrated the efficacy of several different androgen preparations to induce masculinization in transgender males (Appendix A) (113, 114, 131–134). Regimens to change secondary sex characteristics follow the general principle of hormone replacement treatment of male hypogonadism (135). Clinicians can use either parenteral or transdermal preparations to achieve testosterone values in the normal male range (this is dependent on the specific assay, but is typically 320 to 1000 ng/dL) (Table 11) (136). Sustained supraphysiologic levels of testosterone increase the risk of adverse reactions (see section 4.0 "Adverse Outcome Prevention and Long-Term Care") and should be avoided.

Similar to androgen therapy in hypogonadal men, testosterone treatment in transgender males results in increased muscle mass and decreased fat mass, increased facial hair and acne, male pattern baldness in those genetically predisposed, and increased sexual desire (137).

Table 10. Medical Risks Associated With Sex Hormone Therapy

Transgender female: estrogen
Very high risk of adverse outcomes:
•Thromboembolic disease
Moderate risk of adverse outcomes:
•Macroprolactinoma
•Breast cancer
•Coronary artery disease
•Cerebrovascular disease
•Cholelithiasis
•Hypertriglyceridemia
Transgender male: testosterone
Very high risk of adverse outcomes:
•Erythrocytosis (hematocrit > 50%)
Moderate risk of adverse outcomes:
•Severe liver dysfunction (transaminases > threefold upper limit of normal)
•Coronary artery disease
•Cerebrovascular disease
•Hypertension
•Breast or uterine cancer

Table 11. Hormone Regimens in Transgender Persons

Transgender females[a]	
Estrogen	
Oral	
Estradiol	2.0–6.0 mg/d
Transdermal	
Estradiol transdermal patch (New patch placed every 3–5 d)	0.025–0.2 mg/d
Parenteral	
Estradiol valerate or cypionate	5–30 mg IM every 2 wk 2–10 mg IM every week
Anti-androgens	
Spironolactone	100–300 mg/d
Cyproterone acetate[b]	25–50 mg/d
GnRH agonist	3.75 mg SQ (SC) monthly 11.25 mg SQ (SC) 3-monthly
Transgender males	
Testosterone	
Parenteral testosterone	
Testosterone enanthate or cypionate	100–200 mg SQ (IM) every 2 wk or SQ (SC) 50% per week
Testosterone undecanoate[c]	1000 mg every 12 wk
Transdermal testosterone	
Testosterone gel 1.6%[d]	50–100 mg/d
Testosterone transdermal patch	2.5–7.5 mg/d

Abbreviations: IM, intramuscularly; SQ, sequentially; SC, subcutaneously.

[a]Estrogens used with or without antiandrogens or GnRH agonist.

[b]Not available in the United States.

[c]One thousand milligrams initially followed by an injection at 6 wk then at 12-wk intervals.

[d]Avoid cutaneous transfer to other individuals.

In transgender males, testosterone will result in clitoromegaly, temporary or permanent decreased fertility, deepening of the voice, cessation of menses (usually), and a significant increase in body hair, particularly on the face, chest, and abdomen. Cessation of menses may occur within a few months with testosterone treatment alone, although high doses of testosterone may be required. If uterine bleeding continues, clinicians may consider the addition of a progestational agent or endometrial ablation (138). Clinicians may also administer GnRH analogs or depot medroxyprogesterone to stop menses prior to testosterone treatment.

Transgender females

The hormone regimen for transgender females is more complex than the transgender male regimen (Appendix B). Treatment with physiologic doses of estrogen alone is insufficient to suppress testosterone levels into the normal range for females (139). Most published clinical studies report the need for adjunctive therapy to achieve testosterone levels in the female range (21, 113, 114, 132–134, 139, 140).

Multiple adjunctive medications are available, such as progestins with antiandrogen activity and GnRH agonists (141). Spironolactone works by directly blocking androgens during their interaction with the androgen receptor (114, 133, 142). It may also have estrogenic activity (143). Cyproterone acetate, a progestational compound with antiandrogenic properties (113, 132, 144), is widely used in Europe. 5α-Reductase inhibitors do not reduce testosterone levels and have adverse effects (145).

Dittrich *et al.* (141) reported that monthly doses of the GnRH agonist goserelin acetate in combination with estrogen were effective in reducing testosterone levels with a low incidence of adverse reactions in 60 transgender females. Leuprolide and transdermal estrogen were as effective as cyproterone and transdermal estrogen in a comparative retrospective study (146).

Patients can take estrogen as oral conjugated estrogens, oral 17β-estradiol, or transdermal 17β-estradiol. Among estrogen options, the increased risk of thromboembolic events associated with estrogens in general seems most concerning with ethinyl estradiol specifically (134, 140, 141), which is why we specifically suggest that it not be used in any transgender treatment plan. Data distinguishing among other estrogen options are less well established although there is some thought that oral routes of administration are more thrombogenic due to the "first pass effect" than are transdermal and parenteral routes, and that the risk of thromboembolic events is dose-dependent. Injectable estrogen and sublingual

estrogen may benefit from avoiding the first pass effect, but they can result in more rapid peaks with greater overall periodicity and thus are more difficult to monitor (147, 148). However, there are no data demonstrating that increased periodicity is harmful otherwise.

Clinicians can use serum estradiol levels to monitor oral, transdermal, and intramuscular estradiol. Blood tests cannot monitor conjugated estrogens or synthetic estrogen use. Clinicians should measure serum estradiol and serum testosterone and maintain them at the level for premenopausal females (100 to 200 pg/mL and <50 ng/dL, respectively). The transdermal preparations and injectable estradiol cypionate or valerate preparations may confer an advantage in older transgender females who may be at higher risk for thromboembolic disease (149).

Values

Our recommendation to maintain levels of gender-affirming hormones in the normal adult range places a high value on the avoidance of the long-term complications of pharmacologic doses. Those patients receiving endocrine treatment who have relative contraindications to hormones should have an in-depth discussion with their physician to balance the risks and benefits of therapy.

Remarks

Clinicians should inform all endocrine-treated individuals of all risks and benefits of gender-affirming hormones prior to initiating therapy. Clinicians should strongly encourage tobacco use cessation in transgender females to avoid increased risk of VTE and cardiovascular complications. We strongly discourage the unsupervised use of hormone therapy (150).

Not all individuals with GD/gender incongruence seek treatment as described (*e.g.*, male-to-eunuchs and individuals seeking partial transition). Tailoring current protocols to the individual may be done within the context of accepted safety guidelines using a multidisciplinary approach including mental health. No evidence-based protocols are available for these groups (151). We need prospective studies to better understand treatment options for these persons.

3.4. We suggest that endocrinologists provide education to transgender individuals undergoing treatment about the onset and time course of physical changes induced by sex hormone treatment. (2 |⊕○○○)

Evidence

Transgender males

Physical changes that are expected to occur during the first 1 to 6 months of testosterone therapy include cessation of menses, increased sexual desire, increased facial and body hair, increased oiliness of skin, increased muscle, and redistribution of fat mass. Changes that occur within the first year of testosterone therapy include deepening of the voice (152, 153), clitoromegaly, and male pattern hair loss (in some cases) (114, 144, 154, 155) (Table 12).

Transgender females

Physical changes that may occur in transgender females in the first 3 to 12 months of estrogen and antiandrogen therapy include decreased sexual desire, decreased spontaneous erections, decreased facial and body hair (usually mild), decreased oiliness of skin, increased breast tissue growth, and redistribution of fat mass (114, 139, 149, 154, 155, 161) (Table 13). Breast development is generally maximal at 2 years after initiating hormones (114, 139, 149, 155). Over a long period of time, the prostate gland and testicles will undergo atrophy.

Although the time course of breast development in transgender females has been studied (150), precise information about other changes induced by sex hormones is lacking (141). There is a great deal of variability among individuals, as evidenced during pubertal development. We all know that a major concern for transgender females is breast development. If we work with estrogens, the result will be often not what the transgender female expects.

Alternatively, there are transgender females who report an anecdotal improved breast development, mood, or sexual desire with the use of progestogens. However, there have been no well-designed studies of the role of progestogens in feminizing hormone regimens, so the question is still open.

Our knowledge concerning the natural history and effects of different cross-sex hormone therapies on breast

Table 12. Masculinizing Effects in Transgender Males

Effect	Onset	Maximum
Skin oiliness/acne	1–6 mo	1–2 y
Facial/body hair growth	6–12 mo	4–5 y
Scalp hair loss	6–12 mo	—[a]
Increased muscle mass/strength	6–12 mo	2–5 y
Fat redistribution	1–6 mo	2–5 y
Cessation of menses	1–6 mo	—[b]
Clitoral enlargement	1–6 mo	1–2 y
Vaginal atrophy	1–6 mo	1–2 y
Deepening of voice	6–12 mo	1–2 y

Estimates represent clinical observations: Toorians *et al.* (149), Asscheman *et al.* (156), Gooren *et al.* (157), Wierckx *et al.* (158).

[a] Prevention and treatment as recommended for biological men.

[b] Menorrhagia requires diagnosis and treatment by a gynecologist.

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Table 13. Feminizing Effects in Transgender Females

Effect	Onset	Maximum
Redistribution of body fat	3–6 mo	2–3 y
Decrease in muscle mass and strength	3–6 mo	1–2 y
Softening of skin/decreased oiliness	3–6 mo	Unknown
Decreased sexual desire	1–3 mo	3–6 mo
Decreased spontaneous erections	1–3 mo	3–6 mo
Male sexual dysfunction	Variable	Variable
Breast growth	3–6 mo	2–3 y
Decreased testicular volume	3–6 mo	2–3 y
Decreased sperm production	Unknown	>3 y
Decreased terminal hair growth	6–12 mo	>3 y[a]
Scalp hair	Variable	—[b]
Voice changes	None	—[c]

Estimates represent clinical observations: Toorians *et al.* (149), Asscheman *et al.* (156), Gooren *et al.* (157).

[a]Complete removal of male sexual hair requires electrolysis or laser treatment or both.

[b]Familial scalp hair loss may occur if estrogens are stopped.

[c]Treatment by speech pathologists for voice training is most effective.

development in transgender females is extremely sparse and based on the low quality of evidence. Current evidence does not indicate that progestogens enhance breast development in transgender females, nor does evidence prove the absence of such an effect. This prevents us from drawing any firm conclusion at this moment and demonstrates the need for further research to clarify these important clinical questions (162).

Values and preferences

Transgender persons have very high expectations regarding the physical changes of hormone treatment and are aware that body changes can be enhanced by surgical procedures (*e.g.*, breast, face, and body habitus). Clear expectations for the extent and timing of sex hormone–induced changes may prevent the potential harm and expense of unnecessary procedures.

4.0 Adverse Outcome Prevention and Long-Term Care

Hormone therapy for transgender males and females confers many of the same risks associated with sex hormone replacement therapy in nontransgender persons. The risks arise from and are worsened by inadvertent or intentional use of supraphysiologic doses of sex hormones, as well as use of inadequate doses of sex hormones to maintain normal physiology (131, 139).

4.1. We suggest regular clinical evaluation for physical changes and potential adverse changes in response to sex steroid hormones and laboratory monitoring of sex steroid hormone levels every 3 months during the first year of hormone therapy for transgender males and females and then once or twice yearly. (2 ⊕⊕◯◯)

Evidence

Pretreatment screening and appropriate regular medical monitoring are recommended for both transgender males and females during the endocrine transition and periodically thereafter (26, 155). Clinicians should monitor weight and blood pressure, conduct physical exams, and assess routine health questions, such as tobacco use, symptoms of depression, and risk of adverse events such as deep vein thrombosis/pulmonary embolism and other adverse effects of sex steroids.

Transgender males

Table 14 contains a standard monitoring plan for transgender males on testosterone therapy (154, 159). Key issues include maintaining testosterone levels in the physiologic normal male range and avoiding adverse events resulting from excess testosterone therapy, particularly erythrocytosis, sleep apnea, hypertension, excessive weight gain, salt retention, lipid changes, and excessive or cystic acne (135).

Because oral 17-alkylated testosterone is not recommended, serious hepatic toxicity is not anticipated with parenteral or transdermal testosterone use (163, 164). Past concerns regarding liver toxicity with testosterone have been alleviated with subsequent reports that indicate the risk of serious liver disease is minimal (144, 165, 166).

Transgender females

Table 15 contains a standard monitoring plan for transgender females on estrogens, gonadotropin suppression, or antiandrogens (160). Key issues include avoiding supraphysiologic doses or blood levels of estrogen that may lead to increased risk for thromboembolic disease, liver dysfunction, and hypertension. Clinicians should monitor serum estradiol levels using laboratories participating in external quality control, as measurements of estradiol in blood can be very challenging (167).

VTE may be a serious complication. A study reported a 20-fold increase in venous thromboembolic disease in a large cohort of Dutch transgender subjects (161). This increase may have been associated with the use of the synthetic estrogen, ethinyl estradiol (149). The incidence decreased when clinicians stopped administering ethinyl estradiol (161). Thus, the use of synthetic estrogens and conjugated estrogens is undesirable because of the inability to regulate doses by measuring serum levels and the risk of thromboembolic disease. In a German gender clinic, deep vein thrombosis occurred in 1 of 60 of transgender females treated with a GnRH analog and oral

Table 14. Monitoring of Transgender Persons on Gender-Affirming Hormone Therapy: Transgender Male

1. Evaluate patient every 3 mo in the first year and then one to two times per year to monitor for appropriate signs of virilization and for development of adverse reactions.
2. Measure serum testosterone every 3 mo until levels are in the normal physiologic male range:[a]
   a. For testosterone enanthate/cypionate injections, the testosterone level should be measured midway between injections. The target level is 400–700 ng/dL to 400 ng/dL. Alternatively, measure peak and trough levels to ensure levels remain in the normal male range.
   b. For parenteral testosterone undecanoate, testosterone should be measured just before the following injection. If the level is <400 ng/dL, adjust dosing interval.
   c. For transdermal testosterone, the testosterone level can be measured no sooner than after 1 wk of daily application (at least 2 h after application).
3. Measure hematocrit or hemoglobin at baseline and every 3 mo for the first year and then one to two times a year. Monitor weight, blood pressure, and lipids at regular intervals.
4. Screening for osteoporosis should be conducted in those who stop testosterone treatment, are not compliant with hormone therapy, or who develop risks for bone loss.
5. If cervical tissue is present, monitoring as recommended by the American College of Obstetricians and Gynecologists.
6. Ovariectomy can be considered after completion of hormone transition.
7. Conduct sub- and periareolar annual breast examinations if mastectomy performed. If mastectomy is not performed, then consider mammograms as recommended by the American Cancer Society.

[a] Adapted from Lapauw *et al.* (154) and Ott *et al.* (159).

estradiol (141). The patient who developed a deep vein thrombosis was found to have a homozygous C677 T mutation in the methylenetetrahydrofolate reductase gene. In an Austrian gender clinic, administering gender-affirming hormones to 162 transgender females and 89 transgender males was not associated with VTE, despite an 8.0% and 5.6% incidence of thrombophilia (159). A more recent multinational study reported only 10 cases of VTE from a cohort of 1073 subjects (168). Thrombophilia screening of transgender persons initiating hormone treatment should be restricted to those with a personal or family history of VTE (159). Monitoring D-dimer levels during treatment is not recommended (169).

4.2. We suggest periodically monitoring prolactin levels in transgender females treated with estrogens. (2 l⊕⊕◯◯)

Evidence

Estrogen therapy can increase the growth of pituitary lactrotroph cells. There have been several reports of prolactinomas occurring after long-term, high-dose estrogen therapy (170–173). Up to 20% of transgender females treated with estrogens may have elevations in prolactin levels associated with enlargement of the pituitary gland (156). In most cases, the serum prolactin levels will return to the normal range with a reduction or discontinuation of the estrogen therapy or discontinuation of cyproterone acetate (157, 174, 175).

The onset and time course of hyperprolactinemia during estrogen treatment are not known. Clinicians should measure prolactin levels at baseline and then at least annually during the transition period and every 2 years thereafter. Given that only a few case studies reported prolactinomas, and prolactinomas were not reported in large cohorts of estrogen-treated persons, the risk is likely to be very low. Because the major presenting findings of microprolactinomas (hypogonadism and sometimes gynecomastia) are not apparent in transgender females, clinicians may perform radiologic examinations of the pituitary in those patients whose prolactin levels persistently increase despite stable or reduced estrogen levels. Some transgender individuals receive psychotropic medications that can increase prolactin levels (174).

Table 15. Monitoring of Transgender Persons on Gender-Affirming Hormone Therapy: Transgender Female

1. Evaluate patient every 3 mo in the first year and then one to two times per year to monitor for appropriate signs of feminization and for development of adverse reactions.
2. Measure serum testosterone and estradiol every 3 mo.
   a. Serum testosterone levels should be <50 ng/dL.
   b. Serum estradiol should not exceed the peak physiologic range: 100–200 pg/mL.
3. For individuals on spironolactone, serum electrolytes, particularly potassium, should be monitored every 3 mo in the first year and annually thereafter.
4. Routine cancer screening is recommended, as in nontransgender individuals (all tissues present).
5. Consider BMD testing at baseline (160). In individuals at low risk, screening for osteoporosis should be conducted at age 60 years or in those who are not compliant with hormone therapy.

This table presents strong recommendations and does not include lower level recommendations.

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4.3. We suggest that clinicians evaluate transgender persons treated with hormones for cardiovascular risk factors using fasting lipid profiles, diabetes screening, and/or other diagnostic tools. (2 ⊕⊕◯◯)

Evidence

Transgender males

Administering testosterone to transgender males results in a more atherogenic lipid profile with lowered high-density lipoprotein cholesterol and higher triglyceride and low-density lipoprotein cholesterol values (176–179). Studies of the effect of testosterone on insulin sensitivity have mixed results (178, 180). A randomized, open-label uncontrolled safety study of transgender males treated with testosterone undecanoate demonstrated no insulin resistance after 1 year (181, 182). Numerous studies have demonstrated the effects of sex hormone treatment on the cardiovascular system (160, 179, 183, 184). Long-term studies from The Netherlands found no increased risk for cardiovascular mortality (161). Likewise, a meta-analysis of 19 randomized trials in nontransgender males on testosterone replacement showed no increased incidence of cardiovascular events (185). A systematic review of the literature found that data were insufficient (due to very low–quality evidence) to allow a meaningful assessment of patient-important outcomes, such as death, stroke, myocardial infarction, or VTE in transgender males (176). Future research is needed to ascertain the potential harm of hormonal therapies (176). Clinicians should manage cardiovascular risk factors as they emerge according to established guidelines (186).

Transgender females

A prospective study of transgender females found favorable changes in lipid parameters with increased high-density lipoprotein and decreased low-density lipoprotein concentrations (178). However, increased weight, blood pressure, and markers of insulin resistance attenuated these favorable lipid changes. In a meta-analysis, only serum triglycerides were higher at ≥24 months without changes in other parameters (187). The largest cohort of transgender females (mean age 41 years, followed for a mean of 10 years) showed no increase in cardiovascular mortality despite a 32% rate of tobacco use (161).

Thus, there is limited evidence to determine whether estrogen is protective or detrimental on lipid and glucose metabolism in transgender females (176). With aging, there is usually an increase of body weight. Therefore, as with nontransgender individuals, clinicians should monitor and manage glucose and lipid metabolism and blood pressure regularly according to established guidelines (186).

4.4. We recommend that clinicians obtain BMD measurements when risk factors for osteoporosis exist, specifically in those who stop sex hormone therapy after gonadectomy. (1 ⊕⊕◯◯)

Evidence

Transgender males

Baseline bone mineral measurements in transgender males are generally in the expected range for their pretreatment gender (188). However, adequate dosing of testosterone is important to maintain bone mass in transgender males (189, 190). In one study (190), serum LH levels were inversely related to BMD, suggesting that low levels of sex hormones were associated with bone loss. Thus, LH levels in the normal range may serve as an indicator of the adequacy of sex steroid administration to preserve bone mass. The protective effect of testosterone may be mediated by peripheral conversion to estradiol, both systemically and locally in the bone.

Transgender females

A baseline study of BMD reported T scores less than −2.5 in 16% of transgender females (191). In aging males, studies suggest that serum estradiol more positively correlates with BMD than does testosterone (192, 193) and is more important for peak bone mass (194). Estrogen preserves BMD in transgender females who continue on estrogen and antiandrogen therapies (188, 190, 191, 195, 196).

Fracture data in transgender males and females are not available. Transgender persons who have undergone gonadectomy may choose not to continue consistent sex steroid treatment after hormonal and surgical sex reassignment, thereby becoming at risk for bone loss. There have been no studies to determine whether clinicians should use the sex assigned at birth or affirmed gender for assessing osteoporosis (*e.g.*, when using the FRAX tool). Although some researchers use the sex assigned at birth (with the assumption that bone mass has usually peaked for transgender people who initiate hormones in early adulthood), this should be assessed on a case-by-case basis until there are more data available. This assumption will be further complicated by the increasing prevalence of transgender people who undergo hormonal transition at a pubertal age or soon after puberty. Sex for comparison within risk assessment tools may be based on the age at which hormones were initiated and the length of exposure to hormones. In some cases, it may be

reasonable to assess risk using both the male and female calculators and using an intermediate value. Because all subjects underwent normal pubertal development, with known effects on bone size, reference values for birth sex were used for all participants (154).

4.5. We suggest that transgender females with no known increased risk of breast cancer follow breast-screening guidelines recommended for those designated female at birth. (2 ⊕⊕◯◯)

4.6. We suggest that transgender females treated with estrogens follow individualized screening according to personal risk for prostatic disease and prostate cancer. (2 ⊕◯◯◯)

Evidence

Studies have reported a few cases of breast cancer in transgender females (197–200). A Dutch study of 1800 transgender females followed for a mean of 15 years (range of 1 30 years) found one case of breast cancer. The Women's Health Initiative study reported that females taking conjugated equine estrogen without progesterone for 7 years did not have an increased risk of breast cancer as compared with females taking placebo (137).

In transgender males, a large retrospective study conducted at the U.S. Veterans Affairs medical health system identified seven breast cancers (194). The authors reported that this was not above the expected rate of breast cancers in cisgender females in this cohort. Furthermore, they did report one breast cancer that developed in a transgender male patient after mastectomy, supporting the fact that breast cancer can occur even after mastectomy. Indeed, there have been case reports of breast cancer developing in subareolar tissue in transgender males, which occurred after mastectomy (201, 202).

Women with primary hypogonadism (Turner syndrome) treated with estrogen replacement exhibited a significantly decreased incidence of breast cancer as compared with national standardized incidence ratios (203, 204). These studies suggest that estrogen therapy does not increase the risk of breast cancer in the short term (<20 to 30 years). We need long-term studies to determine the actual risk, as well as the role of screening mammograms. Regular examinations and gynecologic advice should determine monitoring for breast cancer.

Prostate cancer is very rare before the age of 40, especially with androgen deprivation therapy (205). Childhood or pubertal castration results in regression of the prostate and adult castration reverses benign prostate hypertrophy (206). Although van Kesteren *et al.* (207) reported that estrogen therapy does not induce hypertrophy or premalignant changes in the prostates of transgender females, studies have reported cases of benign prostatic hyperplasia in transgender females treated with estrogens for 20 to 25 years (208, 209). Studies have also reported a few cases of prostate carcinoma in transgender females (210–214).

Transgender females may feel uncomfortable scheduling regular prostate examinations. Gynecologists are not trained to screen for prostate cancer or to monitor prostate growth. Thus, it may be reasonable for transgender females who transitioned after age 20 years to have annual screening digital rectal examinations after age 50 years and prostate-specific antigen tests consistent with U.S. Preventive Services Task Force Guidelines (215).

4.7. We advise that clinicians determine the medical necessity of including a total hysterectomy and oophorectomy as part of gender-affirming surgery. (Ungraded Good Practice Statement)

Evidence

Although aromatization of testosterone to estradiol in transgender males has been suggested as a risk factor for endometrial cancer (216), no cases have been reported. When transgender males undergo hysterectomy, the uterus is small and there is endometrial atrophy (217, 218). Studies have reported cases of ovarian cancer (219, 220). Although there is limited evidence for increased risk of reproductive tract cancers in transgender males, health care providers should determine the medical necessity of a laparoscopic total hysterectomy as part of a gender-affirming surgery to prevent reproductive tract cancer (221).

Values

Given the discomfort that transgender males experience accessing gynecologic care, our recommendation for the medical necessity of total hysterectomy and oophorectomy places a high value on eliminating the risks of female reproductive tract disease and cancer and a lower value on avoiding the risks of these surgical procedures (related to the surgery and to the potential undesirable health consequences of oophorectomy) and their associated costs.

Remarks

The sexual orientation and type of sexual practices will determine the need and types of gynecologic care required following transition. Additionally, in certain countries, the approval required to change the sex in a birth certificate for transgender males may be dependent on having a complete hysterectomy. Clinicians should help patients research nonmedical administrative criteria and

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provide counseling. If individuals decide not to undergo hysterectomy, screening for cervical cancer is the same as all other females.

5.0 Surgery for Sex Reassignment and Gender Confirmation

For many transgender adults, genital gender-affirming surgery may be the necessary step toward achieving their ultimate goal of living successfully in their desired gender role. The type of surgery falls into two main categories: (1) those that directly affect fertility and (2) those that do not. Those that change fertility (previously called sex reassignment surgery) include genital surgery to remove the penis and gonads in the male and removal of the uterus and gonads in the female. The surgeries that effect fertility are often governed by the legal system of the state or country in which they are performed. Other gender-conforming surgeries that do not directly affect fertility are not so tightly governed.

Gender-affirming surgical techniques have improved markedly during the past 10 years. Reconstructive genital surgery that preserves neurologic sensation is now the standard. The satisfaction rate with surgical reassignment of sex is now very high (187). Additionally, the mental health of the individual seems to be improved by participating in a treatment program that defines a pathway of gender-affirming treatment that includes hormones and surgery (130, 144) (Table 16).

Surgery that affects fertility is irreversible. The World Professional Association for Transgender Health Standards of Care (222) emphasizes that the "threshold of 18 should not be seen as an indication in itself for active intervention." If the social transition has not been satisfactory, if the person is not satisfied with or is ambivalent about the effects of sex hormone treatment, or if the person is ambivalent about surgery then the individual should not be referred for surgery (223, 224).

Gender-affirming genital surgeries for transgender females that affect fertility include gonadectomy, penectomy, and creation of a neovagina (225, 226). Surgeons often invert the skin of the penis to form the wall of the vagina, and several literatures reviews have reported on outcomes (227). Sometimes there is inadequate tissue to form a full neovagina, so clinicians have revisited using intestine and found it to be successful (87, 228, 229). Some newer vaginoplasty techniques may involve autologuous oral epithelial cells (230, 231).

The scrotum becomes the labia majora. Surgeons use reconstructive surgery to fashion the clitoris and its hood, preserving the neurovascular bundle at the tip of the penis as the neurosensory supply to the clitoris. Some surgeons are also creating a sensate pedicled-spot adding a G spot to the neovagina to increase sensation (232). Most recently, plastic surgeons have developed techniques to fashion labia minora. To further complete the feminization, uterine transplants have been proposed and even attempted (233).

Neovaginal prolapse, rectovaginal fistula, delayed healing, vaginal stenosis, and other complications do sometimes occur (234, 235). Clinicians should strongly remind the transgender person to use their dilators to maintain the depth and width of the vagina throughout the postoperative period. Genital sexual responsivity and other aspects of sexual function are usually preserved following genital gender-affirming surgery (236, 237).

Ancillary surgeries for more feminine or masculine appearance are not within the scope of this guideline. Voice therapy by a speech language pathologist is available to transform speech patterns to the affirmed gender (148). Spontaneous voice deepening occurs during testosterone treatment of transgender males (152, 238). No studies have compared the effectiveness of speech therapy, laryngeal surgery, or combined treatment.

Breast surgery is a good example of gender-confirming surgery that does not affect fertility. In all females, breast size exhibits a very broad spectrum. For transgender females to make the best informed decision, clinicians should delay breast augmentation surgery until the patient has completed at least 2 years of estrogen therapy, because the breasts continue to grow during that time (141, 155).

Another major procedure is the removal of facial and masculine-appearing body hair using either electrolysis or

Table 16. Criteria for Gender-Affirming Surgery, Which Affects Fertility

1. Persistent, well-documented gender dysphoria
2. Legal age of majority in the given country
3. Having continuously and responsibly used gender-affirming hormones for 12 mo (if there is no medical contraindication to receiving such therapy)
4. Successful continuous full-time living in the new gender role for 12 mo
5. If significant medical or mental health concerns are present, they must be well controlled
6. Demonstrable knowledge of all practical aspects of surgery (*e.g.*, cost, required lengths of hospitalizations, likely complications, postsurgical rehabilitation)

laser treatments. Other feminizing surgeries, such as that to feminize the face, are now becoming more popular (239–241).

In transgender males, clinicians usually delay gender-affirming genital surgeries until after a few years of androgen therapy. Those surgeries that affect fertility in this group include oophorectomy, vaginectomy, and complete hysterectomy. Surgeons can safely perform them vaginally with laparoscopy. These are sometimes done in conjunction with the creation of a neopenis. The cosmetic appearance of a neopenis is now very good, but the surgery is multistage and very expensive (242, 243). Radial forearm flap seems to be the most satisfactory procedure (228, 244). Other flaps also exist (245). Surgeons can make neopenile erections possible by reinervation of the flap and subsequent contraction of the muscle, leading to stiffening of the neopenis (246, 247), but results are inconsistent (248). Surgeons can also stiffen the penis by imbedding some mechanical device (*e.g.*, a rod or some inflatable apparatus) (249, 250). Because of these limitations, the creation of a neopenis has often been less than satisfactory. Recently, penis transplants are being proposed (233).

In fact, most transgender males do not have any external genital surgery because of the lack of access, high cost, and significant potential complications. Some choose a metaoidioplasty that brings forward the clitoris, thereby allowing them to void in a standing position without wetting themselves (251, 252). Surgeons can create the scrotum from the labia majora with good cosmetic effect and can implant testicular prostheses (253).

The most important masculinizing surgery for the transgender male is mastectomy, and it does not affect fertility. Breast size only partially regresses with androgen therapy (155). In adults, discussions about mastectomy usually take place after androgen therapy has started. Because some transgender male adolescents present after significant breast development has occurred, they may also consider mastectomy 2 years after they begin androgen therapy and before age 18 years. Clinicians should individualize treatment based on the physical and mental health status of the individual. There are now newer approaches to mastectomy with better outcomes (254, 255). These often involve chest contouring (256). Mastectomy is often necessary for living comfortably in the new gender (256).

5.1. We recommend that a patient pursue genital gender-affirming surgery only after the MHP and the clinician responsible for endocrine transition therapy both agree that surgery is medically necessary and would benefit the patient's overall health and/or well-being. (1 |⊕⊕◯◯)

5.2. We advise that clinicians approve genital gender-affirming surgery only after completion of at least 1 year of consistent and compliant hormone treatment, unless hormone therapy is not desired or medically contraindicated. (Ungraded Good Practice Statement)

5.3. We advise that the clinician responsible for endocrine treatment and the primary care provider ensure appropriate medical clearance of transgender individuals for genital gender-affirming surgery and collaborate with the surgeon regarding hormone use during and after surgery. (Ungraded Good Practice Statement)

5.4. We recommend that clinicians refer hormone-treated transgender individuals for genital surgery when: (1) the individual has had a satisfactory social role change, (2) the individual is satisfied about the hormonal effects, and (3) the individual desires definitive surgical changes. (1 |⊕◯◯◯)

5.5. We suggest that clinicians delay gender-affirming genital surgery involving gonadectomy and/or hysterectomy until the patient is at least 18 years old or legal age of majority in his or her country. (2 |⊕⊕◯◯).

5.6. We suggest that clinicians determine the timing of breast surgery for transgender males based upon the physical and mental health status of the individual. There is insufficient evidence to recommend a specific age requirement. (2 |⊕◯◯◯)

Evidence

Owing to the lack of controlled studies, incomplete follow-up, and lack of valid assessment measures, evaluating various surgical approaches and techniques is difficult. However, one systematic review including a large numbers of studies reported satisfactory cosmetic and functional results for vaginoplasty/neovagina construction (257). For transgender males, the outcomes are less certain. However, the problems are now better understood (258). Several postoperative studies report significant long-term psychological and psychiatric pathology (259–261). One study showed satisfaction with breasts, genitals, and femininity increased significantly and showed the importance of surgical treatment as a key therapeutic option for transgender females (262). Another analysis demonstrated that, despite the young average age at death following surgery and the relatively larger number of individuals with somatic morbidity, the study does not allow for determination of

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causal relationships between, for example, specific types of hormonal or surgical treatment received and somatic morbidity and mortality (263). Reversal surgery in regretful male-to-female transsexuals after sexual reassignment surgery represents a complex, multistage procedure with satisfactory outcomes. Further insight into the characteristics of persons who regret their decision postoperatively would facilitate better future selection of applicants eligible for sexual reassignment surgery. We need more studies with appropriate controls that examine long-term quality of life, psychosocial outcomes, and psychiatric outcomes to determine the long-term benefits of surgical treatment.

When a transgender individual decides to have gender-affirming surgery, both the hormone prescribing clinician and the MHP must certify that the patient satisfies criteria for gender-affirming surgery (Table 16).

There is some concern that estrogen therapy may cause an increased risk for venous thrombosis during or following surgery (176). For this reason, the surgeon and the hormone-prescribing clinician should collaborate in making a decision about the use of hormones before and following surgery. One study suggests that preoperative factors (such as compliance) are less important for patient satisfaction than are the physical postoperative results (56). However, other studies and clinical experience dictate that individuals who do not follow medical instructions and do not work with their physicians toward a common goal do not achieve treatment goals (264) and experience higher rates of postoperative infections and other complications (265, 266). It is also important that the person requesting surgery feels comfortable with the anatomical changes that have occurred during hormone therapy. Dissatisfaction with social and physical outcomes during the hormone transition may be a contraindication to surgery (223).

An endocrinologist or experienced medical provider should monitor transgender individuals after surgery. Those who undergo gonadectomy will require hormone replacement therapy, surveillance, or both to prevent adverse effects of chronic hormone deficiency.

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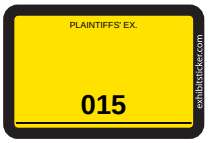
AACAP Statement Responding to Efforts to ban Evidence-Based Care for Transgender and Gender Diverse Youth



November 8, 2019

Variations in gender expression represent normal and expectable dimensions of human development. They are not considered to be pathological. Health promotion for all youth encourages open exploration of all identity issues, including sexual orientation, gender identity, and/or gender expression according to recognized practice guidelines (1, 2). Research consistently demonstrates that gender diverse youth who are supported to live and/or explore the gender role that is consistent with their gender identity have better mental health outcomes than those who are not (3, 4, 5).

State-based legislation regarding the treatment of transgender youth that directly oppose the evidence-based care recognized by professional societies across multiple disciplines is a serious concern. Many reputable professional organizations, including the American Psychological Association, the American Psychiatric Association, the American Academy of Pediatrics, and the Endocrine Society, which represent tens of thousands of professionals across the United States, recognize natural variations in gender identity and expression and have published clinical guidance that promotes nondiscriminatory, supportive interventions for gender diverse youth based on the current evidence base. These interventions may include, and are not limited to, social gender transition, hormone blocking agents, hormone treatment, and affirmative psychotherapeutic modalities.

The American Academy of Child and Adolescent Psychiatry (AACAP) supports the use of current evidence-based clinical care with minors. AACAP strongly opposes any efforts – legal, legislative, and otherwise – to block access to these recognized interventions. Blocking access to timely care has been shown to increase youths' risk for suicidal ideation and other negative mental health outcomes. Consistent with AACAP's policy against conversion therapy (2), AACAP recommends that youth and their families formulate an individualized treatment plan with their clinician that addresses the youth's unique mental health needs under the premise that all gender identities and expressions are not inherently pathological.

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ENDOCRINE SOCIETY
Hormone Science to Health

PES PEDIATRIC ENDOCRINE SOCIETY

TRANSGENDER HEALTH POSITION STATEMENT

INTRODUCTION

Over the last few decades, there has been a rapid expansion in the understanding of gender identity along with the implications for the care of transgender and gender diverse individuals. In parallel with the greater societal awareness of transgender individuals, evidence-based practices in caring for pediatric and adult transgender patients have been developed in response to scientific research. While there continue to be gaps in knowledge about the optimal care for transgender individuals, the framework for providing care is increasingly well-established as is the recognition of needed policy changes.

BACKGROUND

The medical consensus in the late 20th century was that transgender and gender incongruent individuals suffered a mental health disorder termed "gender identity disorder." Gender identity was considered malleable and subject to external influences. Today, however, this attitude is no longer considered valid. Considerable scientific evidence has emerged demonstrating a durable biological element underlying gender identity.[1,2] Individuals may make choices due to other factors in their lives, but there do not seem to be external forces that genuinely cause individuals to change gender identity.

Although the specific mechanisms guiding the biological underpinnings of gender identity are not entirely understood, there is evolving consensus that being transgender is not a mental health disorder. Such evidence stems from scientific studies suggesting that: 1) attempts to change gender identity in intersex patients to match external genitalia or chromosomes are typically unsuccessful[1,2]; 2) identical twins (who share the exact same genetic background) are more likely to both experience transgender identity as compared to fraternal (non-identical) twins[3]; 3) among individuals with female chromosomes (XX), rates of male gender identity are higher for those exposed to higher levels of androgens *in utero* relative to those without such exposure, and male (XY)-chromosome individuals with complete androgen insensitivity syndrome typically have female gender identity[4]; and 4) there are associations of certain brain scan or staining patterns with gender identity rather than external genitalia or chromosomes.[1,2]

CONSIDERATIONS

Transgender individuals are often denied insurance coverage for appropriate medical and psychological treatment. Those gender diverse youth who have barriers to accessing adequate healthcare have poorer overall physical and mental health compared to their cisgender peers.[5] Over the last decade, there has been considerable research on and development of evidence-based standards of care that have proven to be both safe and efficacious for the treatment of gender dysphoria/gender incongruence in youth and adults. There is also a growing understanding of the positive impact that increased access to such treatments can have on the mental health of these individuals.

The Endocrine Society's Clinical Practice Guideline on gender dysphoria/gender incongruence[6] provides the standard of care for supporting transgender individuals. The guideline establishes a methodical, conservative framework for gender-affirming care, including pubertal suppression, hormones and surgery and standardizes terminology to be used by healthcare professionals. These recommendations include evidence that treatment of gender dysphoria/incongruence is medically necessary and should be covered by insurance.

Despite increased awareness, many barriers to improving the health and well-being of transgender youth and adults remain. Oftentimes, medical treatment for gender dysphoria/gender incongruence is considered elective by insurance companies, which fail to provide coverage for physician-prescribed treatment. Access to appropriately trained healthcare professionals can also be challenging as there

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is a lack of formal education on gender dysphoria/gender incongruence among clinicians trained in the United States. A 2016 survey of endocrinologists, the physicians most likely to care for these patients, found that over 80% have never received training on care of transgender patients.[7]

This can have an adverse impact on patient outcomes, particularly in rural and underserved areas. In fact, studies have indicated that 70% of transgender individuals have experienced maltreatment by medical providers, including harassment and violence.[7] Many transgender individuals have been subjected to conversion therapy, or efforts to change a transgender person's gender identity using psychological interventions; this is known to be associated with adverse mental health outcomes, including suicidality, and is banned in 20 states and the District of Columbia.[8]

Transgender individuals who have been denied care show an increased likelihood of dying by suicide and engaging in self-harm.[7] Transgender/gender incongruent youth who had access to pubertal suppression, a treatment which is fully reversible and prevents development of secondary sex characteristics not in alignment with their gender identity, have lower lifetime odds of suicidal ideation compared to those youth who desired pubertal suppression but did not have access to such treatment.[9] Youth who are able to access gender-affirming care, including pubertal suppression, hormones and surgery based on conservative medical guidelines and consultation from medical and mental health experts, experience significantly improved mental health outcomes over time, similar to their cis-gender peers.[10-12] Pre-pubertal youth who are supported and affirmed in their social transitions long before medical interventions are indicated, experience no elevation in depression compared to their cis-gender peers.[12] It is critical that transgender individuals have access to the appropriate treatment and care to ensure their health and well-being.

FUTURE CONSIDERATIONS

While the data are strong for both a biological underpinning to gender identity and the relative safety of hormone treatment (when appropriately monitored medically), there are gaps in knowledge that are necessary to address in order to optimize care. Comparative effectiveness research in hormone regimens is needed to determine: the best endocrine and surgical protocols[13], as it is not yet known if certain regimens are safer or more effective than others; the degree of improvement as a result of the intervention (e.g. decrease in mental health diagnoses); the need for training of health care providers and the most effective training methods; and to build the body of evidence pertaining to cardiovascular, malignancy, or other long-term risks from hormone interventions, particularly as the transgender individual ages. Additional studies are needed to elucidate the biological processes underlying gender identity; such studies may lead to destigmatization and may also decrease health disparities for gender minorities. In addition, further studies are needed to determine strategies for fertility preservation and to investigate long-term outcomes of early medical intervention, including pubertal suppression, gender-affirming hormones and gender-affirming surgeries for transgender/gender incongruent youth. To successfully establish and enact these protocols requires long-term, large-scale studies across countries that employ similar care protocols.

POSITIONS

- There is a durable biological underpinning to gender identity that should be considered in policy determinations.
- Medical intervention for transgender youth and adults (including puberty suppression, hormone therapy and medically indicated surgery) is effective, relatively safe (when appropriately monitored), and has been established as the standard of care.[6] Federal and private insurers should cover such interventions as prescribed by a physician as well as the appropriate medical screenings that are recommended for all body tissues that a person may have.
- Increased funding for national pediatric and adult transgender health research programs is needed to close the gaps in knowledge regarding transgender medical care and should be made a priority.

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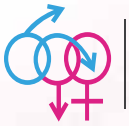

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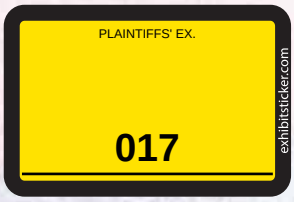

www.wpath.org

Standards of Care

for the Health of Transsexual, Transgender, and Gender Nonconforming People

The World Professional Association for Transgender Health

7th Version

WPATH WORLD PROFESSIONAL ASSOCIATION for TRANSGENDER HEALTH

Standards of Care

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The World Professiona Association for Transgender Health

7th Version[1] | 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.

II

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.

III

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 incidence[3] and prevalence[4] 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.

V

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 fact 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, & Jaberi, 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 prolactinom[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 (Cattrall & 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 econonomic 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 gonadtropin 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 malignances 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.

X

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 irreversibile, 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 dsyphoria 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, Hiltebrand, & 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, & LWPES1/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 femininizing 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 being 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 iteratations 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.

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USPATH
UNITED STATES PROFESSIONAL ASSOCIATION FOR TRANSGENDER HEALTH

USPATH Position Statement on Legislative and Executive Actions Regarding the Medical Care of Transgender Youth

The US Professional Association for Transgender Health (USPATH) believes that decision making regarding the use of hormone therapy or puberty blocking medicine in transgender adolescents should involve physicians, psychologists, and other health personnel, parents or guardians, adolescents, and other community stakeholders identified on a case-by-case basis. Decision making should be informed by current guidelines from the World Professional Association for Transgender Health (WPATH), and the Endocrine Society. This standard of care has been endorsed by the American Academy of Pediatrics, the American Medical Association, the American Psychiatric Association, the American Academy of Child & Adolescent Psychiatry, and the US Department of Health and Human Services Office of Population Affairs.

USPATH opposes recent efforts in several states to restrict parental rights and direct the practice of medicine through legislative or executive action. These efforts lack scientific merit, and in some cases misinterpret or distort available data, or otherwise lend credence to individual opinions in the literature that are at odds with the overwhelming majority of experts and publications in this field. Specifically, the justification included in recent Florida Department of Health guidelines claiming that such treatment confers an "unacceptably high risk of doing harm" has numerous such misinterpretations and distortions. As such, USPATH wishes to make several clarifying statements regarding this matter. These statements build on a prior joint USPATH/WPATH statement regarding executive action in Texas on this matter.

1. A claim is made that Ristori & Steensma (2016) demonstrated 80% of children seeking clinical care will "lose their desire" to transition. This paper, which was not a research study but a review of numerous other studies, did not look at medical care. It looked at studies of pre-pubertal children presenting with gender dysphoria at younger ages, when hormones would not be prescribed. Any such children who cease to experience dysphoria and revert to identifying with their birth assigned sex at the time of puberty would not be a candidate for hormone therapy or pubertal blockade. So in effect, this review suggests at most that the current guidelines, which require persistence of gender dysphoria upon reaching puberty Tanner stage 2 prior to initiation of any medical treatment, are appropriate. This same paper stated that with regards to social transition prior to puberty, it was clear that reparative therapy or other efforts encourage identification with or behavior consistent with the birth assigned sex were unethical.

2. A reference is made to Chew et al (2018), also a review article, which the Florida statement claims concluded that "hormonal treatments for transgender adolescents can achieve their intended physical effects, but evidence regarding their psychosocial and cognitive impact is generally lacking". However, the paper also states in the final paragraph of the discussion, "Notwithstanding these limitations, collectively, the studies reviewed provide qualified support for the use of [puberty blocking medications], [gender affirming hormones], cyproterone acetate and, to a lesser extent, lynestrenol in transgender youth. Overall, these hormonal treatments appear to provide some therapeutic benefits in terms of physical effects and are generally well-tolerated on the basis of current evidence." The Chew et al paper included studies only through 2017 and does not include 2 subsequent published studies with more solid evidence. Turban et al (2020) found 70% lower odds of suicidality in trans youth treated with hormones vs those who did not receive this treatment, and Achille et al (2020), which found significant improvements in a range of mental health and quality of life measures among those trans youth prescribed hormone therapy or puberty blockers.

3. It is important to clarify that a statement of "low quality evidence" means neither "poor quality research" nor "evidence of harm". Instead, this term typically means that larger, prospective randomized trials are lacking. Randomized and blinded trials of gender affirming hormones would neither be feasible nor ethical. There are many areas of medicine where commonly prescribed treatment recommendations are made based on "low quality" evidence due to similar practical limitations, for example the use of antidepressants during pregnancy.

4. The statement "Based on the currently available evidence, "encouraging mastectomy, ovariectomy, uterine extirpation, penile disablement, tracheal shave, the prescription of hormones which are out of line with the genetic make-up of the child, or puberty blockers, are all clinical practices which run an unacceptably high risk of doing harm" is not an original statement from the Florida DOH. Instead, it is a direct quote from the linked resource, which is not a research paper, but an opinion piece published by a single author who is a private practice psychotherapist with no published background in research in this area, and who in the same document advocates for reparative treatment modalities.

5. The Florida DOH statement provided links to documents from four European countries (Sweden, Finland, The United Kingdom, and France), which are presented as supporting evidence for Florida's position. However, the referenced Finnish, British, and French links and policies still permit hormone therapy and puberty blockade after appropriate assessment, and in appropriate care centers. The Swedish policy falls victim to the same misinterpretations and distortions as does the Florida guideline. The Florida guideline also presents a Centers for Medicare and Medicaid Services (CMS) document as evidence of US Federal policy regarding such treatment. In fact, this document pertains only to payments for these treatments under Medicare. It is neither a clinical practice guideline nor a position statement.

6. Arkansas Act 626, which makes the prescribing of hormones or puberty blockers to transgender youth a felony, was vetoed by the sitting governor, overridden by the legislature, and currently is under a stay by the courts. The bill wording provides no citations to support claims made about medical and psychological risks and harms.

Fortunately, there are state governments which have examined this issue and have come to a more scientifically grounded conclusion. Specifically, we applaud the Idaho State Senate Majority Caucus, who, when recently presented with proposed legislation from the Idaho State House of Representatives (HB675) which would outlaw all hormone therapy and puberty blockade for transgender minors, declined to act and issued a statement that such a law would interfere with parental rights and decision making that should be based on discussions between physicians, parents, and children, and would be out of step with the recommendations of the Idaho Medical Association.

We encourage other state legislative and executive bodies and agencies to follow Idaho's lead on this matter and defer setting policy and practice guidelines to clinicians, scientists, and researchers in this field.

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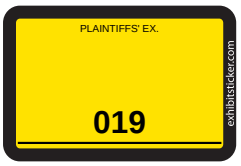

April 28, 2022

Biased Science: The Texas and Alabama Measures Criminalizing Medical Treatment for Transgender Children and Adolescents Rely on Inaccurate and Misleading Scientific Claims

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Introduction and Summary

On February 18, 2022, Texas Attorney General Ken Paxton issued an interpretation of Texas state law (the "AG Opinion"), taking the position that certain medical procedures constitute child abuse as defined in the Texas Family Code.[1] Texas Governor Greg Abbott cited the AG Opinion as authority for his February 22, 2022 directive requiring the Texas Department of Family and Protective Services to "conduct a prompt and thorough investigation of any reported instances of these abusive procedures" (the "Governor's Directive").[2]

[*] We would like to thank Dr. Sundes Kazmir, M.D., FAAP, who provided helpful information on medical research on child abuse investigations. Calleigh Higgins, Christina Lepore, and Henry Robinson provided excellent research assistance.

[1] Tex. Op. Att'y. Gen. No. KP-0401 (Feb. 18, 2022) (hereinafter, "AG Opinion").

[2] Letter from Greg Abbott, Governor of Texas, to Jaime Masters, Commissioner, Texas Department of Family and Protective Services, Feb. 22, 2022, at https://gov.texas.gov/uploads/files/press/O-MastersJaime202202221358.pdf

On April 7, 2022, Governor Kay Ivey of Alabama signed S.B. 184 (the "Alabama Law"), which imposes felony penalties on anyone providing certain medical care to any child, adolescent, or young adult under age 19.[3]

We are a group of six scientists and one law professor. Among the scientists, three of us are M.D.s., three are PhD's, and all treat transgender children and adolescents in daily clinical practice. We all hold academic appointments at major medical schools, including the University of Texas Southwestern and Yale University. In this report, we examine in depth the scientific claims made in the AG Opinion and the text of the Alabama Law about medical care for transgender children and adolescents. Note that, although we reject the AG's assertion that gender-affirming care constitutes child abuse and we oppose the Alabama Law's criminalization of such care, we do not address, in this report, the legal validity of either.[4] In accordance with our expertise, our focus is on the science.

After examining the AG Opinion and the findings of "fact" in the Alabama Law in detail, we conclude that their medical claims are not grounded in reputable science and are full of errors of omission and inclusion. These errors, taken together, thoroughly discredit the AG Opinion's claim that standard medical care for transgender children and adolescents constitutes child abuse. The Alabama Law contains similar assertions of scientific fact, and these too are riddled with errors, calling into question the scientific foundations of the law.

In this report, we focus closely on the AG Opinion, because it contains a full explanation of its reasoning, while the Alabama law presents a list of purported scientific findings without argument or citation. We note, throughout, when the purported findings in the Alabama law echo the claims made in the AG Opinion.

The Texas Attorney General either misunderstands or deliberately misstates medical protocols and scientific evidence. The AG Opinion and the Alabama Law make exaggerated and unsupported claims about the course of treatment for gender dysphoria, specifically claiming that standard medical care for pediatric patients includes surgery on genitals and reproductive organs. In fact, the authoritative protocols for medical care for transgender children and adolescents, which define what we term "gender-affirming care," specifically state that individuals must be over the age of majority before they can undergo such surgery. The AG Opinion and the Alabama Law also ignore the mainstream scientific evidence showing the significant benefits of gender-affirming care and exaggerate potential risks.

These are not close calls or areas of reasonable disagreement. The AG Opinion and the Alabama Law's findings ignore established medical authorities and repeat discredited, outdated, and poor-quality information. The AG Opinion also mischaracterizes reputable sources and repeatedly cites a fringe group whose listed advisors have limited (or no) scientific and medical credentials and include well-known anti-trans activists.

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[3] Vulnerable Child Compassion and Protection Act, 2022 Ala. Laws 289 (hereinafter, "Alabama Law").

[4] For legal analysis, see Plaintiffs' Original Petition and Application for Temporary Restraining Order, Temporary Injunction, Permanent Injunction, and Request for Declaratory Relief, Doe v. Abbott, March 1, 2022, at https://www.aclu.org/legal-document/doe-v-abbott-petition.

The AG Opinion falsely implies that puberty blockers and hormones are administered to prepubertal children, when, in fact, the standard medical protocols recommend drug treatments only for adolescents (and not prepubertal children). For purposes of this report, we use the term "adolescent" to refer to a child under the age of majority in whom pubertal development has begun.

The AG Opinion also omits mention of the extensive safeguards established by the standard protocols to ensure that medication is needed and that adolescents and their parents give informed assent and consent, respectively, to treatment when it is determined to be essential care. There is no rush to treatment: the course of gender-affirming care is tailored to each individual, and standard protocols mandate a process of consultation involving an interdisciplinary team including mental health professionals, medical providers, and parents.

By omitting the evidence demonstrating the substantial benefits of treatment for gender dysphoria, and by focusing on invented and exaggerated harms, the AG Opinion and the Alabama Law portray a warped picture of the scientific evidence. Contrary to their claims, a solid body of reputable evidence shows that gender-affirming care can be lifesaving and significantly improves mental health and reduces suicide attempts. The standard medical protocols were crafted by bodies of international experts based on a solid scientific foundation and have been in use for decades. Thus, treating gender dysphoria is considered not only ethical but also the clinically and medically recommended standard of care. Indeed, it would be considered unethical to *withhold* medical care from patients with gender dysphoria, just as it would be unethical to withhold potentially lifesaving care for patients with any other serious medical condition.

The repeated errors and omissions in the AG Opinion are so consistent and so extensive that it is difficult to believe that the opinion represents a good-faith effort to draw legal conclusions based on the best scientific evidence. It seems apparent that the AG Opinion is, rather, motivated by bias and crafted to achieve a preordained goal: to deny gender-affirming care to transgender youth. The same is true of the scientific claims made in the Alabama Law.

Many reputable scientific and professional organizations have issued statements opposing the Texas action,[5] but to our knowledge, none have conducted the in-depth, point-by-point review that we provide here.

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[5] See APA President Condemns Texas Governor's Directive to Report Parents of Transgender Minors [Internet]. Washington, D.C.: American Psychological Association; 2022 Feb 24 [cited 2022 Apr 15]. Available from: https://www.apa.org/news/press/releases/2022/02/report-parents-transgender-children; American Academy of Pediatrics, AAP, Texas Pediatric Society Oppose Actions in Texas Threatening Health of Transgender Youth [Internet]. Itasca (IL): American Academy of Pediatrics; 2022 Feb 24 [cited 2022 Apr 15]. Available from: https://www.aap.org/en/news-room/news-releases/aap/2022/aap-texas-pediatric-society-oppose-actions-in-texas-threatening-health-of-transgender-youth/; AACAP Statement Opposing Actions in Texas Threatening the Health, Mental Health and Well-Being of Transgender and Gender Diverse Youth and Their Families [Internet]. Washington, D.C.: American Academy of Child & Adolescent Psychiatry; 2022 March 1 [cited 2022 Apr 22]. Available from: https://www.aacap.org/AACAP/zLatest_News/AACAP_Statement_Opposing_Actions_in_Texas.aspx. See also Letter from James L. Madara, CEO and Executive Vice President of the American Medical Association, to Bill McBride, Executive Director of the National Governors Association, April 26, 2021 (opposing legislation in

Throughout this report, we use the highest-quality scientific evidence available. In this context, large-scale, randomized controlled trials would be inappropriate for ethical reasons: when medical care has been shown (by other methods) to reduce gender dysphoria and improve mental health, as is the case for gender-affirming care for individuals with gender dysphoria, it would be unethical to deny that care to a control group of patients. This is true in many areas of medicine. In such cases, physicians instead rely on studies using other scientific methods, and they judge the relative quality of evidence based on several factors, including whether the study is peer-reviewed, published in a high-impact journal, up to date, and conducted by reputable investigators.

In this report, we cite studies that are peer-reviewed, up to date, conducted by respected investigators, and published in high-impact journals that are widely read. This represents the highest-quality evidence available to physicians making treatment decisions in this context. By contrast, the AG Opinion relies on very poor-quality evidence. Only two of its sources are peer-reviewed scientific studies. Of these, one is badly out-of-date, and the other is cited for a proposition that is irrelevant to the treatment of transgender children and adolescents.[6]

To summarize, we find that:

1. The AG Opinion and the Alabama Law falsely claim that current medical standards authorize the surgical sterilization of transgender children and adolescents. In fact, present medical standards state that individuals must be the age of majority or older before undergoing surgery on genitals or reproductive organs.

> Current medical protocols do not allow for either surgery or drug therapy for prepubertal children and specifically state that genital surgery should not be carried out before patients reach the legal age of majority. The standards of care do permit the careful use of drug therapies for adolescents (but not prepubertal children) and caution that drug therapies should be undertaken only after a careful, staged process of psychological and medical counseling. The AG Opinion's and Alabama Law's lists of "sex change procedures" and the claims that doctors are routinely sterilizing children and teenagers do not reflect current medical practice.

Arkansas and other states that would deny gender-affirming care), at https://www.ama-assn.org/press-center/press-releases/ama-states-stop-interfering-health-care-transgender-children; Clarke M, Farnan A, Barba A, Giovanni K, Brymer M, Julian J. Gender-Affirming Care Is Trauma-Informed Care [Internet]. Los Angeles (CA) and Durham (NC): National Child Traumatic Stress Network; 2022 [cited 2022 Apr 15]. Available from: https://www.nctsn.org/sites/default/files/resources/fact-sheet/gender-affirming-care-is-trauma-informed-care.pdf.

[6] One study is Dhejne C, Lichtenstein P, Boman M, Johansson AL, Langstrom N, Landen M. Long-term follow-up of transsexual persons undergoing sex reassignment surgery: cohort study in Sweden. PLoS One 2011 Feb 22;6(2):e16885. We discuss in Section 2 why Dhejne et al. is out of date and unsupportive of the AG's claims. The AG Opinion also cites one study for the proposition that "hysterectomy, oophorectomy, and orchiectomy result in permanent sterility." The cited study is Cheng PJ, Pastuszak AW, Myers JB, Goodwin IA, Hotaling JM. Fertility concerns of the transgender patient. Transl Androl Urol. 2019 Jun;8(3):209-218. As we explain in Section 1, current medical protocols do not authorize surgery on genitals or reproductive organs for anyone under the age of majority, and so the reference is irrelevant to the treatment of minors.

2. The AG Opinion and the Alabama Law ignore the substantial benefits of medical care for transgender children and adolescents, care which has consistently been shown to reduce gender dysphoria and improve mental health. The best scientific evidence shows that gender dysphoria is real, that untreated gender dysphoria leads predictably to serious, negative medical consequences, and that gender-affirming care significantly improves mental health outcomes, including reducing rates of suicide.

The AG Opinion and the Alabama Law omit any discussion of the demonstrated benefits of gender-affirming care as recognized by established medical science. The AG Opinion and the Alabama Law also greatly exaggerate the percentage of adolescents whose diagnosed gender dysphoria dissipates without gender-affirming care. And the AG Opinion repeats discredited evidence claiming that there is a wave of so-called "rapid-onset" gender dysphoria among U.S. adolescents.

3. The AG Opinion and the Alabama Law greatly exaggerate the risks of gender-affirming drug therapy.

The AG Opinion exhibits a poor understanding of medicine and consistently misstates medical protocols and scientific evidence. Contrary to the AG Opinion's statements, gender-affirming drug therapy (including puberty blockers and hormonal treatments) is safe and effective and has been approved by the major medical authorities. Puberty blockers are fully reversible; when discontinued, puberty begins, and fertility develops normally.

Gender-affirming hormone treatments can reduce fertility to some degree while ongoing, but the evidence suggests that these effects are reversible when hormone therapy is discontinued. Standard medical protocols manage these risks in the way any medical risks should be managed: by weighing the benefits of treatment against potential harms and by a careful and individualized process of consultation and consent. Indeed, the informed consent procedures for gender-affirming drug treatment are at least as rigorous as the consent required for any other drug treatment.

Table of Contents

Section 1. The AG Opinion and the Alabama Law falsely claim that current medical standards authorize the surgical sterilization of transgender children and adolescents. In fact, present medical standards state that individuals must be the age of majority or older before undergoing surgery on genitals or reproductive organs.

The AG Opinion asserts that the medical treatments for transgender children include a list of surgical procedures including "sterilization through castration, vasectomy, hysterectomy, oophorectomy, metoidioplasty, orchiectomy, penectomy, phalloplasty, and vaginoplasty."[7] The AG Opinion also claims that physicians dispense "drugs to children that induce transient or permanent infertility," including "(1) puberty-suppression or puberty-blocking drugs, (2) supraphysiologic doses of testosterone to females; and (3) supraphysiologic doses of estrogen to males."[8] The AG Opinion asserts that "[t] he novel trend of providing these elective sex changes to minors often has the effect of permanently sterilizing those minor children."[9] The Alabama Law contains similar statements.[10]

These statements are incorrect. Current medical protocols state that genital surgery should not be carried out before patients reach the legal age of majority. To make the distinction clear, we refer to the AG Opinion's list of procedures as the "AG Opinion claims." We refer to the standard medical protocols issued by the World Professional Association for Transgender Health ("WPATH") and the Endocrine Society as "gender-affirming care."[11]

The AG Opinion fails to engage with the WPATH and Endocrine Society guidelines (or any other recognized set of medical guidelines), even though these are well-known, widely viewed as authoritative, and readily available to the public.[12] These standards are explicitly

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[7] AG Opinion, p. 1. The AG Opinion also includes "(2) mastectomies; and (3) removing from children otherwise healthy or non-diseased body part or tissue." These procedures do not affect fertility, which is the opinion's stated concern, and they are common among cisgender adolescents (e.g., rhinoplasty and breast reduction). We do not address these procedures in this report.

[8] AG Opinion, p. 1.

[9] AG Opinion, pp. 2-3.

[10] Alabama Law, Section 2(6).

[11] See 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, Pfafflin F, Rachlin K, Robinson B, Schechter LS, Tangpricha V, van Trotsenburg M, Vitale A, Winter S, Whittle S, Wylie KR, Zucker K. Standards of Care for the Health of Transsexual, Transgender, and Gender Nonconforming People, 7th version [Internet]. East Dundee (IL): World Professional Association for Transgender Health; 2012 [cited 2022 Apr 17]. Available from: https://www.wpath.org/publications/soc (hereinafter, "WPATH (2012)"); Hembree WC, Cohen-Kettenis PT, Gooren L, Hannema SE, Meyer WJ, Murad MH, Rosenthal SM, Safer JD, Tangpricha V, T'Sjoen GG. Endocrine Treatment of Gender-Dysphoric/Gender-Incongruent Persons: An Endocrine Society Clinical Practice Guideline. J Clin Endocrinol Metab. 2017 Sept 13;102(11):3869-3903 (hereinafter, "Endocrine Society (2017)").

[12] The AG Opinion quotes the WPATH standards once, but the opinion mischaracterizes the source material and persists in its repeated claims that gender-affirming care involves genital surgery on children. At page 4, the AG Opinion quotes WPATH (2012) to the effect that genital surgery should not be carried out before patients reach the age of majority. See AG Opinion, p. 4. The AG Opinion misleadingly uses the WPATH quotation as evidence that there is no benefit from gender-affirming care; in fact, WPATH (2012), pp. 10-21, acknowledges the benefits of psychotherapy and, in the case of adolescents, puberty blockers and hormone therapy. Apart from the isolated and misleading citation to WPATH (2012) at p. 4, the AG Opinion does not otherwise discuss the WPATH standards or correct its repeated assertion that children and adolescents are undergoing "sex change" procedures.

followed by major gender clinics in the United States.[13] We address the AG Opinion's misstatements in turn.

a. The medical standards of care for transgender children specifically state that individuals must be the age of majority or older before undergoing surgery on genitals or reproductive organs.

Gender dysphoria is a recognized medical condition[14] that merits medical treatment, and the evidence shows that treatment improves mental health outcomes, including reducing rates of suicidal ideation and suicide attempts. (See Section 2 of this report.)

Individuals with gender dysphoria seek care at a wide variety of ages, which depends on sociocultural and environmental factors, including parental support, socioeconomic status, and access to care. In the early phases of treatment, gender-affirming care consists of using the individual's preferred pronouns, psychosocial support, and education about the next stages of transition if desired. Medical professionals draw an important distinction between hormonal treatment and gender-affirming surgery. Hormonal transition is an established practice in older adolescents experiencing gender dysphoria, but current standards for gender-affirming care set the age of majority as the threshold for considering surgery on genitals and reproductive organs.

Two of the leading guidelines for the medical treatment of transgender children and adolescents are those published by WPATH and by the Endocrine Society. WPATH is a leading international organization of scientists, which has issued standards of care for transgender adults and children since 1979.[15] Several revisions have been made as scientific evidence drives changes in standards. The current version, WPATH Standards of Care, version 7, is viewed as authoritative in the medical community and is widely consulted by physicians and other clinicians. The WPATH standards explicitly state that genital surgery should not be carried out until the patient reaches the age of majority. Further, WPATH advises that "the age threshold should be seen as a minimum criterion and not an indication in and of itself for active intervention."[16]

The Endocrine Society is the leading international organization of endocrinologists, i.e., physicians specializing in the study and treatment of the human endocrine system, including hormonal treatment.[17] In 2017, the Endocrine Society issued clinical practice guidelines for the

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[13] See Kuper LE, Stewart S, Preston S, Lau M, Lopez X. Body Dissatisfaction and Mental Health Outcomes of Youth on Gender-Affirming Hormone Therapy. Pediatrics 2020 Apr;145(4):e20193006. doi: 10.1542/peds.2019-3006 (stating that Endocrine Society guidelines are followed). The same is true of the Greenwich Center for Gender & Sexuality. The Yale Pediatric Gender Clinic generally follows WPATH standards.

[14] American Psychiatric Association, Diagnostic and Statistical Manual of Mental Disorders (DSM-5), Fifth edition. 2013.

[15] The current version is WPATH (2012). According to WPATH, the first six versions were published in 1979, 1980, 1981, 1990, 1998, and 2001.

[16] WPATH (2012), at p. 21: "Genital surgery should not be carried out until (i) patients reach the legal age of majority to give consent for medical procedures 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."

[17] Who We Are [Internet]. Washington, D.C.: The Endocrine Society; c2022 [cited 2022 Apr 15]. Available from: https://www.endocrine.org/about-us.

treatment of gender dysphoria.[18] Like WPATH, the Endocrine Society does not authorize surgery on the genitals or reproductive organs of transgender children or adolescents.[19]

Both WPATH and Endocrine Society guidelines are based on reviews of the best available science conducted by panels of experts across medical disciplines. These guidelines are updated periodically to ensure that they reflect a current understanding of scientific knowledge and clinical practice. The statements in this report refer to current WPATH and Endocrine Society standards, i.e., those in force as of the date of publication of this report.

b. The standards of care do not recommend drug treatments (puberty blockers or hormones) for prepubertal children.

The AG Opinion wrongly conflates treatments available to adolescents with those offered to children.[20] In fact, current medical protocols for gender-affirming care do not recommend either surgery or drug treatments (puberty blockers and hormones) for prepubertal children.

The WPATH standards state clearly that physical interventions, including drug therapy, are recommended only for adolescents and only after an in-depth process of mental health and medical counseling, described below. The WPATH standards state that social transition, which is entirely reversible, may be considered by the parents of prepubertal children.[21] (Social transition consists of, e.g., wearing clothes and using a name that are consistent with the child's gender identity.) The Endocrine Society also "recommend[s] against puberty blocking and gender-affirming hormone treatment in prepubertal children."[22] (There is, of course, no need for such medication in children who have not reached puberty.)

c. Present standards of care recommend drug treatments for adolescents (youth who have developed pubertal changes) only for those with puberty-induced worsening gender dysphoria and only after a careful protocol that begins with psychological and medical counseling to ensure valid consent.

The AG Opinion claims that "[c]hildren and adolescents are promised relief and asked to 'consent' to life-altering, irreversible treatment—and to do so in the midst of reported psychological distress, when they cannot weigh long-term risks the way adults do."[23] The Alabama Law contains a similar statement.[24]

This statement misdescribes both medical practice and the consent procedures used for the treatment of adolescents. Legally, a parent or guardian must consent to the medical treatment of a minor, and so the AG Opinion is incorrect in implying that medical treatment depends on a

[18] Endocrine Society (2017).
[19] Id. (Guideline 5.5).
[20] AG Opinion, p. 2 (claiming that there is a "novel trend of providing these elective sex changes to minors," with "sex changes" previously defined to include surgery and drug therapies).
[21] WPATH (2012), p. 17.
[22] Endocrine Society (2017) (Guideline 1.4).
[23] AG Opinion, p. 4.
[24] Alabama Law, Section 2(15).

child or teenager's consent alone.[25] As noted above, medical protocols do not recommend drug therapy for prepubertal children, and so consent by young children is never an issue. For adolescents, the standard medical protocols provide for gender-affirming drug therapy only when medically necessary and after a comprehensive process that includes specialist medical consultation and assessment, parent consent and youth assent, and mental health evaluation.

A key feature of both the WPATH Standards of Care and the Endocrine Society Clinical Practice Guidelines is the central role of mental health professionals in assessing gender dysphoria and appropriate modes of medical treatment. The Endocrine Society notes, for example, that, "because of the psychological vulnerability of many individuals with [gender dysphoria], it is important that mental health care is available before, during, and sometimes also after transitioning."[26] Both WPATH and the Endocrine Society provide extensive guidance on how to provide psychosocial support to youth experiencing gender dysphoria, as well as a definition of what constitutes a properly trained mental health professional.

Contrary to the AG Opinion's implication, there is no medical rush to prescribe drug treatments to transgender adolescents. The current WPATH and Endocrine Society standards recommend a staged process for physical interventions, one that takes into account the presentation of gender dysphoria in each individual, along with their medical history and psychological functioning. Social transition, puberty blockers, and hormonal treatment may be used in stages, but not all adolescents with gender dysphoria undergo each treatment.[27] As always in medicine, the priority is to treat the patient as an individual and to address their physical and mental health needs holistically. WPATH, for example, expressly states that, "[b]efore any physical interventions are considered for adolescents, extensive exploration of psychological, family, and social issues should be undertaken …. The duration of this exploration may vary considerably depending on the complexity of the situation."[28]

WPATH and Endocrine Society standards recommend puberty-suppressing medications (GnRH agonist treatment), only for adolescents and only with guardrails to ensure that medication is medically necessary and that adolescents and their parents give informed consent to treatment. These safeguards are worth summarizing in some detail, because they contradict the AG Opinion's claim that gender-affirming care, including drug therapy, is being casually administered.[29]

For puberty-suppressing medications, the standards require the participation of a qualified mental health practitioner, who confirms that the adolescent has demonstrated a long-lasting and intense pattern of gender dysphoria, that gender dysphoria worsened with the onset of

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[25] While the law usually grants parents the final decision, bioethicists have found that adolescents can be meaningful participants in the consent process. Clark BA, Virani A. "This Wasn't a Split-Second Decision": An Empirical Ethical Analysis of Transgender Youth Capacity, Rights, and Authority to Consent to Hormone Therapy. J Bioeth Inq. 2021 Mar;18(1):151-64; Vrouenraets LJJJ, de Vries ALC, de Vries MC, van der Miesen AIR, Hein IM. Assessing Medical Decision-Making Competence in Transgender Youth. Pediatrics 2021 Dec 1;148(6):e2020049643.

[26] Endocrine Society (2017).

[27] WPATH (2012), p. 18; Endocrine Society (2017) (Guidelines 2.1 and 2.2).

[28] WPATH (2012), p. 16.

[29] We quote the Endocrine Society phrasing, but the two protocols are substantively the same.

puberty, and that any coexisting psychological, medical, or social problems that could interfere with treatment have been addressed, so that the adolescent's situation and functioning are stable enough to start treatment. The guidelines also require informed assent by adolescents and (if under the age of majority) informed consent by their parents, and they require the involvement of a pediatric endocrinologist (or another physician versed in gender-affirming treatment) to ensure that puberty-blocking medication is warranted, that puberty has begun in the adolescent patient, and that there are no medical contraindications to puberty-blocking medication. [30]

For those adolescents for whom progression to hormone therapy is medically indicated, WPATH and the Endocrine Society require additional counseling regarding the possible fertility effects of hormone therapy. In addition to parental consent, the guidelines require that a mental health practitioner confirm that the adolescent has "sufficient mental capacity (which most adolescents have by age 16 years)" to evaluate the benefits and risks of treatment.[31]

Section 2. The AG Opinion and the Alabama Law ignore the substantial benefits of medical care for transgender children and adolescents, care which has consistently been shown to reduce gender dysphoria and improve mental health. The best scientific evidence shows that gender dysphoria is real, that untreated gender dysphoria leads predictably to serious, negative medical consequences, and that gender-affirming care significantly improves mental health outcomes, including reducing rates of suicide.

The AG Opinion omits any discussion of the documented benefits of gender-affirming care and vastly overstates potential risks by relying on misrepresented or unreliable studies. The AG Opinion also misstates scientific evidence on the percentage of children and adolescents whose gender dysphoria resolves without treatment (sometimes termed "desistance"), and the opinion repeats discredited evidence on a purported novel trend of so-called rapid-onset gender dysphoria. The Alabama Law contains similar errors.[32]

The AG Opinion falsely states that "The medical evidence does not demonstrate that children and adolescents benefit from engaging in these irreversible sterilization procedures."[33] Contrary to the AG Opinion's statements, scientific studies have demonstrated that gender dysphoria is a well-documented condition for which medical care is essential treatment. The established scientific evidence shows that treatment improves mental health outcomes, including reducing rates of suicidal ideation and suicide attempts.

In this Section, we review the scientific evidence on gender dysphoria and the benefits of gender-affirming treatment, and we correct the AG Opinion's and Alabama Law's erroneous claims.

a. Gender dysphoria is real, and untreated gender dysphoria is harmful.

The American Psychiatric Association explains that

[30] Endocrine Society (2017) (Table 5), citing WPATH (2012), p. 16.
[31] Endocrine Society (2017) (Table 5).
[32] Alabama Law, Section 2 and Section 2(4).
[33] AG Opinion, at 3.

> [T]he term "transgender" refers to a person whose sex assigned at birth (i.e., the sex assigned by a physician at birth, usually based on external genitalia) does not match their gender identity (i.e., one's psychological sense of their gender). Some people who are transgender will experience "gender dysphoria," which refers to psychological distress that results from an incongruence between one's sex assigned at birth and one's gender identity. Though gender dysphoria often begins in childhood, some people may not experience it until after puberty or much later.[34]

In 2013, the American Psychiatric Association released the fifth edition of the DSM-5, the standard reference for the diagnosis of mental health conditions. The DSM-5 recognizes gender dysphoria and sets forth criteria for diagnosis. These criteria include "a marked incongruence between one's experienced/expressed gender and primary and/or secondary sex characteristics" and "a strong conviction that one has the typical feelings and reactions of the other gender (or some alternative gender different from one's assigned gender)." To meet diagnostic criteria, an individual must exhibit "clinically significant distress or impairment in social, occupational, or other important areas of functioning."[35]

In other words, individuals who live in a manner that is physically and socially incongruent to their gender identity can experience gender dysphoria – a clinically significant psychological distress that can lead to depressed mood.[36] Suicidal ideation and attempts have been found to be significantly higher among transgender adolescents who cannot obtain or do not receive gender-affirming care than among their cisgender peers. The harm of not providing gender-affirming care is well documented: 40% of trans individuals who do not receive hormones will attempt or complete suicide in their lifetime.[37] Untreated gender dysphoria can also lead to disordered eating. Patients may engage in unsafe eating behaviors (e.g., food restriction or purging) as a body-affirming tool and an effort to align their bodies with their gender identity. These behaviors can impair physical health and development.[38]

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[34] What is Gender Dysphoria? [Internet]. Washington, D.C.: American Psychiatric Association; 2020 Nov [cited 2022 Apr 15]. Available from: https://www.psychiatry.org/patients-families/gender-dysphoria/what-is-gender-dysphoria.

[35] American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. 5th ed. Washington, D.C.: American Psychiatric Association; 2013.

[36] Sorbara JC, Chiniara LN, Thompson S, Palmert MR. Mental health and timing of gender-affirming care. Pediatrics 2020 Oct 1;146(4):e20193600 (hereinafter, "Sorbara et al. 2020").

[37] Herman JL, Brown TNT, Haas AP. Suicide Thoughts and Attempts Among Transgender Adults [Internet]. Los Angeles (CA): The Williams Institute, UCLA School of Law; 2019 Sept [cited 2022 Apr 1]. Available from: https://williamsinstitute.law.ucla.edu/publications/suicidality-transgender-adults/. So-called "conversion" therapy (an extreme form of denying gender-affirming care, which attempts to change a person's gender identity to match the sex assigned at birth) has been shown to create psychological distress and prompt suicide. Turban JL, Beckwith N, Reisner SL, Keuroghlian AS. Association Between Recalled Exposure to Gender Identity Conversion Efforts and Psychological Distress and Suicide Attempts Among Transgender Adults. JAMA Psychiatry 2019 Sept 11;77(1):68-76.

[38] Coelho JS, Suen J, Clark BA, Marshall SK, Geller J, Lam PY. Eating Disorder Diagnoses and Symptom Presentation in Transgender Youth: a Scoping Review. Curr Psychiatry Rep. 2019 Oct 15;21(11):107; Kamody RC, Yonkers K, Pluhar EI, Olezeski CL. Disordered Eating Among Trans-Masculine Youth: Considerations Through a Developmental Lens. LGBT Health. 2020 May/Jun;7(4):170-73; Legroux I, Cortet B. Factors influencing bone loss in anorexia nervosa: assessment and therapeutic options. RMD Open. 2019 Nov 13;5(2):e001009.

For all these reasons, the American Academy of Pediatrics, the American Psychological Association, and the American Academy of Child and Adolescent Psychiatry – the three major professional associations of pediatricians, psychologists, and child and adolescent psychiatrists – have endorsed gender-affirming care and condemned efforts to deny medical care to transgender people, as have the Texas Medical Society and the Alabama Psychological Association.[39] These organizations have also condemned so-called "conversion therapy" as ineffective, unethical, and dangerous.[40]

The scientific consensus is clear: denying gender-affirming care harms transgender people and puts their lives at risk.[41]

b. Gender-affirming care has measurable and significant benefits.

The AG Opinion incorrectly states that "There is no evidence that long-term mental health outcomes are improved or that rates of suicide are reduced by hormonal or surgical intervention."[42] The AG's statement that gender-affirming care is not beneficial is contradicted by a significant body of recent scientific evidence.[43]

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[39] Rafferty J, Committee on Psychosocial Aspects of Child and Family Health; Committee on Adolescence; Section on Lesbian, Gay, Bisexual, and Transgender Health and Wellness, Ensuring Comprehensive Care and Support for Transgender and Gender-Diverse Children and Adolescents. Pediatrics. 2018 Oct;142(4):e20182162; American Psychological Association. Guidelines for psychological practice with transgender and gender nonconforming people. American Psychologist 2015 Dec;70(9):832-64 (hereinafter, "American Psychological Association (2015)"); AAP Continues to Support Care of Transgender Youth as More States Push Restrictions [Internet]. Itasca (IL): American Academy of Pediatrics; 2022 Jan 6 [cited 2022 Mar 31]. Available from: https://publications.aap.org/aapnews/news/19021/AAP-continues-to-support-care-of-transgender; Criminalizing Gender Affirmative Care with Minors [Internet]. Washington, D.C.: American Psychological Association; [cited 2022 Mar 30]. Available from: https://www.apa.org/pi/lgbt/resources/policy/issues/gender-affirmative-care; AACAP Statement Opposing Actions in Texas Threatening the Health, Mental Health and Well-Being of Transgender and Gender Diverse Youth and Their Families, Washington, D.C.: American Academy of Child & Adolescent Psychiatry; 2022 March 1 [cited 2022 Apr 22=]. Available from: https://www.aacap.org/AACAP/zLatest_News/AACAP_Statement_Opposing_Actions_in_Texas.aspx; Statement of the Alabama Psychological Association (aPA) Supporting Gender-Affirming Care for Transgender Youth and Urging Opposition to Alabama SB184/HB266 [internet]. Alabama Psychological Association 2022. Available at https://cdn.ymaws.com/www.alapsych.org/resource/resmgr/2022/sb184-hb266_apa_statement_3-.pdf; Sorrel AL, TMA Supports Evidence-Based Gender-Affirming Care in Lawsuit [internet]. Texas Medical Association. March 14, 2022. Available from https://www.texmed.org/TexasMedicineDetail.aspx?id=59040.

[40] APA Resolution on Gender Identity Change Efforts [Internet]. Washington, D.C.: American Psychological Association; 2021 Feb [cited 2022 Mar 31]. Available from: https://www.apa.org/about/policy/resolution-gender-identity-change-efforts.pdf.

[41] Abreu RL, Sostre JP, Gonzalez KA, Lockett GM, Matsuno E. "I am afraid for those kids who might find death preferable": Parental figures' reactions and coping strategies to bans on gender-affirming care for transgender and gender diverse youth. Psychology of Sexual Orientation and Gender Diversity [Internet]. 2021 Jul 29 [cited 2022 Mar 31]; advance online publication. Available from: https://psycnet.apa.org/record/2021-67997-001; Hughes LD, Kidd KM, Gamarel KE, Operario D, Dowshen N. (2021). "These Laws Will Be Devastating": Provider Perspectives on Legislation Banning Gender-Affirming Care for Transgender Adolescents. Journal of Adolescent Health 2021 Dec;69(6):976-82; Kidd KM, Sequeira GM, Paglisotti T, Katz-Wise SL, Kazmerski TM, Hillier A, Miller E, Dowshen N. "This could mean death for my child": Parent perspectives on laws banning gender-affirming care for transgender adolescents. Journal of Adolescent Health 2021 Jun;68(6):1082-88.

[42] AG Opinion, p. 4.

[43] De Vries AL, Steensma TD, Doreleijers TA, Cohen-Kettenis PT. Puberty suppression in adolescents with gender identity disorder: A prospective follow-up study. The Journal of Sexual Medicine 2011 Aug;8(8):2276-83; De Vries

As explained in Section 1 of this report, social transition is an important first step for adolescents (and is the only medically accepted form of gender-affirming care for prepubertal children). The scientific evidence shows that social transition, including using a child or adolescent's chosen name, reduces depression and suicide risk.[44]

A solid body of reliable research has shown that the potential next steps in gender-affirming care for adolescents with gender dysphoria – puberty-blocking medications and hormone therapy – have major mental-health benefits, including higher levels of general well-being and significantly decreased levels of suicidality.[45] Puberty blockers have been shown to

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AL, McGuire JK, Steensma TD, Wagenaar EC, Doreleijers TA, Cohen-Kettenis PT. Young adult psychological outcome after puberty suppression and gender reassignment. Pediatrics 2014 Oct;134(4):696-704; Costa R, Dunsford M, Skagerberg E, Holt V, Carmichael P, Colizzi M. Psychological Support, Puberty Suppression, and Psychosocial Functioning in Adolescents with Gender Dysphoria. The Journal of Sexual Medicine 2015 Nov;12(11):2206-14 (hereinafter, "Costa et al. 2015"); Allen LR, Watson LB, Egan AM, Moser CN. Well-being and suicidality among transgender youth after gender-affirming hormones. Clinical Practice in Pediatric Psychology 2019 Sept;7(3):302-11 (hereinafter, ("Allen et al 2019"); Kaltiala R, Heino E, Tyolajarvi M, Suomalainen L. Adolescent development and psychosocial functioning after starting cross-sex hormones for gender dysphoria. Nordic Journal of Psychiatry 2020 Apr;74(3):213-19; de Lara DL, Rodriguez OP, Flores IC, Masa JLP, Campos-Munoz L, Hernandez MC, Amador JTR. Psychosocial assessment in transgender adolescents. Anales de Pediatria (English Edition) 2020 Jul;93(1):41-48; van der Miesen AI, Steensma TD, de Vries AL, Bos H, Popma A. Psychological Functioning in Transgender Adolescents Before and After Gender-Affirmative Care Compared with Cisgender General Population Peers. Journal of Adolescent Health 2020 Jun;66(6):699-704; Achille C, Taggart T, Eaton NR, Osipoff J, Tafuri K, Lane A, Wilson TA. Longitudinal impact of gender-affirming endocrine intervention on the mental health and well-being of transgender youths: preliminary results. International Journal of Pediatric Endocrinology 2020;2020:8; Kuper LE, Stewart S, Preston S, Lau M, Lopez X. Body Dissatisfaction and Mental Health Outcomes of Youth on Gender-Affirming Hormone Therapy. Pediatrics 2020 Apr;145(4):e20193006; Turban JL, King D, Carswell JM, Keuroghlian AS. Pubertal Suppression for Transgender Youth and Risk of Suicidal Ideation. Pediatrics 2020 Feb;145(2):e20191725; Carmichael P, Butler G, Masic U, Cole TJ, De Stavola BL, Davidson S, Skageberg EM, Khadr S, Viner RM. Short-term outcomes of pubertal suppression in a selected cohort of 12 to 15 year old young people with persistent gender dysphoria in the UK. PLoS One 2021 Feb 2;16(2):e0243894; Grannis C, Leibowitz SF, Gahn S, Nahata L, Morningstar M, Mattson WI, Chen D, Strang JF, Nelson EE. Testosterone treatment, internalizing symptoms, and body image dissatisfaction in transgender boys. Psychoneuroendocrinology 2021 Oct;132:105358; Hisle-Gorman E, Schvey NA, Adirim TA, Rayne AK, Susi A, Roberts TA, Klein DA. Mental Healthcare Utilization of Transgender Youth Before and After Affirming Treatment. The Journal of Sexual Medicine 2021 Aug;18(8):1444-54; Green AE, DeChants JP, Price MN, Davis CK. Association of Gender-Affirming Hormone Therapy with Depression, Thoughts of Suicide, and Attempted Suicide Among Transgender and Nonbinary Youth. Journal of Adolescent Health 2022 Apr;70(4):643-49 (hereinafter, "Green et al. 2022"); Turban JL, King D, Kobe J, Reisner SL, Keuroghlian AS. Access to gender-affirming hormones during adolescence and mental health outcomes among transgender adults. PLoS One 2022 Jan 12;17(1):e0261039 (hereinafter, "Turban et al. 2022"); Tordoff DM, Wanta JW, Collin A, Stephney C, Inwards-Breland DJ, Ahrens K. Mental Health Outcomes in Transgender and Nonbinary Youths Receiving Gender-Affirming Care. JAMA Network Open 2022 Feb 1;5(2):e220978 (hereinafter, "Tordoff et al. (2022)").

[44] Russell ST, Pollitt AM, Li G, Grossman AH. Chosen name use is linked to reduced depressive symptoms, suicidal ideation, and suicidal behavior among transgender youth. Journal of Adolescent Health 2018 Oct;63(4):503-05; Durwood L, McLaughlin KA, Olson KR. Mental health and self-worth in socially transitioned transgender youth. Journal of the American Academy of Child & Adolescent Psychiatry 2017 Feb;56(2):116-23.

[45] Allen et al. 2019, cited in note 43; Green et al. (2022), cited in note 43; Connolly MD, Zervos MJ, Barone II CJ, Johnson CC, Joseph CL. The Mental Health of Transgender Youth: Advances in Understanding. Journal of Adolescent Health 2016 Nov;59(5):489-95; Turban et al. 2022, cited in note 43; Costa et al. (2015), cited in note 43; See also Witcomb GL, Bouman WP, Claes L, Brewin N, Crawford JR, Arcelus J. Levels of depression in transgender people and its predictors: Results of a large matched control study with transgender people accessing clinical services. Journal of Affective Disorders 2018 Aug 1; 235:308-15.

decrease suicidality in adulthood and to improve affect and psychosocial functioning as well as social life.[46] Hormone therapy has been shown to reduce suicidality in transgender adolescents when compared to peers with gender dysphoria who did not receive it.[47] Notably, none of the studies has found a worsening of these mental health measures among recipients of gender-affirming care.

Among children and adolescents, patients who present for gender-affirming care at later pubertal stages are more likely to require psychoactive medications and are more likely to have considered or attempted suicide than patients who received gender-affirming care at earlier stages of pubertal development.[48]

As evidence for the proposition that "[t]here is no evidence that long-term mental health outcomes are improved or that rates of suicide are reduced by hormonal or surgical intervention," the AG Opinion cites a 2011 Swedish study by Dhejne et al. that, the AG Opinion claims, "monitored transitioned individuals for 30 years [and] found high rates of post-transition suicide and significantly elevated all-cause mortality, including increased death rates from cardiovascular disease and cancer, although causality could not be established."[49] In fact, the 2011 study by Dhejne is badly out-of-date and does not support the AG Opinion's claim.

The Dhejne study compared post-gender-affirmation transgender individuals with cisgender individuals from the general population, as opposed to transgender individuals who did not receive gender-affirming care. Therefore, as the study's author explicitly cautions in the body of the text, *it is impossible to conclude from this data* that gender-affirming procedures were a causative factor in suicidality among transgender individuals.[50] Rather, the study shows only that transgender adults were more likely to experience suicidal ideation/attempts and risky behavior when compared to the general population in Sweden between 1973 and 2003. Further, the Dhejne study is not generalizable to a modern American population or to adolescents. During the study period, Swedish law required that individuals seeking gender-affirming surgery be

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[46] Rew L, Young CC, Monge M, Bogucka R. Review: Puberty blockers for transgender and gender diverse youth – a critical review of the literature. Child and Adolescent Mental Health 2021 Feb;26(1):3-14; de Vries AL, Steensma TD, Doreleijers TA, Cohen-Kettenis PT. Puberty suppression in adolescents with gender identity disorder: a prospective follow-up study. J Sex Med. 2011 Aug;8(8):2276-83. Epub 2010 Jul 14 (hereinafter, "de Vries et al. (2011)").

[47] Tordoff et al (2022), cited in note 43; Sorbara et. al. (2020), cited in note 36.

[48] Sorbara JC et. al. (2020), cited in note 36. Studies of adults confirm that gender-affirming treatment has been associated with marked improvement in mental health outcomes in transgender patients. See Almazan AN, Keuroghlian AS. Association Between Gender-Affirming Surgeries and Mental Health Outcomes. JAMA Surgery 2021 Jul 1;156(7):611-18; Marano AA, Louis MR, Coon D. Gender-Affirming Surgeries and Improved Psychosocial Health Outcomes. JAMA Surgery 2021 Jul 1;156(7):685-87; Swan J, Phillips TM, Sanders T, Mullens AB, Debattista J and Bromdal A. Mental health and quality of life outcomes of gender-affirming surgery: A systematic literature review, Journal of Gay & Lesbian Mental Health, 2022.

[49] AG Opinion, at 4, citing Dhejne C, Lichtenstein P, Boman M, Johansson AL, Langstrom N, Landen M. Long-term follow-up of transsexual persons undergoing sex reassignment surgery: cohort study in Sweden. PLoS One 2011 Feb 22;6(2):e16885 (hereinafter, "Dhejne (2011)").

[50] "It is therefore important to note that the current study is only informative with respect to [transgender] persons' health after sex reassignment; *no inferences can be drawn as to the effectiveness of sex reassignment as a treatment for transsexualism*. In other words, the results should not be interpreted such as sex reassignment per se increases morbidity and mortality. Things might have been even worse without sex reassignment." Dhejne (2011) at 7 (emphasis added).

sterilized. The presence of this law alone might account for the higher risk of suicide attempts and risky behavior in the transgender population compared to the cisgender population at the time.[51]

The AG Opinion also mischaracterizes an important governmental decision, claiming incorrectly that the Centers for Medicare and Medicaid Services ("CMS") found that gender-affirming care has no benefits. The AG Opinion claims that "there is no scientific consensus that [medical care] even serve[s] to benefit minor children dealing with gender dysphoria," and that "[t]he lack of evidence in this field is why the CMS rejected a nationwide coverage mandate for adult gender transition surgeries during the Obama Administration."[52] Although the CMS did issue a 2016 Decision Memo denying blanket, automatic coverage for gender-affirming surgery, the decision specifically *authorizes* Medicare and Medicaid providers to cover such surgery on a case-by-case basis.[53] Thus, contrary to AG Opinion's claim, the CMS decision memo expressly *permits* state and local decision-makers to authorize coverage for gender-affirming surgery.[54] The federal directive simply declines to authorize automatic coverage in every case. And, in fact, the 2016 CMS decision marks an expansion of the permissibility of gender-affirming treatment: the Decision Memo followed the 2014 revocation of the CMS's 1989 decision to deny nationwide coverage.[55]

Further, the CMS did not reach any negative conclusion on the benefits of gender-affirming care for children and adolescents. The CMS reviewed only studies on the outcomes of surgery (not hormone treatment) for an adult population that is overwhelmingly elderly (over age 65) and has a high prevalence of preexisting medical conditions that can make surgery risky, regardless of its purpose.[56]

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[51] Nelson R. Transgender People in Sweden No Longer Face Forced Sterilization. Time [Internet]. 2013 Jan 14 [cited 2022 Apr 1]; Available from: https://newsfeed/time.com/2013/01/14/transgender-people-in-sweden-no-longer-face-forced-sterilization/. The presence of this law alone might account for the higher risk of suicide attempts and risky behavior in the transgender population at the time.

[52] AG Opinion, at 3-4, citing Jensen TS, Chin J, Rollins J, Koller E, Gousis L. Decision Memo for Gender Dysphoria and Gender Reassignment Surgery (CAG-00446N). Baltimore (MD): Centers for Medicare and Medicaid Services; 2016 Aug 30 [cited 2022 Feb 18]. Available from: https://www.cms.gov/medicare-coverage-database/view/ncacal-decision-memo.aspx?proposed=N&NCAId=282.

[53] Id.

[54] Id. ("We acknowledge that [gender reassignment surgery] 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 [national coverage decision] that identifies the precise patient population for whom the service would be reasonable and necessary.")

[55] Id.

[56] The CMS Decision Memo notes that "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." Id.

c. The AG Opinion repeats discredited and unreliable evidence on "desistance" and "rapid-onset gender dysphoria."

The AG Opinion greatly exaggerates the extent to which adolescent gender dysphoria abates without treatment, and it repeats discredited claims that there is a novel wave of rapid-onset dysphoria among today's teens.

"Desistance." The AG Opinion asserts that "[c]hildhood-onset gender dysphoria has been shown to have a high rate of natural resolution, with 61-98% of children reidentifying with their biological sex during puberty."[57] The Alabama law makes a parallel statement.[58] The assertion is incorrect.

As authority for the claimed 61-98% figure, the AG Opinion does not cite reputable scientific evidence. Instead, it cites a biased source – the website of the so-called Society for Evidence-Based Gender Medicine ("SEGM"). SEGM is not a recognized scientific organization, and in Appendix A we document the bias that infuses its medical claims. The SEGM website badly mischaracterizes the underlying source that it cites for the 61-98% figure.

The study SEGM cites is Steensma et al. (2013).[59] But the Steensma study was not designed to (and the lead author has acknowledged) does not provide a basis for calculating what percentage of prepubertal children diagnosed with gender dysphoria persist with that diagnosis into adolescence. Rather, the Steensma study was designed only to study the characteristics of those who persisted.[60] Among other limitations, in Steensma (2013), former patients who opted to not participate in the study (either refused to participate or did not respond to an offer to participate) were categorized as "desisters," i.e., patients whose gender dysphoria resolved without transition or treatment. Patients can fail to respond to a study request for many reasons, including having moved away, receiving treatment elsewhere, or being uninterested in participating in a study. Thus, SEGM misuses the Steensma data by counting nonresponding patients as having "desisted" in experiencing gender dysphoria.[61] Indeed, in published correspondence, Steensma emphasizes that the 2013 study should *not* be used to calculate the percentages of "persisters" and "desisters."[62] The misrepresentation of Steensma on the SEGM website constitutes a major violation of the scientific method and the accepted conventions of research.

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[57] AG Opinion, at 4.
[58] Alabama Law, Section 2(4).
[59] Steensma TD, McGuire JK, Kreukels BP, Beekman AJ, Cohen-Kettenis PT. Factors associated with desistence and persistence of childhood gender dysphoria: a quantitative follow-up study. J Am Acad Child Adolesc Psychiatry. 2013 Jun;52(6):582-90.
[60] Steensma TD, Cohen-Kettenis PT. A critical commentary on follow-up studies and "desistence" theories about transgender and gender non-conforming children. Int J Transgend. 2018 May; 19(2):225-30.
[61] See American Psychological Association (2015), p. 842 (noting that several studies categorized youth who did not return to the clinic after initial assessment as "desisters" who no longer identified with a gender different than sex assigned at birth; "As a result, this research runs a strong risk of inflating estimates of the number of youth who do not persist with a TGNC identity").
[62] Id.

Actual scientific evidence on the course of gender dysphoria emphasizes the importance of distinguishing between prepubertal children and adolescents. The evidence suggests that the course of dysphoria is more diverse for prepubertal children, and so it is critical to recognize them as a distinct population from adolescents. By referring to "children," the AG Opinion creates the misimpression that most or all children *and* teens diagnosed with dysphoria will cease identifying with the gender not assigned at birth. This is false.

The evidence suggests that the vast majority of adolescents who are diagnosed with gender dysphoria will persist in their gender identity and will benefit from gender-affirming medical care.[63] In a Dutch study, among 70 adolescents diagnosed with gender dysphoria and treated with puberty-suppressing hormones, 100% opted to continue with gender-affirming treatment.[64] A recent U.S. study found a consistent pattern. Following a large cohort of U.S. young people who reported some evidence of gender dysphoria but had not yet been formally diagnosed, the study found that adolescents were far more likely than prepubertal children to go on to a formal diagnosis of gender dysphoria and to receive gender-affirming treatment.[65]

The course of gender dysphoria is different in pre-pubertal children. For this group, the percentage of those whose dysphoria resolves without treatment is higher than for adolescents but likely lower than the AG Opinion's claimed 61-98% figure. When prepubertal children experience gender dysphoria, some will find that their dysphoria resolves before adolescence. That is, many of these children will not, as adolescents, identify as transgender or proceed with gender-affirming medical care. Importantly, as we have emphasized, standard medical protocols do not treat prepubertal children with drug therapy or genital surgery, and so there is zero risk that a prepubertal child with dysphoria will have received physical interventions.

Further, the AG Opinion's claim of 98% "desistance" is overstated even for prepubertal children. The Endocrine Society reports that, "[c]ombining all outcome studies to date, the [gender dysphoria]/gender incongruence of a minority of prepubertal children appears to persist

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[63] American Psychological Association (2015), p. 843; WPATH (2012), p. 11; Endocrine Society (2017). See also Turban JL, DeVries ALC, Zucker K. Gender Incongruence & Gender Dysphoria. In Martin A, Bloch MH, Volkmar FR (editors): Lewis's Child and Adolescent Psychiatry: A Comprehensive Textbook, Fifth Edition. Philadelphia: Wolters Kluwer 2018, pp. 20-21 ("we must recognize that [the existing studies of persistence] have been quite limited in power and generalizability and should not be misused to create barriers for TGD youth seeking gender-affirming care. The most relevant conclusions from these studies are that insistent cross-gender identification in adolescence most often correlates with persistent TGD identities in adulthood").

[64] de Vries et al. 2011, cited in note 43 ("None of the gender dysphoric adolescents in this study renounced their wish for [gender reassignment] during puberty suppression. This finding supports earlier studies showing that young adolescents who had been carefully diagnosed show persisting gender dysphoria into late adolescence or young adulthood").

[65] Wagner S, Panagiotakopoulos L, Nash R, Bradlyn A, Getahun D, Lash TL, Roblin D, Silverberg MJ, Tangpricha V, Vupputuri S, Goodman M. Progression of Gender Dysphoria in Children and Adolescents: A Longitudinal Study. Pediatrics. 2021 Jul;148(1):e2020027722. doi: 10.1542/peds.2020-027722. Epub 2021 Jun 7. PMID: 34099504; PMCID: PMC8276590. Wagner et. al (2021) studied this cohort for only (on average) 3.5 years; by the end of the study period, roughly 35% of teens but only about 15-18% of prepubertal children received a formal diagnosis of gender dysphoria. Note that these data do *not* establish that only 35% of teens *with gender dysphoria* persist in their diagnosis. This was not a population already diagnosed with dysphoria, and so the persistence rate cannot be calculated. Rather, Wagner et al. (2021) shows that, among a population with some evidence of dysphoria, adolescents are far more likely than young children to continue to a formal diagnosis.

in adolescence."[66] A reasonable summary of the literature would be that around 50% of prepubertal children diagnosed with gender dysphoria (using older, less stringent diagnostic criteria) will not persist in identifying as transgender into adolescence and adulthood.[67]

Recent evidence suggests that the spontaneous resolution of true gender dysphoria among prepubertal children is likely even lower. Earlier studies likely overstate the spontaneous resolution of gender dysphoria among children diagnosed before puberty, because their data incorporated broader diagnostic criteria.[68] That is, the studies likely included prepubertal children with gender variant behavior (e.g., boys with feminine interests or "tomboy" girls) alongside children who would meet today's diagnostic criteria for gender dysphoria – a deeply felt and lasting transgender identity with clinically significant distress and impaired functioning.[69] Consistent with this hypothesis is the recent finding that "the intensity of early dysphoria appears to be an important predictor" of the persistence of dysphoria into adolescence.[70] The evidence thus implies that, had the earlier studies focused on prepubertal children with intense gender dysphoria, the rates of spontaneous resolution of dysphoria would be lower.

To summarize, then, the key to the question of whether gender dysphoria persists over time is whether the patient is diagnosed with gender dysphoria in adolescence. (This might be a new diagnosis or it might be a persistent diagnosis from childhood.) Put plainly: *adolescents with gender dysphoria rarely find that their dysphoria resolves without treatment.*

"Rapid-onset" gender dysphoria. The AG Opinion also asserts that there has been a recent spike in gender dysphoria diagnosis and gender-affirming treatment among U.S. adolescents.[71] The AG insists that this is a "novel cohort" of youth and implies that their gender dysphoria is transient.[72]

As evidence, the AG Opinion again fails to consult reputable science and instead cites the SEGM website, which features a graph showing an increase from 2010 to 2020 in referrals of British adolescents to a specialized gender clinic.[73] The graph is calibrated to look as if the

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[66] Endocrine Society (2017). See Wallien MS, Cohen-Kettenis PT. Psychosexual outcome of gender-dysphoric children. J Am Acad Child Adolesc Psychiatry. 2008 Dec;47(12):1413-23. doi: 10.1097/CHI.0b013e31818956b9. PMID: 18981931.

[67] American Psychological Association (2015), pp. 841-2 ("existing research suggests that between 12% and 50% of children diagnosed with gender dysphoria may persist in their identification with a gender different than sex assigned at birth into late adolescence and young adulthood").

[68] See Temple Newhook J, Pyne J, Winters K, Feder S, Holmes C, Tosh J, Sinnott ML, Jamieson A, and Pickett S, A critical commentary on follow-up studies and "desistance" theories about transgender and gender-nonconforming children, International Journal of Transgenderism, vol. 19(2), pp. 212-224 (2018) doi: 10.1080/15532739.2018.1456390.

[69] Endocrine Society (2017).

[70] Steensma TD, McGuire JK, Kreukels BP, Beekman AJ, Cohen-Kettenis PT. Factors associated with desistence and persistence of childhood gender dysphoria: a quantitative follow-up study. J Am Acad Child Adolesc Psychiatry. 2013 Jun;52(6):582-90 (finding that "children with persistent GID are characterized by more extreme gender dysphoria in childhood than children with desisting gender dysphoria").

[71] AG Opinion, at 3 (stating that "the spike in [surgical and drug] procedures is a relatively recent development").

[72] AG Opinion, at 4.

[73] The AG Opinion cites to the website of the Society for Evidence-Based Gender Medicine (SEGM). SEGM's homepage provides an uncredited and unverifiable graph, which claims to depict referrals to an undefined term,

increase is very large, but in fact, the absolute numbers are small. The information depicted cannot be verified, because SEGM provides no citation. But taking the data at face value, in 2020 about 2600 children and teens sought treatment at the U.K. gender clinic. That is a very small percentage of Britain's child population. Further, the data appear to show only the number of children and adolescents referred for consultation; only a subset of these will ultimately be diagnosed with gender dysphoria and will continue with medical treatment.[74] The claimed "spike" in referrals certainly reflects the reduction in social stigma over the past decade and the expansion of care options.

By contrast, reliable recent data shows that, among high-school students, the percentage who identify as transgender is under 2% (1.8%).[75] These data come from the Centers for Disease Control's Youth Risk Behavior Surveillance System, which is the largest repository of data on self-reported behaviors in the United States. Because not all transgender people seek medical treatment, the percentage seeking medical care would be smaller.

The AG Opinion also repeats a discredited claim that a novel wave of "adolescent-onset gender dysphoria" is sweeping the U.S.[76] This statement echoes (without citing or quoting) a poor-quality study by Lisa Littman.[77] Littman's 2018 article contended that a novel pathology, "rapid-onset gender dysphoria" was leading teenagers to claim a transgender identity because of peer influence. WPATH, among other authorities, has taken a skeptical view of Littman's claim,[78] and the study has been criticized for serious methodological errors, including the use of parent reports instead of clinical data and the recruitment of its sample of parents from anti-transgender websites.[79] The journal of publication required an extensive correction of the

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"GIDS." SEGM [Internet]. c2020 [cited 2022 Apr 1]. Available from: https://segm.org/. Although GIDS is not defined on the SEGM site, it appears to refer to the Gender Identity Development Service, a specialized UK gender clinic for children and adolescents. GIDS [Internet]. c2022 [cited 2022 Apt 1]. Available from: https://gids.nhs.uk/about-us#main-content.

[74] A referral means that a medical provider (or, possibly, the patient) has suggested an appointment with GIDS. A referral does not equate to the receipt of gender-affirming care. See GIDS [internet]. Available from https://gids.nhs.uk/about-us#main-content.

[75] Johns MM, Lowry R, Andrzejewski J, Barrios LC, Demissie Z, McManus T, Rasberry CN, Robin L, Underwood JM. Transgender Identity and Experiences of Violence Victimization, Substance Use, Suicide Risk, and Sexual Risk Behaviors Among High School Students – 19 States and Large Urban School Districts, 2017. MMWR Morb Mortal Wkly Rep. 2019 Jan 25;68(3):67-71.

[76] AG Opinion, at 4.

[77] Littman L. Parent reports of adolescents and young adults perceived to show signs of a rapid onset of gender dysphoria. PLoS One. 2018 Aug 16;13(8):1-44; Littman L. Correction: Parent reports of adolescents and young adults perceived to show signs of a rapid onset of gender dysphoria. PLoS One. 2019 Mar 19;14(3):1-7.

[78] WPATH Global Board of Directors. WPATH Position on "Rapid-Onset Gender Dysphoria" [Internet]. 2018 Sep 4 [cited 2022 Apr 1]. Available from: https://www.wpath.org/media/cms/Documents/Public%20Policies/2018/9_Sept/WPATH%20Position%20on%20Rapid-Onset%20Gender%20Dysphoria_9-4-2018.pdf (stating that ROGD "constitutes nothing more than an acronym created to describe a proposed clinical phenomenon that may or may not warrant further peer-reviewed scientific investigation").

[79] Restar AJ. Methodological Critique of Littman's (2018) Parental-Respondents Accounts of "Rapid-Onset Gender Dysphoria". Arch Sex Behav. 2020 Jan;49(1):61-66. doi: 10.1007/s10508-019-1453-2 (hereinafter, "Restar 2020"); Temple Newhook, J, Pyne, J, Winters, K, Feder, S, Holmes, C, Tosh, J, and Pickett, S. A critical commentary on follow-up studies and "desistance" theories about transgender and gender-nonconforming children. *International Journal of Transgenderism*, *19*(2), 212-224. (2018).

original Littman article because of its misstatements.[80] Such a correction in reputable, peer-reviewed academic journals is taken only when a panel of experts, in retrospect, came to recognize the methodological flaws of the original study and concluded that it would be unscientific to allow the originally published findings to stand.

Littman's hypothesis that rapid-onset gender dysphoria exists as a distinct condition has not been supported by studies of clinical data.[81] Neither the American Psychiatric Association nor any other reputable professional organization has recognized rapid-onset gender dysphoria as a distinct clinical condition or diagnosis.[82]

Section 3. The AG Opinion and the Alabama Law greatly exaggerate the risks of gender-affirming drug therapy.

The AG Opinion claims that "sex change procedures," including surgery and drug therapies "often ha[ve] the effect of permanently sterilizing those minor children."[83] The Alabama Law makes similar claims.[84] Section 1 of this report has established that the AG Opinion's claim with respect to surgery is false: current medical protocols state that individuals must be the age of majority or older before undergoing surgery on genitals or reproductive organs. In this Section, we focus on the AG Opinion's (and Alabama Law's) claims regarding the medical effects of drug treatment for transgender adolescents.

a. The AG Opinion and the Alabama Law greatly overstate the risks of puberty-blocking medication and incorrectly state that it results in sterilization.

The Texas Attorney General claims that "[t]here is insufficient medical evidence available to demonstrate that discontinuing [puberty-blocking] medication resumes a normal puberty process."[85] The Alabama Law contains similar statements.[86] The claim is false: puberty-blocking medication has been shown to be safe, effective, and fully reversible.

As noted in Section 1 of this report, puberty-blocking medication (gonadotropin-releasing hormone agonists, or GnRHa's) can be part of a staged approach to gender-affirming care for

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[80] Littman L. Correction: Parent reports of adolescents and young adults perceived to show signs of a rapid onset of gender dysphoria. PLoS One. 2019 Mar 19;14(3):1-7 (altering the original article to, inter alia, clarify that the article collected no data from adolescents or clinicians and generates only a hypothesis for further exploration).
[81] Bauer GR, Lawson ML, Metzger DL; Trans Youth CAN! Research Team. Do Clinical Data from Transgender Adolescents Support the Phenomenon of "Rapid Onset Gender Dysphoria"? J Pediatr. 2022 Apr; 243:224-227. See also Arnoldussen M, Steensma TD, Popma A, van der Miesen AIR, Twisk JWR, de Vries ALC. Re-evaluation of the Dutch approach: are recently referred transgender youth different compared to earlier referrals? Eur Child Adolesc Psychiatry. 2020 Jun;29(6):803-811. Erratum in: Eur Child Adolesc Psychiatry. 2020 Dec 16 (concluding that there has been no marked change in the characteristics of the population of adolescents referred for gender dysphoria from 2000 to 2016; the authors hypothesize that the increase in number of referrals reflects the increasing social acceptability of seeking treatment).
[82] Restar (2018), cited in note 79.
[83] AG Opinion, at 2-3. The AG Opinion repeats its claim about sterilization. Id. at 5 ("The surgical and chemical procedures you ask about can and do cause sterilization.")
[84] Alabama Law, Sections 2(9), 2(11), 2(12), 2(13) and 2(14).
[85] AG Opinion, at 5.
[86] Alabama Law, Sections 2(7), (11), (12) and (13).

adolescents. By stalling pubertal maturation, the medication relieves adolescents of the intense gender dysphoria that can accompany pubertal development along the pathway of their assigned sex. During this pause, the adolescent is given time to confirm their gender identity and to consider the need for appropriate gender-affirming hormone therapy without having had their body mature along pubertal path incongruent with their gender identity. Adolescents who continue to identify as transgender will be able to proceed with gender-affirming hormone therapy when they, their parents, and their providers determine that treatment is medically appropriate. Puberty blockers not only alleviate gender dysphoria in adolescence but have beneficial lifelong effects on dysphoria and can minimize the need for subsequent treatments, including surgery in adulthood. In the unlikely event that a teen realizes that they identify as cisgender, they can discontinue the blocker and spontaneous pubertal maturation will resume.

The scientific evidence clearly shows that treatment with puberty blockers is fully reversible. GnRHa therapy has been used since the 1980's in children with precocious puberty, and a solid body of evidence documents that pubertal progression stops with drug therapy and that spontaneous pubertal development occurs after discontinuation of the medication.[87]

Recent studies suggest that puberty-blocking medication has negligible or small effects on bone development in adolescents, and any negative effects are temporary and reversible. The most recent studies show that puberty-blocking drug therapy either has no effect on bone mineral density (BMD), a proxy measure of bone strength, or is associated with a very small decrease.[88]

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[87] Manasco PK, Pescovitz OH, Feuillan PP, Hench KD, Barnes KM, Jones J, Hill SC, Loriaux DL, Cutler Jr GB. Resumption of puberty after long term luteinizing hormone-releasing hormone agonist treatment of central precocious puberty. J Clin Endocrinol Metab. 1988 Aug 1;67(2):368-72; Heger S, Muller M, Ranke M, Schwarz H, Waldhauser F, Partsch C, Sippell WG. Long-term GnRH agonist treatment for female central precocious puberty does not impair reproductive function. Mol Cell Endocrinol. 2006 Jul 25;254-255:217-220; Feuillan PP, Jones JV, Barnes K, Oerter-Klein K, Cutler Jr GB. Reproductive Axis after Discontinuation of Gonadotropin-Releasing Hormone Analog Treatment of Girls with Precocious Puberty: Long Term Follow-Up Comparing Girls with Hypothalamic Hamartoma to Those with Idiopathic Precocious Puberty. J Clin Endocrinol Metab. 1999 Jan;84(1):44-49; Bertelloni S, Baroncelli GI, Ferdeghini M, Menchini-Fabris F, Saggese G. Final height, gonadal function and bone mineral density of adolescent males with central precocious puberty after therapy with gonadotropin-releasing hormone analogues. Eur J Pediatr. 2000 May;159(5):369-74 (hereinafter, "Bertelloni et al (2000)"); Bertelloni S, Mul D. Treatment of central precocious puberty by GnRH analogs: long-term outcome in men. Asian J Androl. 2008 Jul;10(4):525-34; Luo X, Liang Y, Hou L, Wu W, Ying Y, Ye F. Long-term efficacy and safety of gonadotropin-releasing hormone analog treatment in children with idiopathic central precocious puberty: A systematic review and meta-analysis. Clin Endocrinol. 2021 May; 94(5):786-96.

[88] Klink D, Caris M, Heijboer A, van Trotsenburg M, Rotteveel J. Bone mass in young adulthood following gonadotropin-releasing hormone analog treatment and cross-sex hormone treatment in adolescents with gender dysphoria. J Clin Endocrinol Metab. 2015 Feb;100(2):E270-75 (hereinafter, "Klink et al. 2015"); Schagen SEE, Wouters FM, Cohen-Kettenis PT, Gooren LJ, Hannema SE. Bone Development in Transgender Adolescents Treated With GnRH Analogues and Subsequent Gender-Affirming Hormones. J Clin Endocrinol Metab. 2020 Dec 1;105(12): e4252-e4263 (hereinafter, Schagen et al. 2020"); Delemarre-van de Waal HA, Cohen-Kettenis PT. Clinical management of gender identity disorder in adolescents: a protocol on psychological and paediatric endocrinology aspects. Eur J Endocrinol. 2006;155:S131-S137. Studies of children treated for precocious puberty found that BMD was normal at final height attainment. Alessandri SB, Pereira F de A, Villela RA, Antonini SRR, Elias PCL, Martinelli Jr CE, de Castro M, Moreira AC, de Paula FJA. Bone mineral density and body composition in girls with idiopathic central precocious puberty before and after treatment with a gonadotropin-releasing hormone agonist. Clinics (Sao Paulo). 2012;67(6):591-96; Antoniazzi F, Zamboni G, Bertoldo F, Lauriola S, Mengarda F, Pietrobelli A, Tato L. Bone mass at final height in precocious puberty after gonadotropin-releasing hormone agonist with and without calcium supplementation. J Clin Endocrinol Metab. 2003 Mar;88(3):1096-1101 (hereinafter,

Calcium supplementation has been shown to protect patients from bone loss.[89] Critically, any reduction in BMD is recovered when adolescents cease taking puberty-blocking medication, whether or not they continue to gender-affirming hormone therapy.[90]

Tellingly, the AG Opinion does not cite scientific evidence for its claim regarding "insufficient medical evidence"[91] Instead, it cites two legal cases, neither of which contains sound scientific evidence on this subject.[92] One of the cited cases is irrelevant, because it involves legal claims about surgery, not puberty blockers.[93] The other cited case, Bell v. Tavistock and Portman NHS Foundation Trust (2020), was reversed on appeal in the U.K. in 2021 because the decision relied on biased and inexpert scientific testimony.[94]

The AG Opinion also attacks puberty blockers by claiming that their use "is not approved by the federal Food and Drug Administration and is considered an 'off-label' use of the medications."[95] The Alabama Law makes a similar claim.[96] The implication is that off-label use of medication is harmful, but this claim is unfounded.

"Antoniazzi et al. (2003)"); Heger S, Partsch CJ, Sippell WG. Long-term outcome after depot gonadotropin-releasing hormone agonist treatment of central precocious puberty: final height, body proportions, body composition, bone mineral density, and reproductive function. J Clin Endocrinol Metab. 1999 Dec;84(12):4583-90; Neely EK, Bachrach LK, Hintz RL, Habiby RL, Slemenda CW, Feezle L, Pescovitz OH. Bone mineral density during treatment of central precocious puberty. J Pediatr. 1995 Nov;127(5):819-22.

[89] Antoniazzi et al. (2003), cited in note 88.

[90] Klink et al. (2015), cited in note 88; Schagen et al. (2020), cited in note 88. Bertelloni et al. (2000), cited in note 87; Pasquino AM, Pucarelli I, Accardo F, Demiraj V, Segni M, Di Nardo R. Long-term observation of 87 girls with idiopathic central precocious puberty treated with gonadotropin-releasing hormone analogs: impact on adult height, body mass index, bone mineral content, and reproductive function. J Clin Endocrinol Metab. 2008 Jan;93(1):190-195; Magiakou MA, Manousaki D, Papadaki M, Hadjidakis D, Levidou G, Vakaki M, Papaefstathiou A, Lalioti N, Kanaka- Gantenbein C, Piaditis G, Chrousos GP, Dacou-Voutetakis C. The efficacy and safety of gonadotropin-releasing hormone analog treatment in childhood and adolescence: a single center, long-term follow-up study. J Clin Endocrinol Metab. 2010 Jan;95(1):109-17; Bertelloni S, Baroncelli GI, Sorrentino MC, Perri G, Saggese G. Effect of central precocious puberty and gonadotropin-releasing hormone analogue treatment on peak bone mass and final height in females. Eur J Pediatr. 1998 May;157(5):363-67.

[91] AG Opinion, at 5.

[92] The AG Opinion's citation is "see generally Hennessy-Waller v. Snyder, 529 F. Supp. 3d 1031, 1042 (D. Ariz. 2021), citing Bell v. Tavistock and Portman NHS Foundation Trust, 2020 EWHC 3274, para. 134 (Dec. 1, 2020) (referring to Bell's conclusion that a clinic's practice of prescribing puberty-suppressing medication to individuals under age 18 with gender dysphoria and determining such treatment was experimental)." Id. at 5-6.

[93] Hennessy-Waller is a decision that denies a motion for preliminary injunction against an insurance company for failure to cover gender-affirming surgery. The decision involves surgery, not puberty blockers, and it is not a fully-adjudicated factual determination about either surgery or puberty blockers. Hennessy-Waller v. Snyder, 529 F. Supp. 3d 1031 (D. Ariz. 2021).

[94] Bell v. The Tavistock and Portman NHS Foundation Trust [2021] EWCA (Civ) 1363 [38] (Eng.) (noting that the claimant's (plaintiff's) expert evidence was faulty: "None of it complied with the rules regarding expert evidence and a good deal of it is argumentative and adversarial."). For a scientific review of the evidence in the lower court decision, see de Vries ALC, Richards C, Tishelman AC, Motmans J, Hannema SE, Green J, Rosenthal SM. Bell v Tavistock and Portman NHS Foundation Trust [2020] EWHC 3274: Weighing current knowledge and uncertainties in decisions about gender-related treatment for transgender adolescents. Int J Transgend Health. 2021 Apr 5;22(3):217-24.

[95] AG Opinion, at 5.

[96] Alabama Law, Section 2(7).

"Off label" means only that the FDA has not specifically approved a particular medication for a particular use. The off-label use of medications for children is quite common and often necessary, because an "overwhelming number of drugs" have no FDA-approved instructions for use in pediatric patients.[97] This is in part because pharmaceutical companies often lack financial incentives to support research required for FDA approval for specific use in children.[98] Indeed, the American Academy of Pediatrics specifically approves the off-label use of drugs:

> The purpose of off-label use is to benefit the individual patient. Practitioners use their professional judgment to determine these uses. As such, *the term "off-label" does not imply an improper, illegal, contraindicated, or investigational use*. Therapeutic decision-making must always rely on the best available evidence and the importance of the benefit for the individual patient.[99]

Many common medications, including hormones, are used off-label in adults and minors. In fact, pediatricians prescribe off-label drugs in 20% of patient visits.[100] Estrogen and testosterone are often used off-label to treat adolescents with intersex conditions. Common hormonal medications used off-label include norethindrone, a progesterone analogue used off-label for the treatment of heavy menstrual bleeding in those with polycystic ovarian syndrome, bleeding disorder, and anovulatory bleeding of early puberty. It is also used to treat endometriosis, which is a painful inflammatory condition. Many forms of combined hormonal contraception, as well as a testosterone-blocking medication (spironolactone), are used off-label to treat acne. Other examples include clonidine, a blood pressure medication used off-label for the treatment of ADHD, migraine headaches, disorders of behavioral regulation, and insomnia; and propranolol, a blood pressure medication used off-label for the treatment of performance anxiety.

> b. The AG Opinion and the Alabama Law exaggerate the fertility risks of gender-affirming hormonal treatment.

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[97] The quote is from the American Academy of Pediatrics Committee on Drugs. See Frattarelli DA, Galinkin JL, Green TP, Johnson TD, Neville KA, Paul IM, Van Den Anker JN; American Academy of Pediatrics Committee on Drugs. Off-label use of drugs in children. Pediatrics. 2014 Mar;133(3):563-7 (hereinafter, "AAP Committee on Drugs (2014)"); see also Allen HC, Garbe MC, Lees J, Aziz N, Chaaban H, Miller JL, Johnson P, DeLeon S. Off-Label Medication use in Children, More Common than We Think: A Systematic Review of the Literature. J Okla State Med Assoc. 2018 Oct;111(8):776-783.

[98] AAP Committee on Drugs (2014), cited in note 97.

[99] AAP Committee on Drugs (2014), cited in note 97 (emphasis added). See also Schrier L, Hadjipanayis A, Stiris T, Ross-Russell RI, Valiulis A, Turner MA, Zhao W, De Cock P, de Wildt SN, Allegaert K, van den Anker J. Off-label use of medicines in neonates, infants, children, and adolescents: a joint policy statement by the European Academy of Paediatrics and the European society for Developmental Perinatal and Pediatric Pharmacology. Eur J Pediatr. 2020 May;179(5):839-847.

[100] Hoon D, Taylor MT, Kapadia P, Gerhard T, Strom BL, Horton DB. Trends in Off-Label Drug Use in Ambulatory Settings: 2006-2015. Pediatrics. 2019 Oct;144(4):1-10 (emphasis added).

The AG Opinion claims that gender-affirming hormone treatments cause infertility.[101] The Alabama Law contains a similar statement.[102] These are unwarranted exaggerations, which ignore the substantial evidence of reversibility of the fertility effects of hormone therapy.

Treatment with gender-affirming sex hormones impacts fertility while drug therapy is ongoing, but the effect is anticipated to be reversible if medication is discontinued. Importantly, hormone therapy is always individualized, and some transgender and non-binary teens remain on puberty blockers up to the age of majority without proceeding to hormone treatment.

For transgender men (persons assigned female sex at birth who retain ovaries), testosterone treatment can affect ovarian function, inhibiting menses in the majority of those on therapy. The evidence shows that most transgender men who had regular menses before starting testosterone therapy are reported to resume menses if testosterone is discontinued.[103] Some transgender men may retain fertility during hormone treatment: spontaneous pregnancies have occurred in testosterone-treated transgender men, some while still amenorrheic.[104] Further, a number of transgender men have discontinued testosterone therapy prior to undergoing assisted reproductive technology and have carried pregnancies to term with delivery of normal infants.[105]

The effects of gender-affirming estrogen treatment on testicular histology vary among individuals. Reduced spermatogenesis is common while patients remain on estrogen, but fully normal spermatogenic activity has been documented.[106] Importantly, return of spermatogenesis occurred quickly in patients who discontinued hormone treatment.[107] Patients who were treated with puberty blockers (GnRHa's) starting at the onset of pubertal development and estrogen at

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[101] AG Opinion, at 3.

[102] Alabama Law, Section 2(13).

[103] Endocrine Society (2017). Light AD, Obedin-Maliver J, Sevelius JM, Kerns JL. Transgender men who experienced pregnancy after female-to-male gender transitioning. *Obstet Gynecol.* 2014;124(6):1120–1127 (hereinafter, "Light et al. 2014"); Pelusi C, Costantino A, Martelli V, et al. Effects of three different testosterone formulations in female-to-male transsexual persons. *J Sex Med.* 2014;11(12):3002–3011.; Smith KP, Madison CM, Milne NM. Gonadal suppressive and cross-sex hormone therapy for gender dysphoria in adolescents and adults. *Pharmacotherapy.* 2014;34(12):1282–1297.

[104] Light et al. (2014), cited in note 103; Light A, Wang LF, Zeymo A, Gomez-Lobo V. Family planning and contraception use in transgender men. Contraception. 2018 Oct;98(4):266-69.

[105] Leung A, Sakkas D, Pang S, Thornton K, Resetkova N. Assisted reproductive technology outcomes in female-to-male transgender patients compared with cisgender patients: a new frontier in reproductive medicine. Fertil Steril. 2019 Nov;112(5):858-65; Wallace SA, Blough KL, Kondapalli LA. Fertility preservation in the transgender patient: expanding oncofertility care beyond cancer. Gynecol Endocrinol. 2014;30(12):868-71; Maxwell S, Noyes N, Keefe D, Berkeley AS, Goldman KN. Pregnancy outcomes after fertility preservation in transgender men. Obstet Gynecol. 2017 Jun;129(6):1031-34.; Gale J, Magee B, Forsyth-Greig A, Visram H, Jackson A. Oocyte cryopreservation in a transgender man on long-term testosterone therapy: a case report. F S Rep. 2021 Feb 20;2(2):249-51.

[106] Schneider F, Kliesch S, Schlatt S, Neuhaus N. Andrology of male -to-female transsexuals: influence of cross-sex hormone therapy on testicular function. Andrology. 2017 Sept;5(5):873-80.

[107] Schneider F, Neuhaus N, Wistuba J, Zitzmann M, Heß J, Mahler D, van Ahlen H, Schlatt S, Kliesch S. Testicular functions and clinical characterization of patients with gender dysphoria (GD) undergoing sex reassignment surgery (SRS). J Sex Med. 2015 Nov;12(11):2190-2200.

16 years of age were shown to have normal-appearing, immature sperm-producing cells in the testes, suggesting those individuals retained fertility potential.[108]

As with any other medical decision, parents and providers carefully weigh the risks of treating the individual adolescent against the risks of not treating them, including the mental health impact and potential suicide risk of not beginning gender-affirming care.

As the standard protocols summarized in Section 1 of this report demonstrate, there is no push by physicians to proceed to hormone therapy. On the contrary, the decision to proceed with drug therapy and the choice of therapy are determined after assessing each adolescent's medical history as well as their past and ongoing mental health concerns. The standard of care specifically states that any existing mental health issues must be stable prior to moving forward with gender-affirming medical interventions. When counseling transgender adolescents who are considering gender-affirming drug therapy, physicians can also offer sperm or oocyte (egg) cryopreservation.

In addition to its claims about fertility, the AG Opinion offers a list of asserted medical harms without citation to any existing medical authority. The cited source is a healthcare website, and the underlying document has been removed from the site and is not otherwise available on the Internet.[109] The opinion offers no scientific foundation for its claims but seems to conflate long-outdated practice with the current standard of care.[110]

A more accurate perspective begins with an understanding of the role of hormones in the body. Hormones play a role in determining the medical profile of cisgender people. Generally speaking, cisgender women have relatively higher levels of estrogen and lower levels of testosterone, and cisgender men have the reverse. Each hormonal profile carries with it medical benefits and risks. Cisgender women, for example, have lower rates of cardiovascular disease than cisgender men but higher risks of venous thromboembolism. When a transgender individual receives gender-affirming hormone treatment, they take doses of exogenous sex hormones that approximate the physiologic state of their identified gender. Put simply, a transgender female is supplied an amount of estrogen similar to the estrogen that a cisgender woman's ovaries typically produce. Similarly, a transgender male receives a dose of testosterone that approximates what a cisgender male's testicles typically produce. Protocols provide explicit dosage guidelines to approximate the physiology of the patient's identified gender rather than to develop desired physical characteristics.

The medical result is that transgender individuals move toward the typical medical profile of their identified gender. And so transgender women, like cisgender women, have lower risks of

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[108] de Nie I, Mulder CL, Meißner A, Schut Y, Holleman EM, van der Sluis WB, Hannema SE, den Heijer M, Huirne J, van Pelt AMM, van Mello NM. Histological study on the influence of puberty suppression and hormonal treatment on developing germ cells in transgender women. Hum Reprod. 2022 Jan 28;37(1):297-308.

[109] The AG Opinion cites to Timothy Cavanaugh, M.D., Cross-Sex Hormone Therapy, FENWAY HEALTH (2015), https://www.lgbtqiahealtheducation.org/wp-content/uploads/Cross-Sex-Hormone-Therapy1.pdf. A search conducted in March 2022 found that the link was broken and the document could not be found on the Fenway Health website or elsewhere on the Internet.

[110] The iatrogenic (drug-induced) risks of hepatotoxicity, meningioma, and prolactinoma are now zero, because the medication associated with those risks (cyproterone) is no longer in use in the United States. WPATH (2012), p. 48.

cardiovascular disease than cisgender men.[111] Transgender women, like cisgender women, have a slightly higher risk of venous thromboembolism than cisgender men. In fact, transgender women have a *lower* risk of venous thromboembolism than cisgender women, and the overall risk is extremely low (less than 1%) for all transgender individuals, both women and men.[112] The risk of venous thromboembolism in transgender women and non-pregnant cisgender women is less than the risk in pregnancy, which is the highest estrogenic physiologic state known.

It is also critical to note that the medical impact of gender-affirming treatment is generally the same in transgender people as in cisgender people who take the same hormone medications. For example, physicians commonly prescribe hormonal contraceptives containing ethinyl estradiol (a synthetic estrogen) to adolescents for reasons including birth control, management of irregular or painful menstrual periods, and acne. In other words, similar doses of exogenous sex hormones are commonly administered to cisgender individuals for a host of reasons and are well tolerated.

[111] Connelly PJ, Marie Freel E, Perry C, Ewan J, Touyz RM, Currie G, Delles C. Gender-Affirming Hormone Therapy, Vascular Health and Cardiovascular Disease in Transgender Adults. Hypertension. 2019 Dec;74(6):1266-1274. doi: 10.1161/HYPERTENSIONAHA.119.13080. Epub 2019 Oct 28. Erratum in: Hypertension. 2020 Apr;75(4):e10. PMID: 31656099; PMCID: PMC6887638.

[112] Oral estradiol, the preferred estrogen formulation that is given to transgender women in the United States, carries a VTE risk of <1%. T'Sjoen G, Arcelus J, Gooren L, Klink DT, Tangpricha V. Endocrinology of Transgender Medicine. Endocr Rev. 2019 Feb 1;40(1):97-117. In transgender men, the overall risk of VTE ranges from 0% to 0.34%. Maraka S, Singh Ospina N, Rodriguez-Gutierrez R, Davidge-Pitts CJ, Nippoldt TB, Prokop LJ, Murad MH. Sex Steroids and Cardiovascular Outcomes in Transgender Individuals: A Systematic Review and Meta-Analysis. J Clin Endocrinol Metab. 2017 Nov 1;102(11):3914-23.

Appendix A: Additional Information on Biased Sources of Information in the AG Opinion

Here, we address two sources of information mischaracterized by the AG Opinion as authorities on, respectively, science and medical ethics.

a. The Society for Evidence-Based Gender Medicine

The AG Opinion twice cites the Society for Evidence-Based Gender Medicine ("SEGM"). SEGM claims to be "an international group of over 100 clinicians and researchers concerned about the lack of quality evidence for the use of hormonal and surgical interventions as first-line treatment for young people with gender dysphoria."[113]

Despite SEGM's statement, the group appears to be nothing more than a website; it does not appear to hold meetings, screen its members, or publish a journal. The original content on the website includes statements unsupported by any citations. When the content does provide citations, they are often unreliable or misleading. The SEGM website includes a list of citations to more than 100 articles as evidence for the medical risks of gender-affirming care, but we reviewed each article and found the vast majority to be of low quality. The site's content omits mention of the standards of care published by mainstream scientific organizations, and it falsely claims that the standard protocols permit gender-affirming surgery before the age of majority. The long list of citations omits mainstream scientific articles that do not support the SEGM agenda, and the list includes a large number of letters to the editor, which are not peer-reviewed or fact-checked,[114] as well as other sources of little scientific value, including opinion pieces and case studies.

Although the SEGM site claims "over 100 clinicians and researchers" as members, it lists as "clinical and academic advisors" a group of only 14 people, many of whom have limited (or no) scientific qualifications related to the study of medical treatment for transgender people. Of the 14, only eight claim academic credentials above the master's degree level (and, of these, two of the PhD's are in sociology and evolutionary biology). None have academic appointments in pediatric medicine or child psychology; none have published original empirical research on the medical treatment of transgender people in a peer-reviewed publication; and none currently treat patients in a recognized gender clinic.[115]

A contextual examination reveals that SEGM is an ideological organization without apparent ties to mainstream scientific or professional organizations. Its 14 core members are a small group of repeat players in anti-trans activities – a fact that the SEGM website does not disclose. These 14 often write letters to the editor of mainstream scientific publications; these letters appear in the list of publications on the website (even though letters to the editor typically are not peer-reviewed or fact-checked). (Our review shows that the group of 14 has a total of 39 relevant publications and that 75% of these are letters to the editor.)

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[113] All SEGM.org website citations reflect visits to the site in March 2022.

[114] Of the 123 listed papers (some are listed more than once), 49 (or 40%) are letters to the editor or opinion pieces.

[115] These findings are based on the biographical data posted on the SEGM.org website, supplemented with searches of Google (to determine academic appointments and listed publications) and the database PubMed (to determine medical publication records).

The core members of SEGM frequently serve together on the boards of other organizations that oppose gender-affirming treatment and, like SEGM, feature biased and unscientific content. These include Genspect, Gender Identity Challenge (GENID), Gender Health Query, Rethink Identity Medicine Ethics, Sex Matters, Gender Exploratory Therapy Team, Gender Dysphoria Working Group, and the Institute for Comprehensive Gender Dysphoria Research.

b. Purported bioethics experts

The AG Opinion cites two purported ethics experts for the proposition that "it is particularly unethical to radically intervene in the normal physical development of a child to 'affirm' a 'gender identity' that is at odds with bodily sex."[116]

This is an unreliable citation for two reasons. First, the cited item is not published in a peer-reviewed or mainstream legal or ethics journal. It appears, instead, in *Public Discourse*, an online journal on the website of an organization with no clear academic or professional affiliation.[117] Second, the two authors have strong ties to anti-trans activism. The first author, Ryan T. Anderson, is the president of a right-wing, Catholic-identified think tank. [118] (Anderson is also the founder of the publishing journal, *Public Discourse*, further undermining the credibility of the citation.) The second author, Robert George, is a professor at Princeton who has long been engaged in anti-trans political activism. George is the founder of The American Principles Project, which states: "We want to impose a political cost on the Left's anti-family extremism. If they want to attack parental rights [or] confuse young children about their gender…they are going to be punished at the polls."[119]

By contrast, academic experts in bioethics consider gender-affirming treatment to be ethical.[120] They emphasize "the importance of balanced decision making when counseling and

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[116] AG Opinion, at 4 (citing Anderson RT, George RP. Physical Interventions on the Bodies of Children to "Affirm" their "Gender Identity" Violate Sound Medical Ethics and Should Be Prohibited [Internet]. Public Discourse: The Journal of the Witherspoon Institute; 2019 Dec 8 [cited 2022 Mar]. Available from: https://www.thepublicdiscourse.com/2019/12/58839/.

[117] "*Public Discourse* is the online journal of the Witherspoon Institute, a 501(c)3 research center located in Princeton, New Jersey". Our Mission. Public Discourse: The Journal of the Witherspoon Institute; c2022 [cited 2022 Mar]. Available from: https://www.thepublicdiscourse.com/our-mission/.

[118] "Founded in 1976, the Ethics and Public Policy Center" works "to apply the riches of the Judeo-Christian tradition to contemporary questions of law, culture, and politics, in pursuit of America's continued civic and cultural renewal." About. Ethics & Public Policy Center; c2022 [cited 2022 Mar]. Available from: https://eppc.org/about/. The EPPC's programs include "Catholic Studies" and the "Catholic Women's Forum. Programs. Ethics & Public Policy Center; c2022 [cited 2022 Mar]. Available from: https://eppc.org/program/. Anderson is listed as the president. Ryan T. Anderson. Ethics & Public Policy Center; c2022 [cited 2022 Mar]. Available from: https://eppc.org/author/ryan_anderson/.

[119] About. American Principles Project; c2020 [cited 2022 Mar]. Available from: https://americanprinciplesproject.org/about/. On another page, the website states that the American Principles Project was founded in 2009 by George and "veteran political strategist Frank Cannon." History. American Principles Project; c2020 [cited 2022 Mar]. Available from: https://americanprinciplesproject.org/about/history-story/.

[120] For examples, see Kimberly LL, Folkers KM, Friesen P, Sultan D, Quinn GP, Bateman-House A, Parent B, Konnoth C, Janssen A, Shah LD, Bluebond-Langner R, Salas-Humara C. Ethical Issues in Gender-Affirming Care for Youth. Pediatrics. 2018 Dec;142(6):e20181537; Bizic MR, Jeftovic M, Pusica S, Stojanovic B, Duisin D,

treating adolescents with nonconforming gender identities,"[121] and they have evaluated decision-making procedures that can ensure that adolescents and their parents give fully-informed consent to treatment.[122] These considerations align with the consent processes prescribed by standard medical protocols, which we discuss in Section 1.

Vujovic S, Rakic V, Djordjevic ML. Gender Dysphoria: Bioethical Aspects of Medical Treatment. BioMed Res Int. 2018 Jun 13;2018:9652305; Strang JF, Powers MD, Knauss M, Sibarium E, Leibowitz SF, Kenworthy L, Sadikova E, Wyss S, Willing L, Caplan R, Pervez N, Nowak J, Gohari D, Gomez-Lobo V, Call D, Anthony LG. "They Thought It Was an Obsession": Trajectories and Perspectives of Autistic Transgender and Gender-Diverse Adolescents. J Autism Dev Disord. 2018 Dec;48(12):4039-55.

[121] Steensma TD, Wensing-Kruger SA, Klink DT. How Should Physicians Help Gender-Transitioning Adolescents Consider Potential Iatrogenic Harms of Hormone Therapy? AMA J Ethics. 2017 Aug 1;19(8):762-70.

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AMERICAN PSYCHIATRIC ASSOCIATION

Frontline Physicians Oppose Legislation That Interferes in or Criminalizes Patient Care

April 02, 2021

Washington, D.C. (April 2, 2021) – Several state legislatures across the country have recently introduced or are deliberating bills that would restrict delivery of gender-affirming care for gender-diverse patients, specifically for children and adolescents.

Our organizations, which represent nearly 600,000 physicians and medical students, oppose any laws and regulations that discriminate against transgender and gender-diverse individuals or interfere in the confidential relationship between a patient and their physician. That confidentiality is critical to allow patients to trust physicians to properly counsel, diagnose and treat.

Our organizations are strongly opposed to any legislation or regulation that would interfere with the provision of evidence-based patient care for any patient, affirming our commitment to patient safety. We recognize health as a basic human right for every person, regardless of gender identity or sexual orientation. For gender-diverse individuals, including children and adolescents, this means access to gender-affirming care that is part of comprehensive primary care.

Further, we strongly oppose any effort to criminalize or penalize physicians for providing necessary care for their patients. Physicians must be able to practice medicine that is informed by their years of medical education, training, experience, and the available evidence, freely and without threat of punishment. Patients and their physicians, not policymakers, should be the ones to make decisions together about what care is best for them.

American Psychiatric Association

The American Psychiatric Association, founded in 1844, is the oldest medical association in the country. The APA is also the largest psychiatric association in the world with more than 37,400 physician members specializing in the diagnosis, treatment, prevention and research of mental

illnesses. APA's vision is to ensure access to quality psychiatric diagnosis and treatment. For more information please visit www.psychiatry.org.

About the American Academy of Family Physicians

Founded in 1947, the AAFP represents 136,700 physicians and medical students nationwide. It is the only medical society devoted solely to primary care. Family physicians conduct approximately one in five office visits -- that's 192 million visits annually or 48 percent more than the next most visited medical specialty. Today, family physicians provide more care for America's underserved and rural populations than any other medical specialty. Family medicine's cornerstone is an ongoing, personal patient-physician relationship focused on integrated care. To learn more about the specialty of family medicine, the AAFP's positions on issues and clinical care, and for downloadable multi-media highlighting family medicine, visit www.aafp.org/media". For information about health care, health conditions and wellness, please visit the AAFP's award-winning consumer website, http://www.familydoctor.org/.

About the American Academy of Pediatrics

The American Academy of Pediatrics is an organization of 67,000 primary care pediatricians, pediatric medical subspecialists and pediatric surgical specialists dedicated to the health, safety and well-being of infants, children, adolescents and young adults. For more information, visit www.aap.org and follow us on Twitter @AmerAcadPeds.

About the American College of Physicians

The American College of Physicians is the largest medical specialty organization in the United States with members in more than 145 countries worldwide. ACP membership includes 163,000 internal medicine physicians (internists), related subspecialists, and medical students. Internal medicine physicians are specialists who apply scientific knowledge and clinical expertise to the diagnosis, treatment, and compassionate care of adults across the spectrum from health to complex illness. Follow ACP on Twitter, Facebook, and Instagram.

About the American College of Obstetricians and Gynecologists

The American College of Obstetricians and Gynecologists (ACOG) is the nation's leading group of physicians providing health care for women. As a private, voluntary, nonprofit membership organization of 60,000 members, ACOG strongly advocates for quality health care for women, maintains the highest standards of clinical practice and continuing education of its members, promotes patient education, and increases awareness among its members and the public of the changing issues facing women's health care. www.acog.org.

About the American Osteopathic Association

The American Osteopathic Association (AOA) represents more than 151,000 osteopathic physicians (DOs) and osteopathic medical students; promotes public health; encourages scientific research; serves as the primary certifying body for DOs; and is the accrediting agency for osteopathic medical schools. To learn more about DOs and the osteopathic philosophy of medicine, visit www.osteopathic.org.

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Medical leadership for mind, brain and body.

AMA

March 26, 2021: State Advocacy Update

AMA fights to protect health care for transgender patients

As physicians and leaders in medicine, the AMA is steadfast in its belief that every individual is entitled to high quality evidence-based medical care regardless of gender or sexual orientation and will continue to work diligently to expand access to medical services, reduce stigma for LGBTQ patients and break down discriminatory barriers.

This year, the threat to transgender patients is especially pronounced. More states have filed bills in 2021 that discriminate and harm transgender patients than any year before. These bills drive discrimination, reinforce stigma and erect barriers to care. The AMA's state Advocacy Resource Center remains actively engaged in defeating legislation that would harm transgender patients.

Criminalizing health care for transgender minors

Among the concerning legislation are bills that would criminalize the provision of medically necessary gender transition-related care to minor patients and, in some states, deem such care child abuse. These bills target surgical interventions as well as medications and hormone therapies that delay puberty while the child explores their gender identity.

Legislation of this kind was introduced in 16 states this year. To date, most have been defeated. However, work remains in a few key states, particularly in Alabama (S.B. 10) and Montana (H.B. 427) where bills have passed one chamber and are expected to be brought for a vote in the second chamber.

The AMA views these bills as a dangerous legislative intrusion into the practice of medicine and has been working closely with state medical associations to vigorously oppose them. In letters to legislators (PDF), the AMA has emphasized that it is "imperative that transgender minors be given the opportunity to explore their gender identity under the safe and supportive care of a physician."

Proponents of these disturbing bills often falsely assert that transgender care for minors is extreme or experimental. In fact, clinical guidelines established by professional medical organizations for the care of minors promote supportive interventions based on the current evidence and that enable young

people to explore and live as the gender that they choose. Every major medical association in the United States, including the AMA, recognizes the medical necessity of transition-related care for improving the physical and mental health of transgender people.

Unfortunately, if enacted, legislation of this kind could have tragic consequences. Transgender individuals are up to three times more likely than the general population to report or be diagnosed with mental health disorders, with as many as 41.5% reporting at least one diagnosis of a mental health or substance use disorder. Transgender minors also face a significantly heightened risk of suicide. But research has demonstrated that improved body satisfaction and self-esteem following the receipt of gender-affirming care is protective against poorer mental health and supports healthy relationships with parents and peers. Studies also demonstrate dramatic reductions in suicide attempts, as well as decreased rates of depression and anxiety.

Excluding transgender youth from athletics

Another concerning trend are bills that would prohibit transgender women and girls from participating in school athletics consistent with their gender identity. In some states, a health care provider would need to verify a student's sex.

Legislation has been introduced in more than half of all states this year. Though most have not advanced, some states are moving bills forward. Notably, Mississippi recently became the first state this year to enact such a prohibition into law. Legislation is soon expected to be signed in North Dakota and Tennessee as well.

In 2020, Idaho became the first ever state to enact a ban on transgender minors' participation in youth athletics. The law was challenged and blocked by a federal court in August 2020. The AMA, along with the American Academy of Pediatrics and other health care organizations, submitted a friend-of-the-court brief (PDF) with the Ninth Circuit Court of Appeals noting that the law undermines the accepted approach for treating gender dysphoria.

As the AMA's brief stated, barring transgender females from participating in school-sponsored organized sports consistent with their gender identity frustrates the treatment of gender dysphoria by preventing transgender females from living openly in accordance with their true gender. This lack of treatment, in turn, increases the rate of negative mental health outcomes, substance abuse and suicide. In order for transgender females to live their lives fully in accordance with their gender identity, they must be able to publicly identify and compete as female athletes.

The AMA continues to work with state medical associations to oppose legislation that would compound the stigma and discrimination that transgender individuals face.

More articles in this issue

- March 26, 2021: Advocacy Update spotlight on progress made to extend sequester moratorium
- March 26, 2021: National Advocacy Update
- March 26, 2021: Advocacy Update other news

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN®

News Release

American Academy of Pediatrics Speaks Out Against Bills Harming Transgender Youth

For Release:

3/16/2021

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By: Lee Savio Beers, MD, FAAP, President, American Academy of Pediatrics

"With alarm and dismay, pediatricians have watched bills advance through state legislatures across the country with the sole purpose of threatening the health and well-being of transgender youth.

"The American Academy of Pediatrics has long been on the record in support of affirmative care for transgender children through our **clinical policy**. Today, we are going on the record to oppose public policies that would allow for the opposite.

"Several state legislatures have introduced bills that would prohibit gender-affirming care for gender-diverse and transgender youth and forbid transgender youth from participating on sports teams according to their gender identity. These bills are dangerous. If left unchallenged, there will be transgender teens in certain zip codes who

will be unable to access basic medical care, and pediatricians in certain zip codes who would be criminalized for providing medical care. And, transgender youth would be denied the ability to participate in sports according to their gender identity.

"We are in the middle of a pandemic that has led to staggering rises in mental health concerns among children and teens. Transgender children had statistically higher rates of depression and suicidal ideation before the pandemic: around half of transgender youth consider suicide, and a third attempt it.

"The American Academy of Pediatrics recommends that youth who identify as transgender have access to comprehensive, gender-affirming, and developmentally appropriate health care that is provided in a safe and inclusive clinical space. We also recommend that playing on sports teams helps youth develop self-esteem, correlates positively with overall mental health, and appears to have a protective effect against suicide.

"These bills not only ignore these recommendations, they undermine them. Instead, the legislation would allow policymakers rather than pediatricians to determine the best course of care for our patients, and in some medically underserved states, it could mean losing an already limited number of pediatric practitioners who care for transgender youth. Forcing transgender children to play on teams according to their sex assigned at birth, rather than the gender they live in, also puts their physical and mental health at risk.

"Evidence-based medical care for transgender and gender diverse children is a complex issue. Pediatricians are best able to determine what care is necessary and appropriate for these children, but these bills interfere in the physician-patient-family relationship and would cause undue harm.

"Politics has no place here. Transgender children, like all children, just want to belong. We will fight state by state, in the courts and on the national stage to make sure they know they do."

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The American Academy of Pediatrics is an organization of 67,000 primary care pediatricians, pediatric medical subspecialists and pediatric surgical specialists dedicated to the health, safety and well-being of infants, children, adolescents and young adults. For more information, visit ***www.aap.org*** *and follow us on Twitter @AmerAcadPeds.*

APA Official Actions

Position Statement on Treatment of Transgender (Trans) and Gender Diverse Youth

Approved by the Board of Trustees, July 2020
Approved by the Assembly, April 2020

"Policy documents are approved by the APA Assembly and Board of Trustees. . . These are . . . position statements that define APA official policy on specific subjects. . ." – *APA Operations Manual*

Issue:

Transgender and gender non-conforming youth often experience an intensification of emotional distress when the physical changes of puberty occur in opposition to the adolescent's gender identity and sense of self. The onset of menses, for example, is unwanted and psychologically devastating for an adolescent transman (assigned female at birth). Worsening dysphoria may manifest as depression, anxiety, poor relationships with family and peers, self-harm and suicide. Racism, misogyny, economic disadvantage and neurodiversity can compound the risk of negative outcomes. Due to the dynamic nature of puberty development, lack of gender-affirming interventions (i.e. social, psychological, and medical) is not a neutral decision; youth often experience worsening dysphoria and negative impact on mental health as the incongruent and unwanted puberty progresses. Trans-affirming treatment, such as the use of puberty suppression, is associated with the relief of emotional distress, and notable gains in psychosocial and emotional development, in trans and gender diverse youth.

Gender-affirming treatment of trans and gender diverse youth who experience gender dysphoria due to the physical changes of puberty, may include suppression of puberty development with GnRH (gonadotropin releasing hormone) agonists, commonly referred to as "puberty blockers." Use of GnRH agonists, despite potential side effects (e.g., hot flashes, depression) can allow the adolescent a period of time, often several years, in which to further explore their gender identity and benefit from additional cognitive and emotional development. During this time, the youth and family can receive mental health and social support services, if needed, to navigate the gender affirmation process including the consideration of whether gender affirming hormone therapy is an appropriate next step. If during this discernment period further adolescent development leads to increased comfort with the birth-assigned gender, the GnRH agonist can be discontinued, and puberty allowed to resume. If the developmental trajectory affirms the trans identity, treatment with estrogen or testosterone can be instituted to facilitate development of affirmed secondary sex characteristics, if desired. Gender-affirming surgeries may follow in later adolescence or young adulthood. However, affirmation of gender identity is a highly individualized process. For gender diverse youth and their families, decisions to which gender-affirming medical, surgical, social, and/or legal procedures to pursue are best managed via an informed consent approach.

APA Position:

The American Psychiatric Association:

1. **Supports access to affirming and supportive treatment for trans and gender diverse youth and their families, including appropriate mental health services, and when indicated puberty suppression and medical transition support.**
2. **Opposes all legislative and other governmental attempts to limit access to these services for trans and gender diverse youth, or to sanction or criminalize the actions of physicians and other clinicians who provide them.**

PRESS RELEASE

Discriminatory policies threaten care for transgender, gender diverse individuals

Washington, DC December 16, 2020

Endocrine experts unite to call for evidence-based policies governing transgender and gender diverse health care

The Endocrine Society and the Pediatric Endocrine Society oppose legislative efforts to block transgender and gender diverse individuals from accessing gender-affirming medical and surgical care, the two medical societies said in a joint policy perspective published in *The Journal of Clinical Endocrinology & Metabolism*.

In the past three years, legislators in 17 states have proposed more than two dozen bills barring medical and surgical treatments for transgender and gender diverse youth and adults. Many of these bills reflect widespread misinformation about the nature of evidence-based gender-affirming medical care.

"For young children experiencing feelings that their gender does not match the one assigned at birth, known as gender dysphoria, an initial intervention is likely to be a new haircut or clothing," said the manuscript's first author and Co-Chair of the Pediatric Endocrine Society's Transgender Special Interest Group Advocacy Subcommittee, Abby Walch, M.D., of the University of California San Francisco and Benioff Children's Hospitals in San Francisco, Calif. "The first course of action is to support the child in living as their affirmed gender identity and to provide mental health support as needed."

After transgender and gender diverse minors start puberty, prescribing hormones to suppress puberty is the recommended strategy if desired and if diagnostic and treatment criteria are met. This treatment, which is completely reversible, gives adolescents more time to explore their options.

Only reversible treatments are recommended for adolescents until they demonstrate the ability to provide informed consent and experience sustained feelings of gender dysphoria. Even then, gender-affirming hormone therapy to help individuals experience puberty in a way that matches their gender identity is partially reversible.

Three **High Court judges in the United Kingdom** ruled Dec. 1 that minors under the age of 16 likely could not give informed consent for pubertal suppression. Though it is likely to be challenged, this decision is a problematic development that could prevent transgender and gender diverse minors from obtaining the medical care they need.

"Considering transgender and gender diverse individuals face a disproportionately high risk of suicide and other health disparities, it is crucial that they have access to essential and often life-saving, gender-affirming care from well-informed health care professionals," said senior author and Co-Chair of the EndocrineSociety's

Transgender Research and Medicine Special Interest Group, Sean J. Iwamoto, M.D., of the University of Colorado School of Medicine and Rocky Mountain Regional VA Medical Center, both in Aurora, Colo. "Barring gender-affirming medical and surgical care for transgender and gender diverse individuals would force many to go through distressing and even traumatic experiences in life related to misgendering. No bill should criminalize physicians who provide the standard of care for this vulnerable population."

The course of gender-affirming treatment should be determined by patients and their health care providers, not by policymakers. Experts should be consulted regarding any policies governing treatment for transgender and gender diverse individuals, the authors wrote.

The Endocrine Society has updated its **transgender position statement** to incorporate additional information about the importance of care for minors. Read the pediatric transgender **health fact sheet**.

Other authors of the policy perspective include: Caroline Davidge-Pitts, M.B., B.Ch., of the Mayo Clinic in Rochester, Minn.; Joshua D. Safer, M.D., F.A.C.P. of Mount Sinai Center for Transgender Medicine and Surgery and Icahn School of Medicine at Mount Sinai in New York, N.Y.; Ximena Lopez, M.D., of University of Texas Southwestern Medical Center in Dallas, Texas.; and Vin Tangpricha, M.D., Ph.D., of Emory University School of Medicine in Atlanta, Ga., and of the Atlanta VA Medical Center in Decatur, Ga.

The manuscript, ***"Proper Care of Transgender and Gender Diverse Persons in the Setting of Proposed Discrimination: A Policy Perspective,"*** was published online, ahead of print.

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Endocrinologists are at the core of solving the most pressing health problems of our time, from diabetes and obesity to infertility, bone health, and hormone-related cancers. The Endocrine Society is the world's oldest and largest organization of scientists devoted to hormone research and physicians who care for people with hormone-related conditions.

The Society has more than 18,000 members, including scientists, physicians, educators, nurses and students in 122 countries. To learn more about the Society and the field of endocrinology, visit our site at **www.endocrine.org**. Follow us on Twitter at **@TheEndoSociety** and **@EndoMedia**.

About the Pediatric Endocrine Society

The Pediatric Endocrine Society has over 1,400 members representing the various disciplines of pediatric endocrinology. The mission of the Pediatric Endocrine Society is to advance and promote the endocrine health and well-being of children and adolescents. Its vision is to be the professional home and voice of pediatric endocrinology in North America, and it aims to support and foster research, improve patient care through teaching, discovery and dissemination of knowledge, provide opportunities for professional growth, leadership and practice development, advocate for the needs of its members, patients and their families, and expand its impact and value through strategic partnerships.

PRESS RELEASE

Thyroid hormone replacement undertreatment linked to worse hospital outcomes

April 26, 2022

Undertreatment with thyroid hormone replacement can put patients with hypothyroidism at risk for worse hospital outcomes, including longer length of stay and higher rates of readmission, according to a new study published in the Endocrine Society's Journal of Clinical Endocrinology and Metabolism.

PRESS RELEASE

People with diabetes and cognitive decline may be at higher risk for heart disease

April 21, 2022

People with type 2 diabetes who have cognitive impairment could be at greater risk for stroke, heart attack or death than other individuals with diabetes, according to a new study published in the Endocrine Society's Journal of Clinical Endocrinology and Metabolism.

PRESS RELEASE

Endocrine Society opposes Florida Department of Health policy on gender dysphoria treatment for children and adolescents

April 20, 2022

The Endocrine Society objects to the Florida Department of Health's bulletin on gender-affirming care for transgender and gender-diverse youth. The bulletin contradicts the U.S. Department of Health &

Human Services' resources and the Society's own evidence-based Clinical Practice Guideline regarding gender-affirming care.

PRESS RELEASE

Black people with diabetes disproportionately affected by diabetic ketoacidosis during COVID

April 05, 2022

Black people with diabetes were more likely to develop cases of a life-threatening complication called diabetic ketoacidosis during the pandemic, even in people without COVID-19, according to a new study from the TID Exchange published in the Endocrine Society's Journal of Clinical Endocrinology and Metabolism.

PRESS RELEASE

Babies exposed to cannabis in the womb may be at risk for obesity, high blood sugar

March 31, 2022

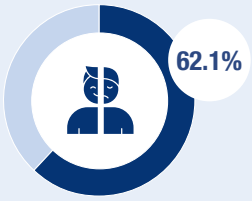
Cannabis use among pregnant women is on the rise and may be associated with negative health outcomes in children, according to a new study published in the Endocrine Society's Journal of Clinical Endocrinology and Metabolism.

TRANSGENDER HEALTH:
SUPPORTING GENDER DIVERSE YOUTH TO IMPROVE THEIR HEALTH, WELL-BEING, AND SAFETY

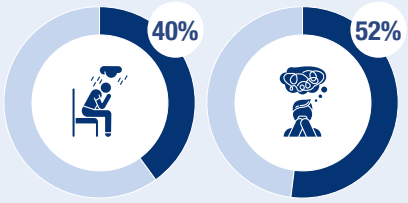
SIX RECOMMENDATIONS TO IMPROVE PEDIATRIC TRANSGENDER HEALTH CARE

1. Support for gender diverse youth in their gender identity can improve mental health outcomes and should be included in policy determinations.
2. Treatment for prepubertal transgender and gender diverse children never includes medical or surgical interventions however it is helpful for them to be supported in living in their desired gender role.
3. When puberty begins, gender affirming medical treatment with puberty blockade followed in late adolescence by hormone therapy, is standard of care. Per Endocrine Society guidelines, such treatment is undertaken in a conservative and family-centered process with appropriate medical and mental health supervision.
4. Medical and mental health professionals should feel comfortable providing gender affirming care to their transgender and gender diverse patients as should be the case for any medical or mental health condition.
5. The medical treatment of gender dysphoria/gender incongruence is safe and effective, is medically necessary, and should be covered by health insurance.
6. Conversion or reparative therapy is a dangerous, discredited practice that falsely claims to change a person's gender identity. It is harmful and unethical.

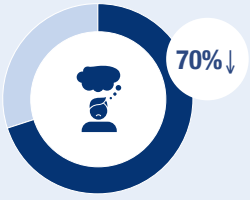
KEY STATISTICS



62.1% OF GENDER DIVERSE YOUTH REPORTED THEIR OVERALL GENERAL HEALTH AS LESS THAN VERY GOOD.



40% OF TRANSGENDER ADOLESCENTS GREATER THAN 15 YEARS OLD HAVE SELF-HARMED, AND 52% HAVE CONSIDERED SUICIDE.



OF YOUTH WHO DESIRED PUBERTY SUPPRESSION, THOSE WHO RECEIVED IT WERE 70% LESS LIKELY TO HAVE SUICIDAL IDEATION COMPARED TO YOUTH WHO DID NOT RECEIVE TREATMENT.

1 IN 5 TRANSGENDER ADULTS REPORTS HAVING BEEN EXPOSED TO CONVERSION OR REPARATIVE THERAPY IN THEIR LIFETIME.

PREPUBERTAL CHILDREN WHO ARE SUPPORTED IN THEIR GENDER IDENTITY SHOW NO INCREASE IN DEPRESSION COMPARED TO CIS-GENDER PEERS.

PARENTAL SUPPORT LED TO A 93% REDUCTION IN SUICIDE ATTEMPTS BY TRANSGENDER ADOLESCENTS AND YOUNG ADULTS.

PUBERTY BLOCKADE AND HORMONE THERAPY IMPROVES MENTAL HEALTH OUTCOMES OF TRANSGENDER ADOLESCENTS.

Reference: Rider et al. *Pediatrics*, 2018; Sorbara et al. *Pediatrics*, 2020; Turban et al. *Pediatrics*, 2020; Turban et al. *JAMA Psychiatry*, 2019; Olson et al. *Pediatrics*, 2016; De Vries et.al. *Pediatrics*, 2014; Kuper et.al. *Pediatrics* 2020

LEARN MORE AT ENDOCRINE.ORG/TRANSGENDERADVOCACY

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ENDOCRINE SOCIETY

WHAT YOU NEED TO KNOW

TRANSGENDER GLOSSARY OF TERMS

GENDER IDENTITY: One's internal, deeply held sense of gender. For transgender people, their gender identity does not match their sex designated at birth. Most people have a gender identity of man or woman (or boy or girl). For some people, their gender identity does not fit neatly into one of those two choices. Unlike gender expression (see below), gender identity is not visible to others.

GENDER EXPRESSION: External manifestations of gender, expressed through one's name, pronouns, clothing, haircut, behavior, voice, or body characteristics. Typically, transgender people seek to make their gender expression affirm their gender identity.

GENDER ROLE: Behaviors, attitudes, and personality traits that a society (in a given culture and historical period) designates as masculine or feminine and/ or that society associates with or considers typical of the social role of men or women.

GENDER OF REARING: Since one cannot designate or record an "identity" at birth, the term "gender designated at birth" in fact refers to a "gender of rearing". "Gender of rearing" (i.e. the decision to raise a child as female or male) is typically based on the sex designated at birth.

TRANSGENDER: Umbrella term for people whose gender identity and/ or gender expression differs from what is typically associated with their sex designated at birth. Not all transgender individuals seek treatment.

TRANSGENDER MALE (ALSO TRANS MAN, FEMALE-TO-MALE): Individuals designated female at birth but who identify and live as men.

TRANSGENDER FEMALE (ALSO TRANS WOMAN, MALE-TO-FEMALE): Individuals designated male at birth but who identify and live as women.

NON-BINARY: Umbrella term for people whose gender identity does not fit within a binary gender classification as male or female.

SEX DESIGNATED AT BIRTH: Sex of the newborn, usually based on gonadal and genital anatomy as well as consideration of chromosomes.

GENDER DYSPHORIA: The distress and unease experienced if the gender identity and sex designated at birth are not completely congruent.

GENDER INCONGRUENCE: Umbrella term used when the gender identity differs from what is typically expected with the sex designated at birth. Gender markers may appear on birth certificates, but this refers to "Gender of Rearing" (see above), since one can't assign an "identity". Gender incongruence is also the proposed name of the gender identity–related diagnoses in the planned revisions to the diagnostic code manual, ICD-11. Not all individuals with gender incongruence seek treatment or have gender dysphoria.

SEXUAL ORIENTATION: An individual's enduring physical and emotional attraction to another person. Gender identity and sexual orientation are not the same.

CISGENDER: Individual whose designated sex at birth and gender identity are in alignment. An alternative way to describe individuals who are not transgender is "non-transgender people."

PUBERTY BLOCKADE: A reversible pause to puberty. It is often a first step in treatment to allow the adolescent to explore their gender identity and/or to provide relief from distress (gender dysphoria) of a puberty that is incongruent with one's gender identity. A person's (pre-programmed) puberty will resume if puberty suppression treatment is stopped and the adolescent does not pursue gender-affirming hormone treatment.

GENDER-AFFIRMING HORMONE TREATMENT: A partially irreversible treatment with estrogen or testosterone, given to align one's physical characteristics with one's gender identity. This is given in late adolescence and can relieve gender dysphoria and improve mental health.

WPATH
WORLD PROFESSIONAL ASSOCIATION FOR TRANSGENDER HEALTH

USPATH

Statement in Response to Proposed Legislation Denying Evidence-Based Care for Transgender People Under 18 Years of Age and to Penalize Professionals who Provide that Medical Care

The World Professional Association for Transgender Health (WPATH) and its US chapter, the United States Professional Association for Transgender Health (USPATH), vehemently oppose the legislation being proposed in Florida (HB 1365), South Carolina (HB 4716), South Dakota (HB 1057), Colorado (HB 20-1114), and similar legislation in other states. These bills seek to deny evidence-based care for transgender people under 18 years of age and to penalize professionals who provide that medical care. These bills will punish practitioners of gender affirming care with revocation of their medical license, or up to 15 years in prison in some states. These bills will treat health care providers as if they committed manslaughter or arson.

Many of the procedures mentioned by these bills are not even offered to transgender youth, revealing these bills to be alarmist expressions of ill-informed opinion. Guidance for the provision of medical care for transgender youth is outlined within the 7th edition of Standards of Care (SOC) for the Health of Transsexual, Transgender, and Gender-Nonconforming People created by the World Professional Association for Transgender Health (Coleman et al. 2012). The guidelines differentiate between children and adolescents with regard to the provision of care.

Under the SOC, children do not receive any of the medical care identified within these bills, but mental health and social supports are provided to them along with their families. Surgeries on genitals and reproductive systems are considered for people who are typically over 18 years of age (depending on the age of consent and other relevant factors in the pertinent jurisdiction) and have been living in their affirmed gender for at least 12 months. Medical treatments that might be recommend for certain adolescents include puberty-blocking medication and – in carefully selected cases – hormone replacement therapies and surgery, most often non-genital. These treatments are not offered without conscientious medical attention and informed clinical evaluation.

Puberty suppression has been found to be very beneficial for transgender adolescents, and it is reversible (Mahfouda et al. 2017; Olson-Kennedy et al. 2018; Hodax et al. 2019; Salas-Humara et al. 2019). Further, a recently published study has concluded that transgender adults who had access to pubertal blockers had a lower risk of suicidal ideation compared to those transgender adults who did not have access to pubertal blockers (Turban et al. 2020).

WPATH
WORLD PROFESSIONAL ASSOCIATION FOR TRANSGENDER HEALTH

USPATH

We are disturbed by these attempts to legislate medical treatment without expert guidance from the relevant national medical organizations or even testimony from experienced, qualified local or regional providers and patients for whom these treatments have been beneficial, if not lifesaving. Given the climate in which these bills are presented, however, we can imagine that few young patients or their parents would be willing to present themselves for the scrutiny of potentially hostile legislators and the activists who are promoting these damaging bills.

All medical treatment is a crucial and very personal service that virtually everyone depends upon at some point in their lives, and it should not be delivered or restricted according to the whims of distant lawmakers who know little or nothing about the circumstances of an individual's life. Proper medical care for any condition is a matter best negotiated between patients and their trained and qualified medical providers who are relying on clinical evidence and experience.

These bills attempt to criminalize treatments or at best restrict medical professionals from helping their patients and their families. Since transgender children, adolescents, or adults cannot be legislated out of existence, these bills seem to be a misguided attempt to prevent transgender people from coming forward for services they need in order to live healthy lives.

We urge you to reject these harmful bills and assure your transgender constituents and their families that their health and well-being is just as important as your own.

Click here for an additional WPATH Statement in Response to Calls for Banning Evidence-Based Supportive Health Interventions for Transgender and Gender-Diverse Youth.

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Statement in Response to Calls for Banning Evidence-Based Supportive Health Interventions for Transgender and Gender-Diverse Youth

Diversity in gender expression and variations in gender identity represent normative developmental processes for children and adolescents and are not inherently pathological aspects of the human experience. They are also not uniformly indicative of a future gender transition. These facts are substantiated by many reputable professional associations representing thousands of pediatric providers. Clinical guidelines for youth experiencing an incongruence between their gender identity and sex assigned at birth have been published, are widely used nationally, and are based on the current evidence. These guidelines support the use of interventions for appropriately assessed minors. The following organizations have pediatric clinical guidelines and/or policy statements on these issues: American Academy of Child and Adolescent Psychiatry, American Academy of Pediatrics, American Psychological Association, and the Endocrine Society. In response to recent critiques of supportive health interventions for transgender and gender-diverse youth, the boards of directors of the World Professional Association for Transgender Health (WPATH), its US chapter (USPATH) and its Europe chapter (EPATH) have authorized the following statement.

The process of pursuing a gender transition is highly individualized based on the youth's situation, family concerns, and various other factors. Thus, there is no “one-size-fits-all” clinical intervention. However, in general, mental health and medical professionals conduct evaluations of each youth/family to ensure that interventions used to promote emotional and psychological wellness in these youth are appropriate and meet the young person’s specific mental health and medical needs. As a result, professionals with experience and training to understand adolescent development and family dynamics are poised to understand the underlying factors behind a specific clinical presentation. Professionals who are experienced working with youth and families can distinguish parents who may be cautious and concerned from parents who might be pushing for medical changes when their child is not ready for them. The best interests of the child are always paramount for any responsible licensed provider.

Some critics have claimed high rates of regret regarding irreversible treatments or procedures such as reconstructive surgeries, implying that children are forced to undergo treatments they may regret. There are no studies to support these claims. However, recent studies show only a very small percentage of people who undergo gender transition as adults (when irreversible procedures may be administered) regret doing so: roughly 1-3%, which is a small number

compared with rates of regret reported for much more common procedures. Most people who have regrets do so because of a lack of support or acceptance from their family, social groups, work, or other organizations. Conversely, the benefits that these medically necessary interventions have for the overwhelming majority of youth whose identities are incongruent with their sex assigned at birth are well-documented. Providers who collaboratively assess youths' understanding of themselves, their gender identity, and their ability to make informed decisions regarding medical/surgical interventions (which are not offered prior to puberty, and never without the youth's assent) play a very important role in minimizing future regret.

Some critics have called 'gender care' "child abuse"; providing care for a transgender child or adolescent is a serious undertaking which respects the best interests of each individual child. Withdrawing care for all transgender youth or adults or threatening to criminalize conscientious healthcare providers who work with transgender patients or clients using evidence-based care is a clear abuse of administrative and legislative power. Legislation that opposes needed treatment is of grave concern as it sustains harmful misconceptions about transgender youth and adults, as well as gender transition processes in general, and also devalues medical protocols, thus driving more people to seek services from providers who are willing to ignore the validated protocols that encourage responsible care.

For more information about clinical support for gender-affirming care, see the following links:

From the American Academy of Child and Adolescent Psychiatry:

https://www.aacap.org/AACAP/Latest_News/AACAP_Statement_Responding_to_Efforts-to_ban_Evidence-Based_Care_for_Transgender_and_Gender_Diverse.aspx

https://www.aacap.org/AACAP/Policy_Statements/2018/Conversion_Therapy.aspx

https://www.aacap.org/AACAP/Policy_Statements/2009/Sexual_Orientation_Gender_Identity_and_Civil_Rights.aspx

https://www.jaacap.org/article/S0890-8567(12)00500-X/fulltext

From the Endocrine Society:

https://www.newswise.com/articles/endocrine-society-urges-policymakers-to-follow-science-on-transgender-health

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And from the American Academy of Pediatrics:

https://www.aap.org/en-us/about-the-aap/aap-press-room/Pages/AAP-Policy-Statement-Urges-Support-and-Care-of-Transgender-and-Gender-Diverse-Children-and-Adolescents.aspx

https://pediatrics.aappublications.org/content/142/4/e20182162

National Association of Pediatric Nurse Practitioners℠

NAPNAP Strongly Opposes Alabama Law Criminalizing Transgender Health Care

The National Association of Pediatric Nurse Practitioners (NAPNAP) strongly opposes Alabama's newly passed law that prohibits health care providers in the state from providing gender-affirming health care to transgender youth under the age of 19 with a penalty of up to 10 years in prison and a felony record. Criminalizing evidence-based gender-affirming care detailed in the peer-reviewed Clinical Practice Guideline for Endocrine Treatment of Gender-Dysphoric/Gender-Incongruent Persons and supported by leading organizations including NAPNAP, the American Academy of Pediatrics, the Endocrine Society and the American Psychological Association severely jeopardizes the physical and mental wellbeing of the Alabama's transgender youth.

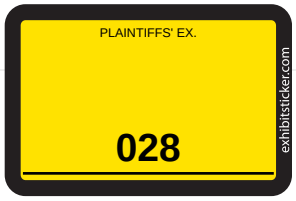
"According to the National Survey on LGBTQ Youth Mental Health 2021, more than half of transgender or nonbinary youth seriously considered suicide in the prior year," said NAPNAP President Dr. Andrea Kline-Tilford. "Laws barring health care experts from providing gender-affirming health care will increase negative mental health outcomes and health inequity for this marginalized and vulnerable youth population."

In its position statement Health Risks and Needs of Lesbian, Gay, Bisexual, Transgender, and Questioning Youth, NAPNAP opposes all forms of discrimination against individuals based on sexual orientation, gender conformity and gender identity, while encouraging pediatric clinicians and advocates to speak out against discrimination and/or victimization of LGBTQIA+ youth. Further, it recommends that health care providers, as well as the health care environment, should support and promote an LGBTQIA+ safe space for all youth and an atmosphere of acceptance to facilitate health care interactions.

During the past year, NAPNAP joined the American Academy of Pediatrics and other leading health care organizations in submitting amicus briefs in the *Brandt, et al. v. Rutledge, et al. and Doe, et al. v. Abbott, et al. cases in Arkansas and Texas, respectively.* Laws banning access to gender-affirming care conflict with our patient-centered position that pediatric health care is best delivered to youth in an individualized manner with a focus on health promotion and risk reduction.

Transgender patients need and deserve access to evidence-based care to optimize their short- and long-term health and well-being. When states like Alabama fail to protect health care access for LGBTQIA+ patients, the court system and/or federal government must intervene. NAPNAP urges other state legislative bodies and government agencies to refrain from passing laws or instituting policies that contradict widely accepted, evidence-based medical science.

April 12, 2022



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VIEWPOINT

Legislation to Criminalize Gender-Affirming Medical Care for Transgender Youth

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Supplemental content

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Legislation seeking to criminalize or otherwise prevent the provision of gender-affirming care for transgender adolescents is on the rise. This Viewpoint describes these laws and explains why they are harmful and potentially unlawful.

Caring for Transgender Youth

Transgender adolescents are those whose gender identity (ie, their psychological sense of their own gender) is incongruent with their sex assigned at birth.[1] According to a 2017 study from the Centers for Disease Control and Prevention, 1.8% of 118 803 surveyed adolescents in the United States identified as transgender.[2] In this same study, approximately 35% of transgender adolescents reported having attempted suicide, highlighting the importance of the mental health concerns affecting this population.[2]

Affirmation of an adolescent's transgender identity is associated with favorable mental health outcomes.[1,3,4] Major medical organizations have outlined best practices for supporting transgender adolescents.[1,3,4] These include facilitation of a social transition (ie, taking on the name, pronouns, and other elements of gender expression that match the adolescent's gender identity), consideration of pubertal suppression (ie, gonadotropin-releasing hormone analogues that temporarily and reversibly pause puberty to prevent the development of secondary sex characteristics that often cause psychological distress for transgender youth), and consideration of gender-affirming hormones (ie, medications including estradiol and testosterone that induce physical feminization or masculinization, respectively, that align with the adolescent's gender identity). Although research has not established that these interventions cause infertility, guidelines recommend that adolescents be offered fertility preservation options prior to treatment with gender-affirming hormones, given the theoretical risk that these medications may impair fertility.[1,3,4] Although gender-affirming genital surgery is generally not recommended until adulthood, these guidelines note that some transmasculine adolescents may benefit from masculinizing chest surgery to lessen chest dysphoria.[1,3,4]

Laws Restricting Physician Autonomy and Expertise

Medical professionals, using their training and autonomy and working with patients and families, are best positioned to determine when gender-affirming medical or surgical care is warranted. Yet despite opposition from major medical organizations, including the American Medical Association, the American Academy of Pediatrics, and the American Psychiatric Association (**Table**), legislators in several US states have introduced legislation to criminalize the provision of such care (for a summary of proposed legislation see eTable 1 in the Supplement). Arkansas recently became the first state to have such a bill become law, after the state legislature overturned the governor's veto. Physicians and public health experts should be aware of these legislative initiatives and their likelihood to cause serious harm to transgender adolescents and their families.

Table. Statements Opposing Legislation to Limit Gender-Affirming Medical Care for Transgender Youth[a]

Organization	Policy statement title
American Medical Association	AMA fights to protect health care for transgender patients
American College of Physicians, American Academy of Family Physicians, American College of Obstetricians and Gynecologists, American Osteopathic Association, and others	Frontline physicians oppose legislation that interferes in or criminalizes patient care
American Psychiatric Association	Position statement on treatment of transgender (trans) and gender diverse youth
American Academy of Pediatrics	American Academy of Pediatrics speaks out against bills harming transgender youth
American Academy of Child and Adolescent Psychiatry	AACAP statement responding to efforts to ban evidence-based care for transgender and gender diverse youth
The Endocrine Society and The Pediatric Endocrine Society	Discriminatory policies threaten care for transgender, gender diverse individuals
World Professional Association for Transgender Health & US Professional Association for Transgender Health	Statement in response to proposed legislation denying evidence-based care for transgender people under 18 years of age and to penalize professionals who provide medical care

[a] Links to the statements are available in eTable 2 in the Supplement.

The bills that have been introduced in state legislatures are diverse, but all have the central aim of removing access to gender-affirming medical care, surgical care, or both for transgender youth. For example, Alabama House Bill 1 (HB1) classified the provision of pubertal suppression or gender-affirming hormones as a class C felony and included potential punishment of physicians with up to 10 years in prison for prescribing these medications. If passed, this bill would have also forced teachers to reveal transgender students' gender identities to their parents without their consent. This could result in some youth becoming homeless or experiencing physical or emotional abuse from unaccepting families.[5]

These bills also represent an assault on key tenets of the medical profession—that physicians are best equipped to determine, both through clinical practice

guidelines and other forms of professional self-regulation, what care will promote the health of individual patients. While the practice of medicine is not wholly without state regulation—licensure requirements, tort liability, etc—for the most part the existing legal, ethical, and cultural superstructure trusts medical professionals to exercise their discretion and act as a medical fiduciary. The use of criminal penalties, in particular, should be of substantial concern for physicians. These bills could transform their fiduciary care for patients into criminal acts.

These bills also propagate a range of factual inaccuracies about transgender youth. Alabama HB1, for example, falsely asserted that gender-affirming medical interventions increase risk of mental illness and suicide, despite research showing that access to these interventions is associated with improved mental health outcomes.[1,3,4]

Legality

Although these bills represent a wide range of provisions affecting medical care, each of which may raise different legal issues, there are good arguments that many of these laws may violate the Affordable Care Act (ACA) and perhaps the US Constitution, state constitutions, or the Americans with Disabilities Act.

To understand the legal challenges affected transgender people might bring should these bills become law, consider *Kadel v Fowell* (446 F Supp 3d 1, [MDNC 2020]), a case currently being litigated in federal district court. In *Kadel*, transgender employees of the University of North Carolina and North Carolina State University sued their respective employers whose insurance plan "denies coverage for medically necessary treatment if the need stems from gender dysphoria, as opposed to some other condition." The plaintiffs alleged that the plan would cover medically necessary mastectomies for either sex but not if the need was related to gender affirmation. They brought claims that the insurance plan violated 2 provisions of federal law—antidiscrimination protections in Title IX and the ACA—as well as the Equal Protection Clause of the Fourteenth Amendment of the US Constitution. A recent opinion in the case denying the universities' motion to dismiss the case and allowing each of the plaintiffs' claims to move forward, illustrates why some of the challenges to these new state laws appear likely to succeed.

The *Kadel* court determined that the insurance plan violates Title IX, because it constituted discrimination "on the basis of sex" within the meaning of Title IX (20 USC §1681[a]). Notably, the US Supreme Court has reached a similar conclusion regarding the interpretation of "because of such individual's…sex" as to Title VII, governing employment, in *Bostock v Clayton County* (140 SCt 1731, 1741 [2020]). It appears likely other courts will interpret language like this, which forms the backbone of most antidiscrimination law, in the same way. Similarly, the *Kadel* court allowed the plaintiffs' claims that the plan violates section 1557 of the ACA to move forward. Section 1557 makes it illegal for any health program or activity receiving federal financial assistance (which the defendant universities are) to discriminate "on the basis of sex" or other prohibited grounds (42 USC § 18116[a]). In addition, the *Kadel* court signaled that the policy might violate the equal protection clause of the US Constitution's Fourteenth Amendment. The court wrote that the plan's exclusion discriminates on the basis of gender and thus the state must show that the exclusion of gender dysphoria serves "important governmental objectives and that the discriminatory means employed are substantially related to the achievement of those objectives," what it called a "demanding standard," to be constitutional. To be clear, the US Supreme Court has not yet reached this constitutional question and given the change in the Court's composition since its last decision in favor of transgender rights and the differences between constitutional and statutory interpretation, a similar ruling on this point is not assured.

Beyond the arguments raised in *Kadel,* other challenges might be brought to these bills. In states that have equal protection clauses in their state constitutions, plaintiffs could bring similar equal protection claims in state court. Other litigants have also argued that individuals with gender dysphoria qualify as disabled within the meaning of the Americans with Disabilities Act and the Rehabilitation Act.[6] These challenges have thus far had a mixed track record in terms of success, but some transgender individuals may challenge these laws on the disability theory in addition to the ACA section 1557 theory.

While it appears all these arguments have merit, the uncertainty over success heightens the need for advocacy now, to keep proposed legislation from becoming law.

Conclusions

Some parents of transgender youth have highlighted the high stakes involved in these legislative debates, "This could mean death for my child."[7] Physicians and mental health experts in states considering these bills should consider contacting their state representatives to provide them with evidence-based information about transgender youth, their medical care, and how physicians can best support these patients.

ARTICLE INFORMATION

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Correction: This article was corrected on June 4, 2021, to add a financial disclosure that was inadvertently omitted during editing.

Conflict of Interest Disclosures: Dr Turban reported receiving textbook royalties from Springer Nature, a pilot research award for general psychiatry residents from the American Academy of Child & Adolescent Psychiatry, supported by industry donors (Pfizer and Arbor), and serving as an expert witness on behalf of the American Civil Liberties Union and Cooley LLP. No other disclosures were reported.

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American Academy of Pediatrics

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News Release

American Academy of Pediatrics and Its Alabama Chapter Oppose Bill Threatening Health of Transgender Youth

For Release:

4/7/2022

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Alabama's efforts to criminalize gender-affirming care violate pediatric recommendations and doctor-family relationship, harm transgender patients

MONTGOMERY, AL AND WASHINGTON, DC – The American Academy of Pediatrics (AAP) and the Alabama Chapter of AAP (AL-AAP) strongly oppose SB 184, a bill that endangers the health and well-being of transgender and gender-diverse youth.

On April 7, the Alabama House passed SB 184, which bans all forms of evidence-based gender-affirming medical care, requires educators and school staff to disclose gender-questioning students' identities to their parents, and classifies providing gender-affirming care as a Class C felony, punishable by up to 10 years in prison. The bill passed both chambers of the state legislature with limited debate and awaits the governor's signature.

"Pediatricians are dedicated to the well-being of all children. Laws like these directly interfere with their ability to keep their patients healthy and provide evidence-based care," said **AAP CEO/Executive Vice President Mark Del Monte, JD**. "This legislation targets vulnerable young people and puts them at great risk of physical and mental harm. Pediatricians are committed to caring for all children. Criminalizing evidence-based, medically necessary services is dangerous to their patients and profession."

The AAP has long supported gender-affirming care for transgender youth, which includes the use of puberty-suppressing medications when appropriate, as outlined in its own **policy statement**, urging that youth who identify as transgender have access to comprehensive, gender-affirming, and developmentally appropriate health care that is provided in a safe and inclusive clinical space in close consultation with parents.

The Academy has repeatedly **opposed** bills that discriminate against transgender youth and their right to receive medical care, and **advocated against** restrictions to their rights in other states. The Alabama Chapter of AAP has **consistently advocated against** prohibitions on gender-affirming care in Alabama.

For young people who identify as transgender, **studies** **show** that gender-affirming care can reduce emotional distress, improve their sense of well-being and reduce the risk of suicide.

“The Alabama Chapter of AAP strongly opposes this bill, which criminalizes evidence-based care, endangers the safety of vulnerable youth at home, and interferes with the fundamental physician-patient-family relationship. Pediatricians in our state care for transgender patients the way we care for all of our patients, by providing science-based, high-quality care to those who need it. We know our patients best, and physicians, not politicians, should be the ones determining how to best do our job. We urge Governor Ivey to veto this bill and instead pursue policies that prioritize children’s health and safety,” said **Alabama Chapter-AAP Vice President Nola Ernest, MD, FAAP.**

About the American Academy of Pediatrics

The American Academy of Pediatrics is an organization of 67,000 primary care pediatricians, pediatric medical subspecialists and pediatric surgical specialists dedicated to the health, safety and well-being of infants, children, adolescents and young adults. For more information, visit **www.aap.org** and follow us on Twitter @AmerAcadPeds.

About the Alabama Chapter of the American Academy of Pediatrics

A 501 (c) 3 organization, the Alabama Chapter of the AAP is the only statewide member organization of pediatricians, with more than 850 members across the state, representing both academic and community pediatrics in both urban and rural areas. With a mission to obtain optimal health and well-being for all children in Alabama, and to provide educational and practice support for its membership so the highest quality of medical care can be achieved, the organization has an active voice on almost every state collaborative effort that serves the health interests of children.

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Statement of the Alabama Psychological Association (aPA) Supporting Gender-Affirming Care for Transgender Youth and Urging Opposition to Alabama SB184/HB266

Alabama SB184/HB266, known as the Alabama Vulnerable Child Compassion and Protection Act, is without scientific merit and is harmful to transgender individuals, impacting their ability to seek and receive gender-affirming care.

The proposed legislation would prevent transgender youth and their families from:

- **Accessing standard medical care** which has been available and practiced for over 25 years throughout our country, is backed by science, and is endorsed by the American Academy of Pediatrics, the American Psychological Association, the Endocrine Society, and the American Medical Association
- **Making joint decisions with medical providers** relative to their individual needs.

The proposed legislation would:

- **Criminalize medical providers,** by making it a Class C Felony, with a prison sentence up to 10 years and fines up to $15,000 to provide standard medical care to transgender youth and families
- **Force nurses, counselors, teachers, principals, or other administrative officials at public or private schools to break trusted confidential relationships with children and gender diverse adolescents** by sharing this sensitive information with parents.

Gender-affirming care saves lives, and access to this care results in better mental health and psychosocial outcomes. Scientific evidence has shown unequivocally that gender affirming care has the potential to reduce mental health difficulties, suicide rates, as well as other negative psychosocial and health outcomes (1). **Gender-affirming care is provided by the medical team in alignment with ethical guidelines and standards of care** (e.g., World Professional Association for Transgender Health). Gender-affirming care is individualized and assists patient and families in defining, exploring, and actualizing their gender identity. **Patients and families lead the way, and the medical team shifts to adapt with the family if there is a change in gender identity.** The care can include psychoeducation about gender and sexuality (appropriate for the individual's age and developmental level), parental and family support, psychosocial interventions and gender affirming medical interventions. S**urgery is not part of gender affirming care for minors in Alabama.** Use of hormones for pubertal suppression is completely reversable and simply pauses puberty to provide the individual with time for their gender identity to develop further. **Gender affirming hormone therapy, which involves the use of masculinizing or feminizing hormones to allow the body to develop physical changes that align with a person's gender identity, is discussed thoroughly with the patient and family, and requires both patient and parent consent prior to treatment.**

Asking licensed professionals to disregard their medical knowledge and scientific evidence and thereby violate their professional ethics (e.g., the Hippocratic Oath) would codify in law a new low point in healthcare in Alabama. In addition, while the proposed legislation appears protective in aim and name (Alabama Vulnerable Child Compassion and Protection Act), it actually harms gender diverse youth by criminalizing all appropriate care and undermining flexibility that is critical for each individual patient to

receive the best possible care for their individual circumstances **Proper treatment saves lives,** by reducing anxiety, depression, and suicide in transgender youth, and with the unified support of their caregivers, families, providers and community, transgender youth can not only survive but thrive.

The proposed legislation would place undue burden on an already taxed mental health care system in Alabama. Increased rates of behavioral concerns, anxiety, depression, and suicide rates were a major concern for adolescents and young adults prior to the pandemic. Suicide is now the second leading cause of death in adolescents ages 15-19 (2). With the onset of the pandemic, rates of mental health disorders increased, symptoms of depression and anxiety doubled (3), and emergency room visits in the U.S. for suspected suicide doubled for adolescent girls compared to the same period in early 2019 (4). Moreover, **Alabama currently ranks 46th in the U.S. regarding access to mental health care for those in need and 51st (last) in mental health workforce availability, with only one mental health provider for every 1,100 people in need (5)**. Our transgender youth are more vulnerable than their peers to depression, anxiety, shame, isolation, and various forms of self-harm including substance use and suicidal behaviors. **Removing access to affirming medical care by taking away treatments transgender youth and families are already receiving puts them for at risk for increased mental health concerns and is a civil rights violation. This legislation could also impact federal funding from the Health and Human Services (HHS), reducing access to needed medical and mental health care for everyone who lives and may seek care in the state of Alabama (6).**

The Alabama Psychological Association stands in solidarity with transgender youth and their families in Alabama and across the United States. We support and stand with our LGBTQ+ colleagues, consumers, families, neighbors, and friends. We will continue to fight for your rights, utilizing our clinical and scientific knowledge to advocate for the right to appropriate healthcare for all persons in Alabama and beyond, without political interference, utilizing policies that advance and protect the rights of everyone, including the LGBTQ+ community.

We strongly oppose Alabama HB266/SB184 and urge all our legislators and Governor Ivey to demonstrate their true compassion for and desire to protect vulnerable youth in our state by opposing this bill as well.

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POLICY STATEMENT Organizational Principles to Guide and Define the Child Health Care System and/or Improve the Health of all Children

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN™

Ensuring Comprehensive Care and Support for Transgender and Gender-Diverse Children and Adolescents

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As a traditionally underserved population that faces numerous health disparities, youth who identify as transgender and gender diverse (TGD) and their families are increasingly presenting to pediatric providers for education, care, and referrals. The need for more formal training, standardized treatment, and research on safety and medical outcomes often leaves providers feeling ill equipped to support and care for patients that identify as TGD and families. In this policy statement, we review relevant concepts and challenges and provide suggestions for pediatric providers that are focused on promoting the health and positive development of youth that identify as TGD while eliminating discrimination and stigma.

INTRODUCTION

In its dedication to the health of all children, the American Academy of Pediatrics (AAP) strives to improve health care access and eliminate disparities for children and teenagers who identify as lesbian, gay, bisexual, transgender, or questioning (LGBTQ) of their sexual or gender identity.[1,2] Despite some advances in public awareness and legal protections, youth who identify as LGBTQ continue to face disparities that stem from multiple sources, including inequitable laws and policies, societal discrimination, and a lack of access to quality health care, including mental health care. Such challenges are often more intense for youth who do not conform to social expectations and norms regarding gender. Pediatric providers are increasingly encountering such youth and their families, who seek medical advice and interventions, yet they may lack the formal training to care for youth that identify as transgender and gender diverse (TGD) and their families.[3]

This policy statement is focused specifically on children and youth that identify as TGD rather than the larger LGBTQ population, providing brief, relevant background on the basis of current available research

abstract

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FROM THE AMERICAN ACADEMY OF PEDIATRICS

TABLE 1 Relevant Terms and Definitions Related to Gender Care

Term	Definition
Sex	An assignment that is made at birth, usually male or female, typically on the basis of external genital anatomy but sometimes on the basis of internal gonads, chromosomes, or hormone levels
Gender identity	A person's deep internal sense of being female, male, a combination of both, somewhere in between, or neither, resulting from a multifaceted interaction of biological traits, environmental factors, self-understanding, and cultural expectations
Gender expression	The external way a person expresses their gender, such as with clothing, hair, mannerisms, activities, or social roles
Gender perception	The way others interpret a person's gender expression
Gender diverse	A term that is used to describe people with gender behaviors, appearances, or identities that are incongruent with those culturally assigned to their birth sex; gender-diverse individuals may refer to themselves with many different terms, such as transgender, nonbinary, genderqueer,[7] gender fluid, gender creative, gender independent, or noncisgender. "Gender diverse" is used to acknowledge and include the vast diversity of gender identities that exists. It replaces the former term, "gender nonconforming," which has a negative and exclusionary connotation.
Transgender	A subset of gender-diverse youth whose gender identity does not match their assigned sex and generally remains persistent, consistent, and insistent over time; the term "transgender" also encompasses many other labels individuals may use to refer to themselves.
Cisgender	A term that is used to describe a person who identifies and expresses a gender that is consistent with the culturally defined norms of the sex they were assigned at birth
Agender	A term that is used to describe a person who does not identify as having a particular gender
Affirmed gender	When a person's true gender identity, or concern about their gender identity, is communicated to and validated from others as authentic
MTF; affirmed female; trans female	Terms that are used to describe individuals who were assigned male sex at birth but who have a gender identity and/or expression that is asserted to be more feminine
FTM; affirmed male; trans male	Terms that are used to describe individuals who were assigned female sex at birth but who have a gender identity and/or expression that is asserted to be more masculine
Gender dysphoria	A clinical symptom that is characterized by a sense of alienation to some or all of the physical characteristics or social roles of one's assigned gender; also, gender dysphoria is the psychiatric diagnosis in the *DSM-5*, which has focus on the distress that stems from the incongruence between one's expressed or experienced (affirmed) gender and the gender assigned at birth.
Gender identity disorder	A psychiatric diagnosis defined previously in the *DSM-IV* (changed to "gender dysphoria" in the *DSM-5*); the primary criteria include a strong, persistent cross-sex identification and significant distress and social impairment. This diagnosis is no longer appropriate for use and may lead to stigma, but the term may be found in older research.
Sexual orientation	A person's sexual identity in relation to the gender(s) to which they are attracted; sexual orientation and gender identity develop separately.

This list is not intended to be all inclusive. The pronouns "they" and "their" are used intentionally to be inclusive rather than the binary pronouns "he" and "she" and "his" and "her." Adapted from Bonifacio HJ, Rosenthal SM. Gender variance and dysphoria in children and adolescents. *Pediatr Clin North Am.* 2015;62(4):1001–1016. Adapted from Vance SR Jr, Ehrensaft D, Rosenthal SM. Psychological and medical care of gender nonconforming youth. *Pediatrics.* 2014;134(6):1184–1192. DSM-5, *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition*; DSM-IV, *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*; FTM, female to male; MTF, male to female.

and expert opinion from clinical and research leaders, which will serve as the basis for recommendations. It is not a comprehensive review of clinical approaches and nuances to pediatric care for children and youth that identify as TGD. Professional understanding of youth that identify as TGD is a rapidly evolving clinical field in which research on appropriate clinical management is limited by insufficient funding.[3,4]

DEFINITIONS

To clarify recommendations and discussions in this policy statement, some definitions are provided. However, brief descriptions of human behavior or identities may not capture nuance in this evolving field. "Sex," or "natal gender," is a label, generally "male" or "female," that is typically assigned at birth on the basis of genetic and anatomic characteristics, such as genital anatomy, chromosomes, and sex hormone levels. Meanwhile, "gender identity" is one's internal sense of who one is, which results from a multifaceted interaction of biological traits, developmental influences, and environmental conditions. It may be male, female, somewhere in between, a combination of both, or neither (ie, not conforming to a binary conceptualization of gender). Self-recognition of gender identity develops over time, much the same way as a child's physical body does. For some people, gender identity can be fluid, shifting in different contexts. "Gender expression" refers to the wide array of ways people display their gender through clothing, hair styles, mannerisms, or social roles. Exploring different ways of expressing gender is common for children and may challenge social expectations. The way others interpret this expression is referred to as "gender perception" (Table 1).[5,6]

These labels may or may not be congruent. The term "cisgender" is used if someone identifies and expresses a gender that is consistent with the culturally defined norms of the sex that was assigned at birth. "Gender diverse" is an umbrella term to describe an ever-evolving array of labels that people may apply when their gender identity, expression, or even perception does not conform

to the norms and stereotypes others expect of their assigned sex. "Transgender" is usually reserved for a subset of such youth whose gender identity does not match their assigned sex and generally remains persistent, consistent, and insistent over time. These terms are not diagnoses; rather, they are personal and often dynamic ways of describing one's own gender experience.

Gender identity is not synonymous with "sexual orientation," which refers to a person's identity in relation to the gender(s) to which they are sexually and romantically attracted. Gender identity and sexual orientation are distinct but interrelated constructs.[8] Therefore, being transgender does not imply a sexual orientation, and people who identify as transgender still identify as straight, gay, bisexual, etc, on the basis of their attractions. (For more information, *The Gender Book*, found at www.thegenderbook.com, is a resource with illustrations that are used to highlight these core terms and concepts.)

EPIDEMIOLOGY

In population-based surveys, questions related to gender identity are rarely asked, which makes it difficult to assess the size and characteristics of the population that is TGD. In the 2014 Behavioral Risk Factor Surveillance System of the Centers for Disease Control and Prevention, only 19 states elected to include optional questions on gender identity. Extrapolation from these data suggests that the US prevalence of adults who identify as transgender or "gender nonconforming" is 0.6% (1.4 million), ranging from 0.3% in North Dakota to 0.8% in Hawaii.[9] On the basis of these data, it has been estimated that 0.7% of youth ages 13 to 17 years (~150 000) identify as transgender.[10] This number is much higher than previous estimates, which were extrapolated from individual states or specialty clinics, and is likely an underestimate given the stigma regarding those who openly identify as transgender and the difficulty in defining "transgender" in a way that is inclusive of all gender-diverse identities.[11]

There have been no large-scale prevalence studies among children and adolescents, and there is no evidence that adult statistics reflect young children or adolescents. In the 2014 Behavioral Risk Factor Surveillance System, those 18 to 24 years of age were more likely than older age groups to identify as transgender (0.7%).[9] Children report being aware of gender incongruence at young ages. Children who later identify as TGD report first having recognized their gender as "different" at an average age of 8.5 years; however, they did not disclose such feelings until an average of 10 years later.[12]

MENTAL HEALTH IMPLICATIONS

Adolescents and adults who identify as transgender have high rates of depression, anxiety, eating disorders, self-harm, and suicide.[13–20] Evidence suggests that an identity of TGD has an increased prevalence among individuals with autism spectrum disorder, but this association is not yet well understood.[21,22] In 1 retrospective cohort study, 56% of youth who identified as transgender reported previous suicidal ideation, and 31% reported a previous suicide attempt, compared with 20% and 11% among matched youth who identified as cisgender, respectively.[13] Some youth who identify as TGD also experience gender dysphoria, which is a specific diagnosis given to those who experience impairment in peer and/or family relationships, school performance, or other aspects of their life as a consequence of the incongruence between their assigned sex and their gender identity.[23]

There is no evidence that risk for mental illness is inherently attributable to one's identity of TGD. Rather, it is believed to be multifactorial, stemming from an internal conflict between one's appearance and identity, limited availability of mental health services, low access to health care providers with expertise in caring for youth who identify as TGD, discrimination, stigma, and social rejection.[24] This was affirmed by the American Psychological Association in 2008[25] (with practice guidelines released in 2015[8]) and the American Psychiatric Association, which made the following statement in 2012:

> *Being transgender or gender variant implies no impairment in judgment, stability, reliability, or general social or vocational capabilities; however, these individuals often experience discrimination due to a lack of civil rights protections for their gender identity or expression.… [Such] discrimination and lack of equal civil rights is damaging to the mental health of transgender and gender variant individuals.*[26]

Youth who identify as TGD often confront stigma and discrimination, which contribute to feelings of rejection and isolation that can adversely affect physical and emotional well-being. For example, many youth believe that they must hide their gender identity and expression to avoid bullying, harassment, or victimization. Youth who identify as TGD experience disproportionately high rates of homelessness, physical violence (at home and in the community), substance abuse, and high-risk sexual behaviors.[5,6,12,27–31] Among the 3 million HIV testing events that were reported in 2015, the highest percentages of new infections were among women who identified as transgender[32] and were also at particular risk for not knowing their HIV status.[30]

GENDER-AFFIRMATIVE CARE

In a gender-affirmative care model (GACM), pediatric providers offer developmentally appropriate care that is oriented toward understanding and appreciating the youth's gender experience. A strong, nonjudgmental partnership with youth and their families can facilitate exploration of complicated emotions and gender-diverse expressions while allowing questions and concerns to be raised in a supportive environment.[5] In a GACM, the following messages are conveyed:

- transgender identities and diverse gender expressions do not constitute a mental disorder;
- variations in gender identity and expression are normal aspects of human diversity, and binary definitions of gender do not always reflect emerging gender identities;
- gender identity evolves as an interplay of biology, development, socialization, and culture; and
- if a mental health issue exists, it most often stems from stigma and negative experiences rather than being intrinsic to the child.[27,33]

The GACM is best facilitated through the integration of medical, mental health, and social services, including specific resources and supports for parents and families.[24] Providers work together to destigmatize gender variance, promote the child's self-worth, facilitate access to care, educate families, and advocate for safer community spaces where children are free to develop and explore their gender.[5] A specialized gender-affirmative therapist, when available, may be an asset in helping children and their families build skills for dealing with gender-based stigma, address symptoms of anxiety or depression, and reinforce the child's overall resiliency.[34,35] There is a limited but growing body of evidence that suggests that using an integrated affirmative model results in young people having fewer mental health concerns whether they ultimately identify as transgender.[24,36,37]

In contrast, "conversion" or "reparative" treatment models are used to prevent children and adolescents from identifying as transgender or to dissuade them from exhibiting gender-diverse expressions. The Substance Abuse and Mental Health Services Administration has concluded that any therapeutic intervention with the goal of changing a youth's gender expression or identity is inappropriate.[33] Reparative approaches have been proven to be not only unsuccessful[38] but also deleterious and are considered outside the mainstream of traditional medical practice.[29,39–42] The AAP described reparative approaches as "unfair and deceptive."[43] At the time of this writing,* conversion therapy was banned by executive regulation in New York and by legislative statutes in 9 other states as well as the District of Columbia.[44]

Pediatric providers have an essential role in assessing gender concerns and providing evidence-based information to assist youth and families in medical decision-making. Not doing so can prolong or exacerbate gender dysphoria and contribute to abuse and stigmatization.[35] If a pediatric provider does not feel prepared to address gender concerns when they occur, then referral to a pediatric or mental health provider with more expertise is appropriate. There is little research on communication and efficacy with transfers in care for youth who identify as TGD, particularly from pediatric to adult providers.

DEVELOPMENTAL CONSIDERATIONS

Acknowledging that the capacity for emerging abstract thinking in childhood is important to conceptualize and reflect on identity, gender-affirmation guidelines are being focused on individually tailored interventions on the basis of the physical and cognitive development of youth who identify as TGD.[45] Accordingly, research substantiates that children who are prepubertal and assert an identity of TGD know their gender as clearly and as consistently as their developmentally equivalent peers who identify as cisgender and benefit from the same level of social acceptance.[46] This developmental approach to gender affirmation is in contrast to the outdated approach in which a child's gender-diverse assertions are held as "possibly true" until an arbitrary age (often after pubertal onset) when they can be considered valid, an approach that authors of the literature have termed "watchful waiting." This outdated approach does not serve the child because critical support is withheld. Watchful waiting is based on binary notions of gender in which gender diversity and fluidity is pathologized; in watchful waiting, it is also assumed that notions of gender identity become fixed at a certain age. The approach is also influenced by a group of early studies with validity concerns, methodologic flaws, and limited follow-up on children who identified as TGD and, by adolescence, did not seek further treatment ("desisters").[45,47] More robust and current research suggests that, rather than focusing on who a child will become, valuing them for who they are, even at a young age, fosters secure attachment and resilience, not only for the child but also for the whole family.[5,45,48,49]

* For more information regarding state-specific laws, please contact the AAP Division of State Government Affairs at stgov@ aap.org.

MEDICAL MANAGEMENT

Pediatric primary care providers are in a unique position to routinely inquire about gender development in children and adolescents as part of recommended well-child visits[50] and to be a reliable source of validation, support, and reassurance. They are often the first provider to be aware that a child may not identify as cisgender or that there may be distress related to a gender-diverse identity. The best way to approach gender with patients is to inquire directly and nonjudgmentally about their experience and feelings before applying any labels.[27,51]

Many medical interventions can be offered to youth who identify as TGD and their families. The decision of whether and when to initiate gender-affirmative treatment is personal and involves careful consideration of risks, benefits, and other factors unique to each patient and family. Many protocols suggest that clinical assessment of youth who identify as TGD is ideally conducted on an ongoing basis in the setting of a collaborative, multidisciplinary approach, which, in addition to the patient and family, may include the pediatric provider, a mental health provider (preferably with expertise in caring for youth who identify as TGD), social and legal supports, and a pediatric endocrinologist or adolescent-medicine gender specialist, if available.[6,28] There is no prescribed path, sequence, or end point. Providers can make every effort to be aware of the influence of their own biases. The medical options also vary depending on pubertal and developmental progression.

Clinical Setting

In the past year, 1 in 4 adults who identified as transgender avoided a necessary doctor's visit because of fear of being mistreated.[31] All clinical office staff have a role in affirming a patient's gender identity. Making flyers available or displaying posters related to LGBTQ health issues, including information for children who identify as TGD and families, reveals inclusivity and awareness. Generally, patients who identify as TGD feel most comfortable when they have access to a gender-neutral restroom. Diversity training that encompasses sensitivity when caring for youth who identify as TGD and their families can be helpful in educating clinical and administrative staff. A patient-asserted name and pronouns are used by staff and are ideally reflected in the electronic medical record without creating duplicate charts.[52,53] The US Centers for Medicare and Medicaid Services and the National Coordinator for Health Information Technology require all electronic health record systems certified under the Meaningful Use incentive program to have the capacity to confidentially collect information on gender identity.[54,55] Explaining and maintaining confidentiality procedures promotes openness and trust, particularly with youth who identify as LGBTQ.[1] Maintaining a safe clinical space can provide at least 1 consistent, protective refuge for patients and families, allowing authentic gender expression and exploration that builds resiliency.

Pubertal Suppression

Gonadotrophin-releasing hormones have been used to delay puberty since the 1980s for central precocious puberty.[56] These reversible treatments can also be used in adolescents who experience gender dysphoria to prevent development of secondary sex characteristics and provide time up until 16 years of age for the individual and the family to explore gender identity, access psychosocial supports, develop coping skills, and further define appropriate treatment goals. If pubertal suppression treatment is suspended, then endogenous puberty will resume.[20,57,58]

Often, pubertal suppression creates an opportunity to reduce distress that may occur with the development of secondary sexual characteristics and allow for gender-affirming care, including mental health support for the adolescent and the family. It reduces the need for later surgery because physical changes that are otherwise irreversible (protrusion of the Adam's apple, male pattern baldness, voice change, breast growth, etc) are prevented. The available data reveal that pubertal suppression in children who identify as TGD generally leads to improved psychological functioning in adolescence and young adulthood.[20,57–59]

Pubertal suppression is not without risks. Delaying puberty beyond one's peers can also be stressful and can lead to lower self-esteem and increased risk taking.[60] Some experts believe that genital underdevelopment may limit some potential reconstructive options.[61] Research on long-term risks, particularly in terms of bone metabolism[62] and fertility,[63] is currently limited and provides varied results.[57,64,65] Families often look to pediatric providers for help in considering whether pubertal suppression is indicated in the context of their child's overall well-being as gender diverse.

Gender Affirmation

As youth who identify as TGD reflect on and evaluate their gender identity, various interventions may be considered to better align their gender expression with their underlying identity. This process of reflection, acceptance, and, for some, intervention is known as "gender affirmation." It was formerly referred to as "transitioning," but many view the process as an affirmation and acceptance of who they have always been rather than a transition

TABLE 2 The Process of Gender Affirmation May Include ≥1 of the Following Components

Component	Definition	General Age Range[a]	Reversibility[a]
Social affirmation	Adopting gender-affirming hairstyles, clothing, name, gender pronouns, and restrooms and other facilities	Any	Reversible
Puberty blockers	Gonadotropin-releasing hormone analogues, such as leuprolide and histrelin	During puberty (Tanner stage 2–5)[b]	Reversible[c]
Cross-sex hormone therapy	Testosterone (for those who were assigned female at birth and are masculinizing); estrogen plus androgen inhibitor (for those who were assigned male at birth and are feminizing)	Early adolescence onward	Partially reversible (skin texture, muscle mass, and fat deposition); irreversible once developed (testosterone: Adam's apple protrusion, voice changes, and male pattern baldness; estrogen: breast development); unknown reversibility (effect on fertility)
Gender-affirming surgeries	"Top" surgery (to create a male-typical chest shape or enhance breasts); "bottom" surgery (surgery on genitals or reproductive organs); facial feminization and other procedures	Typically adults (adolescents on case-by-case basis[d])	Not reversible
Legal affirmation	Changing gender and name recorded on birth certificate, school records, and other documents	Any	Reversible

[a] Note that the provided age range and reversibility is based on the little data that are currently available.
[b] There is limited benefit to starting gonadotropin-releasing hormone after Tanner stage 5 for pubertal suppression. However, when cross-sex hormones are initiated with a gradually increasing schedule, the initial levels are often not high enough to suppress endogenous sex hormone secretion. Therefore, gonadotropin-releasing hormone may be continued in accordance with the Endocrine Society Guidelines.[68]
[c] The effect of sustained puberty suppression on fertility is unknown. Pubertal suppression can be, and often is indicated to be, followed by cross-sex hormone treatment. However, when cross-sex hormones are initiated without endogenous hormones, then fertility may be decreased.[68]
[d] Eligibility criteria for gender-affirmative surgical interventions among adolescents are not clearly defined between established protocols and practice. When applicable, eligibility is usually determined on a case-by-case basis with the adolescent and the family along with input from medical, mental health, and surgical providers.[68–71]

from 1 gender identity to another. Accordingly, some people who have gone through the process prefer to call themselves "affirmed females, males, etc" (or just "females, males, etc"), rather than using the prefix "trans-." Gender affirmation is also used to acknowledge that some individuals who identify as TGD may feel affirmed in their gender without pursuing medical or surgical interventions.[7,66]

Supportive involvement of parents and family is associated with better mental and physical health outcomes.[67] Gender affirmation among adolescents with gender dysphoria often reduces the emphasis on gender in their lives, allowing them to attend to other developmental tasks, such as academic success, relationship building, and future-oriented planning.[64] Most protocols for gender-affirming interventions incorporate World Professional Association of Transgender Health[35] and Endocrine Society[68] recommendations and include ≥1 of the following elements (Table 2):

1. Social Affirmation: This is a reversible intervention in which children and adolescents express partially or completely in their asserted gender identity by adapting hairstyle, clothing, pronouns, name, etc. Children who identify as transgender and socially affirm and are supported in their asserted gender show no increase in depression and only minimal (clinically insignificant) increases in anxiety compared with age-matched averages.[48] Social affirmation can be complicated given the wide range of social interactions children have (eg, extended families, peers, school, community, etc). There is little guidance on the best approach (eg, all at once, gradual, creating new social networks, or affirming within existing networks, etc). Pediatric providers can best support families by anticipating and discussing such complexity proactively, either in their own practice or through enlisting a qualified mental health provider.

2. Legal Affirmation: Elements of a social affirmation, such as a name and gender marker, become official on legal documents, such as birth certificates, passports, identification cards, school documents, etc. The processes for making these changes depend on state laws and may require specific documentation from pediatric providers.

3. Medical Affirmation: This is the process of using cross-sex hormones to allow adolescents who have initiated puberty to develop secondary sex characteristics of the opposite biological sex. Some changes are partially reversible if hormones are stopped, but others become

irreversible once they are fully developed (Table 2).

4. Surgical Affirmation: Surgical approaches may be used to feminize or masculinize features, such as hair distribution, chest, or genitalia, and may include removal of internal organs, such as ovaries or the uterus (affecting fertility). These changes are irreversible. Although current protocols typically reserve surgical interventions for adults,[35,68] they are occasionally pursued during adolescence on a case-by-case basis, considering the necessity and benefit to the adolescent's overall health and often including multidisciplinary input from medical, mental health, and surgical providers as well as from the adolescent and family.[69–71]

For some youth who identify as TGD whose natal gender is female, menstruation, breakthrough bleeding, and dysmenorrhea can lead to significant distress before or during gender affirmation. The American College of Obstetrics and Gynecology suggests that, although limited data are available to outline management, menstruation can be managed without exogenous estrogens by using a progesterone-only pill, a medroxyprogesterone acetate shot, or a progesterone-containing intrauterine or implantable device.[72] If estrogen can be tolerated, oral contraceptives that contain both progesterone and estrogen are more effective at suppressing menses.[73] The Endocrine Society guidelines also suggest that gonadotrophin-releasing hormones can be used for menstrual suppression before the anticipated initiation of testosterone or in combination with testosterone for breakthrough bleeding (enables phenotypic masculinization at a lower dose than if testosterone is used alone).[68] Masculinizing hormones in natal female patients may lead to a cessation of menses, but unplanned pregnancies have been reported, which emphasizes the need for ongoing contraceptive counseling with youth who identify as TGD.[72]

HEALTH DISPARITIES

In addition to societal challenges, youth who identify as TGD face several barriers within the health care system, especially regarding access to care. In 2015, a focus group of youth who identified as transgender in Seattle, Washington, revealed 4 problematic areas related to health care:

1. safety issues, including the lack of safe clinical environments and fear of discrimination by providers;
2. poor access to physical health services, including testing for sexually transmitted infections;
3. inadequate resources to address mental health concerns; and
4. lack of continuity with providers.[74]

This study reveals the obstacles many youth who identify as TGD face in accessing essential services, including the limited supply of appropriately trained medical and psychological providers, fertility options, and insurance coverage denials for gender-related treatments.[74]

Insurance denials for services related to the care of patients who identify as TGD are a significant barrier. Although the Office for Civil Rights of the US Department of Health and Human Services explicitly stated in 2012 that the nondiscrimination provision in the Patient Protection and Affordable Care Act includes people who identify as gender diverse,[75,76] insurance claims for gender affirmation, particularly among youth who identify as TGD, are frequently denied.[54,77] In 1 study, it was found that approximately 25% of individuals who identified as transgender were denied insurance coverage because of being transgender.[31] The burden of covering medical expenses that are not covered by insurance can be financially devastating, and even when expenses are covered, families describe high levels of stress in navigating and submitting claims appropriately.[78] In 2012, a large gender center in Boston, Massachusetts, reported that most young patients who identified as transgender and were deemed appropriate candidates for recommended gender care were unable to obtain it because of such denials, which were based on the premise that gender dysphoria was a mental disorder, not a physical one, and that treatment was not medically or surgically necessary.[24] This practice not only contributes to stigma, prolonged gender dysphoria, and poor mental health outcomes,[77] but it may also lead patients to seek nonmedically supervised treatments that are potentially dangerous.[24] Furthermore, insurance denials can reinforce a socioeconomic divide between those who can finance the high costs of uncovered care and those who cannot.[24,77]

The transgender youth group in Seattle likely reflected the larger TGD population when they described how obstacles adversely affect self-esteem and contribute to the perception that they are undervalued by society and the health care system.[74,77] Professional medical associations, including the AAP, are increasingly calling for equity in health care provisions regardless of gender identity or expression.[1,8,23,72] There is a critical need for investments in research on the prevalence, disparities, biological underpinnings, and standards of care relating to gender-diverse populations. Pediatric providers who work with state government and insurance officials can play an essential role in advocating for

stronger nondiscrimination policies and improved coverage.

There is a lack of quality research on the experience of youth of color who identify as transgender. One theory suggests that the intersection of racism, transphobia, and sexism may result in the extreme marginalization that is experienced among many women of color who identify as transgender,[79] including rejection from their family and dropping out of school at younger ages (often in the setting of rigid religious beliefs regarding gender),[80] increased levels of violence and body objectification,[81] 3 times the risk of poverty compared with the general population,[31] and the highest prevalence of HIV compared with other risk groups (estimated as high as 56.3% in 1 meta-analysis).[30] One model suggests that pervasive stigma and oppression can be associated with psychological distress (anxiety, depression, and suicide) and adoption of risk behaviors by such youth to obtain a sense of validation toward their complex identities.[79]

FAMILY ACCEPTANCE

Research increasingly suggests that familial acceptance or rejection ultimately has little influence on the gender identity of youth; however, it may profoundly affect young people's ability to openly discuss or disclose concerns about their identity. Suppressing such concerns can affect mental health.[82] Families often find it hard to understand and accept their child's gender-diverse traits because of personal beliefs, social pressure, and stigma.[49,83] Legitimate fears may exist for their child's welfare, safety, and acceptance that pediatric providers need to appreciate and address. Families can be encouraged to communicate their concerns and questions. Unacknowledged concerns can contribute to shame and hesitation in regard to offering support and understanding,[84] which is essential for the child's self-esteem, social involvement, and overall health as TGD.[48,85–87] Some caution has been expressed that unquestioning acceptance per se may not best serve questioning youth or their families. Instead, psychological evidence suggests that the most benefit comes when family members and youth are supported and encouraged to engage in reflective perspective taking and validate their own and the other's thoughts and feelings despite divergent views.[49,82]

In this regard, suicide attempt rates among 433 adolescents in Ontario who identified as "trans" were 4% among those with strongly supportive parents and as high as 60% among those whose parents were not supportive.[85] Adolescents who identify as transgender and endorse at least 1 supportive person in their life report significantly less distress than those who only experience rejection. In communities with high levels of support, it was found that nonsupportive families tended to increase their support over time, leading to dramatic improvement in mental health outcomes among their children who identified as transgender.[88]

Pediatric providers can create a safe environment for parents and families to better understand and listen to the needs of their children while receiving reassurance and education.[83] It is often appropriate to assist the child in understanding the parents' concerns as well. Despite expectations by some youth with transgender identity for immediate acceptance after "coming out," family members often proceed through a process of becoming more comfortable and understanding of the youth's gender identity, thoughts, and feelings. One model suggests that the process resembles grieving, wherein the family separates from their expectations for their child to embrace a new reality. This process may proceed through stages of shock, denial, anger, feelings of betrayal, fear, self-discovery, and pride.[89] The amount of time spent in any of these stages and the overall pace varies widely. Many family members also struggle as they are pushed to reflect on their own gender experience and assumptions throughout this process. In some situations, youth who identify as TGD may be at risk for internalizing the difficult emotions that family members may be experiencing. In these cases, individual and group therapy for the family members may be helpful.[49,78]

Family dynamics can be complex, involving disagreement among legal guardians or between guardians and their children, which may affect the ability to obtain consent for any medical management or interventions. Even in states where minors may access care without parental consent for mental health services, contraception, and sexually transmitted infections, parental or guardian consent is required for hormonal and surgical care of patients who identify as TGD.[72,90] Some families may take issue with providers who address gender concerns or offer gender-affirming care. In rare cases, a family may deny access to care that raises concerns about the youth's welfare and safety; in those cases, additional legal or ethical support may be useful to consider. In such rare situations, pediatric providers may want to familiarize themselves with relevant local consent laws and maintain their primary responsibility for the welfare of the child.

SAFE SCHOOLS AND COMMUNITIES

Youth who identify as TGD are becoming more visible because gender-diverse expression is increasingly admissible in the media, on social media, and in schools and communities. Regardless of whether a youth with a gender-diverse

identity ultimately identifies as transgender, challenges exist in nearly every social context, from lack of understanding to outright rejection, isolation, discrimination, and victimization. In the US Transgender Survey of nearly 28 000 respondents, it was found that among those who were out as or perceived to be TGD between kindergarten and eighth grade, 54% were verbally harassed, 24% were physically assaulted, and 13% were sexually assaulted; 17% left school because of maltreatment.[31] Education and advocacy from the medical community on the importance of safe schools for youth who identify as TGD can have a significant effect.

At the time of this writing,* only 18 states and the District of Columbia had laws that prohibited discrimination based on gender expression when it comes to employment, housing, public accommodations, and insurance benefits. Over 200 US cities have such legislation. In addition to basic protections, many youth who identify as TGD also have to navigate legal obstacles when it comes to legally changing their name and/or gender marker.[54] In addition to advocating and working with policy makers to promote equal protections for youth who identify as TGD, pediatric providers can play an important role by developing a familiarity with local laws and organizations that provide social work and legal assistance to youth who identify as TGD and their families.

School environments play a significant role in the social and emotional development of children. Every child has a right to feel safe and respected at school, but for youth who identify as TGD, this can be challenging. Nearly every aspect of school life may present safety concerns and require negotiations regarding their gender expression, including name/pronoun use, use of bathrooms and locker rooms, sports teams, dances and activities, overnight activities, and even peer groups. Conflicts in any of these areas can quickly escalate beyond the school's control to larger debates among the community and even on a national stage.

The formerly known Gay, Lesbian, and Straight Education Network (GLSEN), an advocacy organization for youth who identify as LGBTQ, conducts an annual national survey to measure LGBTQ well-being in US schools. In 2015, students who identified as LGBTQ reported high rates of being discouraged from participation in extracurricular activities. One in 5 students who identified as LGBTQ reported being hindered from forming or participating in a club to support lesbian, gay, bisexual, or transgender students (eg, a gay straight alliance, now often referred to as a genders and sexualities alliance) despite such clubs at schools being associated with decreased reports of negative remarks about sexual orientation or gender expression, increased feelings of safety and connectedness at school, and lower levels of victimization. In addition, >20% of students who identified as LGBTQ reported being blocked from writing about LGBTQ issues in school yearbooks or school newspapers or being prevented or discouraged by coaches and school staff from participating in sports because of their sexual orientation or gender expression.[91]

One strategy to prevent conflict is to proactively support policies and protections that promote inclusion and safety of all students. However, such policies are far from consistent across districts. In 2015, GLSEN found that 43% of children who identified as LGBTQ reported feeling unsafe at school because of their gender expression, but only 6% reported that their school had official policies to support youth who identified as TGD, and only 11% reported that their school's antibullying policies had specific protections for gender expression.[91] Consequently, more than half of the students who identified as transgender in the study were prevented from using the bathroom, names, or pronouns that aligned with their asserted gender at school. A lack of explicit policies that protected youth who identified as TGD was associated with increased reported victimization, with more than half of students who identified as LGBTQ reporting verbal harassment because of their gender expression. Educators and school administrators play an essential role in advocating for and enforcing such policies. GLSEN found that when students recognized actions to reduce gender-based harassment, both students who identified as transgender and cisgender reported a greater connection to staff and feelings of safety.[91] In another study, schools were open to education regarding gender diversity and were willing to implement policies when they were supported by external agencies, such as medical professionals.[92]

Academic content plays an important role in building a safe school environment as well. The 2015 GLSEN survey revealed that when positive representations of people who identified as LGBTQ were included in the curriculum, students who identified as LGBTQ reported less hostile school environments, less victimization and greater feelings of safety, fewer school absences because of feeling unsafe, greater feelings of connectedness to their school

* For more information regarding state-specific laws, please contact the AAP Division of State Government Affairs at stgov@ aap.org.

community, and an increased interest in high school graduation and postsecondary education.[91] At the time of this writing,* 8 states had laws that explicitly forbade teachers from even discussing LGBTQ issues.[54]

MEDICAL EDUCATION

One of the most important ways to promote high-quality health care for youth who identify as TGD and their families is increasing the knowledge base and clinical experience of pediatric providers in providing culturally competent care to such populations, as recommended by the recently released guidelines by the Association of American Medical Colleges.[93] This begins with the medical school curriculum in areas such as human development, sexual health, endocrinology, pediatrics, and psychiatry. In a 2009–2010 survey of US medical schools, it was found that the median number of hours dedicated to LGBTQ health was 5, with one-third of US medical schools reporting no LGBTQ curriculum during the clinical years.[94]

During residency training, there is potential for gender diversity to be emphasized in core rotations, especially in pediatrics, psychiatry, family medicine, and obstetrics and gynecology. Awareness could be promoted through the inclusion of topics relevant to caring for children who identify as TGD in the list of core competencies published by the American Board of Pediatrics, certifying examinations, and relevant study materials. Continuing education and maintenance of certification activities can include topics relevant to TGD populations as well.

* For more information regarding state-specific laws, please contact the AAP Division of State Government Affairs at stgov@ aap.org.

RECOMMENDATIONS

The AAP works toward all children and adolescents, regardless of gender identity or expression, receiving care to promote optimal physical, mental, and social well-being. Any discrimination based on gender identity or expression, real or perceived, is damaging to the socioemotional health of children, families, and society. In particular, the AAP recommends the following:

1. that youth who identify as TGD have access to comprehensive, gender-affirming, and developmentally appropriate health care that is provided in a safe and inclusive clinical space;
2. that family-based therapy and support be available to recognize and respond to the emotional and mental health needs of parents, caregivers, and siblings of youth who identify as TGD;
3. that electronic health records, billing systems, patient-centered notification systems, and clinical research be designed to respect the asserted gender identity of each patient while maintaining confidentiality and avoiding duplicate charts;
4. that insurance plans offer coverage for health care that is specific to the needs of youth who identify as TGD, including coverage for medical, psychological, and, when indicated, surgical gender-affirming interventions;
5. that provider education, including medical school, residency, and continuing education, integrate core competencies on the emotional and physical health needs and best practices for the care of youth who identify as TGD and their families;
6. that pediatricians have a role in advocating for, educating, and developing liaison relationships with school districts and other community organizations to promote acceptance and inclusion of all children without fear of harassment, exclusion, or bullying because of gender expression;
7. that pediatricians have a role in advocating for policies and laws that protect youth who identify as TGD from discrimination and violence;
8. that the health care workforce protects diversity by offering equal employment opportunities and workplace protections, regardless of gender identity or expression; and
9. that the medical field and federal government prioritize research that is dedicated to improving the quality of evidence-based care for youth who identify as TGD.

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ABBREVIATIONS

AAP: American Academy of Pediatrics
GACM: gender-affirmative care model
GLSEN: Gay, Lesbian, and Straight Education Network
LGBTQ: lesbian, gay, bisexual, transgender, or questioning
TGD: transgender and gender diverse

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Young Adult Psychological Outcome After Puberty Suppression and Gender Reassignment

WHAT'S KNOWN ON THIS SUBJECT: Puberty suppression has rapidly become part of the standard clinical management protocols for transgender adolescents. To date, there is only limited evidence for the long-term effectiveness of this approach after gender reassignment (cross-sex hormones and surgery).

WHAT THIS STUDY ADDS: In young adulthood, gender dysphoria had resolved, psychological functioning had steadily improved, and well-being was comparable to same-age peers. The clinical protocol including puberty suppression had provided these formerly gender-dysphoric youth the opportunity to develop into well-functioning young adults.

abstract

BACKGROUND: In recent years, puberty suppression by means of gonadotropin-releasing hormone analogs has become accepted in clinical management of adolescents who have gender dysphoria (GD). The current study is the first longer-term longitudinal evaluation of the effectiveness of this approach.

METHODS: A total of 55 young transgender adults (22 transwomen and 33 transmen) who had received puberty suppression during adolescence were assessed 3 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 1 year after gender reassignment surgery (mean age, 20.7 years). Psychological functioning (GD, body image, global functioning, depression, anxiety, emotional and behavioral problems) and objective (social and educational/professional functioning) and subjective (quality of life, satisfaction with life and happiness) well-being were investigated.

RESULTS: After gender reassignment, in young adulthood, the GD was alleviated and psychological functioning had steadily improved. Well-being was similar to or better than same-age young adults from the general population. Improvements in psychological functioning were positively correlated with postsurgical subjective well-being.

CONCLUSIONS: A clinical protocol of a multidisciplinary team with mental health professionals, physicians, and surgeons, including puberty suppression, followed by cross-sex hormones and gender reassignment surgery, provides gender dysphoric youth who seek gender reassignment from early puberty on, the opportunity to develop into well-functioning young adults. *Pediatrics* 2014;134:696–704

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KEY WORDS

gender dysphoria, transgenderism, adolescents, psychological functioning, puberty suppression, longitudinal outcomes

ABBREVIATIONS

ABCL—Adult Behavior Checklist
ASR—Adult Self-Report
BDI—Beck Depression Inventory
BIS—Body Image Scale
CBCL—Child Behavior Checklist
CGAS—Children's Global Assessment Scale
CSH—cross-sex hormones
GD—gender dysphoria
GnRHa—gonadotropin-releasing hormone analogs
GRS—gender reassignment surgery
SHS—Subjective Happiness Scale
STAI—Spielberger's Trait Anxiety Scale
SWLS—Satisfaction With Life Scale
TPI—Spielberger's Trait Anger Scale
UGDS—Utrecht Gender Dysphoria Scale
YSR—Youth Self-Report

Dr de Vries conceptualized the study, clinically assessed the participants, drafted the initial manuscript, and reviewed and revised the manuscript; Dr McGuire conceptualized the study, planned and carried out the analyses, assisted in drafting the initial manuscript, and reviewed and revised the manuscript; Dr Steensma conceptualized the study, coordinated and supervised data collection, and reviewed and revised the manuscript; Dr Wagenaar coordinated and invited participants for assessments and reviewed and revised the manuscript; Drs Doreleijers and Cohen-Kettenis conceptualized the study and reviewed and revised the manuscript; and all authors approved the final manuscript as submitted.

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(Continued on last page)

Transgender adolescents experience an incongruence between their assigned gender and their experienced gender and may meet the Diagnostic and Statistical Manual of Mental Disorders 5 criteria for gender dysphoria (GD).[1] Fifteen years ago, pubertal delay was introduced as an aid in the treatment of a gender dysphoric adolescent.[2] Although not without debate, blocking pubertal development has rapidly become more widely available[3–7] and is now part of the clinical management guidelines for GD.[8–12]

Gonadotropin-releasing hormone analogs (GnRHa) are a putatively fully reversible[13] medical intervention intended to relieve distress that gender dysphoric adolescents experience when their secondary sex characteristics develop. A protocol designed by Cohen-Kettenis and Delemarre-van de Waal[14] (sometimes referred to as "the Dutch model")[4,7] considers adolescents, after a comprehensive psychological evaluation with many sessions over a longer period of time, eligible for puberty suppression, cross-sex hormones (CSH), and gender reassignment surgery (GRS) at the respective ages of 12, 16, and 18 years when there is a history of GD; no psychosocial problems interfering with assessment or treatment, for example, treatment might be postponed because of continuous moving from 1 institution to another or repeated psychiatric crises; adequate family or other support; and good comprehension of the impact of medical interventions.[12] Puberty suppression is only started after the adolescent actually enters the first stages of puberty (Tanner stages 2–3), because although in most prepubertal children GD will desist, onset of puberty serves as a critical diagnostic stage, because the likelihood that GD will persist into adulthood is much higher in adolescence than in the case of childhood GD.[15,16]

Despite the apparent usefulness of puberty suppression, there is only limited evidence available about the effectiveness of this approach. In the first cohort of adolescents who received GnRHa, we demonstrated an improvement in several domains of psychological functioning after, on average, 2 years of puberty suppression while GD remained unchanged.[16] The current study is a longer-term evaluation of the same cohort, on average, 6 years after their initial presentation at the gender identity clinic. This time, we were not only interested in psychological functioning and GD, but added as important outcome measures objective and subjective well-being (often referred to as "quality of life"), that is, the individuals' social life circumstances and their perceptions of satisfaction with life and happiness.[17–19] After all, treatment cannot be considered a success if GD resolves without young adults reporting they are healthy, content with their lives, and in a position to make a good start with their adult professional and personal lives.[20] Because various studies show that transgender youth may present with psychosocial problems,[21,22] a clinical approach that includes both medical (puberty suppression) and mental health support (regular sessions, treatment when necessary, see Cohen-Kettenis et al[12]) aims to improve long-term well-being in all respects.

In the present longitudinal study, 3 primary research questions are addressed. Do gender dysphoric youth improve over time with medical intervention consisting of GnRHa, CSH, and GRS? After gender reassignment, how satisfied are young adults with their treatment and how do they evaluate their objective and subjective well-being? Finally, do young people who report relatively greater gains in psychological functioning also report a higher subjective well-being after gender reassignment?

METHODS

Participants and Procedure

Participants included 55 young adults (22 transwomen [natal males who have a female gender identity] and 33 transmen [natal females who have a male gender identity]) of the first cohort of 70 adolescents who had GD who were prescribed puberty suppression at the Center of Expertise on Gender Dysphoria of the VU University Medical Center and continued with GRS between 2004 and 2011. These adolescents belonged to a group of 196 consecutively referred adolescents between 2000 and 2008, of whom 140 had been considered eligible for medical intervention and 111 were prescribed puberty suppression (see de Vries et al[16]). The young adults were invited between 2008 and 2012, when they were at least 1 year past their GRS (vaginoplasty for transwomen, mastectomy and hysterectomy with ovariectomy for transmen; many transmen chose not to undergo a phalloplasty or were on a long waiting list). Nonparticipation (n = 15, 11 transwomen and 4 transmen) was attributable to not being 1 year postsurgical yet (n = 6), refusal (n = 2), failure to return questionnaires (n = 2), being medically not eligible (eg, uncontrolled diabetes, morbid obesity) for surgery (n = 3), dropping out of care (n = 1), and 1 transfemale died after her vaginoplasty owing to a postsurgical necrotizing fasciitis. Between the 55 participants and the 15 nonparticipating individuals, Student's t tests revealed no significant differences on any of the pretreatment variables. A similar lack of differences was found between the 40 participants who had complete data and the 15 who were missing some data.

Participants were assessed 3 times: pre-treatment (T0, at intake), during treatment (T1, at initiation of CSH), and post-treatment (T2, 1 year after GRS). See Table 1 for age at the different time points. The VU University Medical Center medical ethics committee approved the study, and all participants gave informed consent.

TABLE 1 Age at Different Treatment Milestones and Intelligence by Gender

Variable	All Participants[a] (*N* = 55)		Transwomen (Natal Males) (*N* = 22)	Transmen (Natal Females) (*N* = 33)
Age, y	Mean (SD)	Range	Mean (SD)	Mean (SD)
At assessment PreT	13.6 (1.9)	11.1–17.0	13.6 (1.8)	13.7 (2.0)
At start of GnRHa	14.8 (1.8)	11.5–18.5	14.8 (2.0)	14.9 (1.9)
At start of CSH	16.7 (1.1)	13.9–19.0	16.5 (1.3)	16.8 (1.0)
At GRS	19.2 (0.9)	18.0–21.3	19.6 (0.9)	19.0 (0.8)
At assessment PostT	20.7 (1.0)	19.5–22.8	21.0 (1.1)	20.5 (0.8)
Full-scale intelligence[b]	99.0 (14.3)	70–128	97.8 (14.2)	100.4 (14.3)

PostT, post-treatment; PreT, pre-treatment.

[a] Comparisons between those who had complete data (*n* = 40) and those who had missing data on the CBCL/ABCL (*n* = 15) reveal no significant differences between the groups in age at any point in the study or in natal sex.

[b] WISC-R, the WISC-III, or the WAIS-III at first assessment, depending on age and time.[45–47]

Measures

Time was the predominate independent variable. Other demographic characteristics were incorporated in some models, including, age, natal sex, Full Scale Intelligence, and parent marital status; where significantly different they are reported.

Gender Dysphoria/Body Image

There was 1 indicator measuring GD (Utrecht Gender Dysphoria Scale [UGDS]) and 3 indicators measuring body image (Body Image Scale [BIS] with primary, secondary, and neutral subscales). Higher UGDS (12 items, 1–5 range, total score ranging from 12–60) total scores indicate higher levels of GD, for example, "I feel a continuous desire to be treated as a man/woman."[23] There are separate versions of the UGDS for males and females with mostly different items, permitting no gender difference analyses. BIS (30 items, 1–5 range) higher scores indicate more dissatisfaction with primary sex characteristics (important gender-defining body characteristics, eg, genitals, breasts), secondary sex characteristics (less obvious gender-defining features, eg, hips, body hair), and neutral (hormonally unresponsive) body characteristics (eg, face, height).[24] The male and the female BIS are identical except for the sexual body parts. The UGDS and the BIS of the natal gender were administered at T0 and T1. At T1, we chose the UGDS of the assigned gender, because no physical changes had occurred yet and some were still treated as their assigned gender. This way, however, decreased GD caused by social transitioning was not measured. At T2 young adults filled out the versions of their affirmed gender.

Psychological Functioning

There were 10 indicators assessing psychological functioning. To assess global functioning, the Children's Global Assessment Scale (CGAS) was used.[25] The Beck Depression Inventory (BDI; 21 items, 0–3 range) indicates presence and severity of depressive symptoms.[26] Spielberger's Trait Anger (TPI) and Spielberger's Trait Anxiety (STAI; 10 and 20 items, respectively, 1–4 range) scales of the State-Trait Personality Inventory were administered to assess the tendency to respond with anxiety or anger, respectively, to a threatening or annoying situation.[27,28]

Behavioral and emotional problems were assessed by the total, internalizing, and externalizing T scores as well as clinical range scores for these 3 indices (T score >63) of the Child/Adult Behavior Checklist (CBCL at T0 and T1, ABCL at T2), the Youth/Adult Self-Report (YSR at T0 and T1, ASR at T2).[29–31] Items referring to GD in the CBCL/YSR and ABCL/ASR were scored as 0 (for more explanation, see Cohen-Kettenis et al[32]).

Objective and Subjective Well-Being (T2 Only)

A self-constructed questionnaire was used to ask the young adults about their current life circumstances, such as living conditions, school and employment, and social support (objective well-being), and satisfaction with treatment (subjective well-being). Three instruments further assessed subjective well-being. To measure quality of life, the WHOQOL-BREF (quality of life measure developed by the World Health Organization) was administered (24 items, 4 domains: Physical Health, Psychological Health, Social Relationships, and Environment, 1–5 range with higher scores indicating better quality of life).[17] The Satisfaction With Life Scale (SWLS, 5 items, 5–35 range, 20 being neutral) was used to assess life satisfaction.[18] Higher scores on the Subjective Happiness Scale (SHS, 4 items, 7-point Likert scale, average score 1–7) reflect greater happiness.[19]

Data Analyses

General Linear Models examined the repeated measures with an analysis of variance-based model, incorporating continuous and categorical predictors, and correcting for the unbalanced cell sizes. Linear and quadratic effects of the 14 indicators across 3 time points, with time as the within-subjects factor, and sex as a between-subjects factor in a second set of analyses are reported in Tables 2 and 3 and Fig 1. A linear effect signifies an overall change across T0 to T2. A quadratic effect signifies that the change was not continuous, such as when an indicator does not improve from T0 to T1 but improves from T1 to T2. It is possible to have both a significant linear and quadratic effect on the same

TABLE 2 Gender Dysphoria and Body Image of Adolescents at Intake (T0), While on Puberty Suppression (T1), and After Gender Reassignment (T2)

	N[a]	T0	T1	T2	T0–T2	Time	Time × Sex
					t test	Linear Effect Quadratic Effect	Linear Effect Quadratic Effect
		Mean (SD)	Mean (SD)	Mean (SD)	*P*	*P*	*P*
UGDS	33	53.51 (8.29)	54.39 (7.70)	15.81 (2.78)	<.001		
MtF	11	47.07 (11.05)	48.95 (10.80)	17.27 (2.57)	<.001	<.001 <.001	n/a
FtM	22	56.74 (3.74)	57.11 (3.40)	15.08 (2.64)	<.001	<.001 <.001	n/a
Body Image (BIS)							
Primary sex characteristics	45	4.13 (0.59)	4.05 (0.60)	2.59 (0.82)	<.001	<.001 <.001	.01 .45
MtF	17	4.03 (0.68)	3.82 (0.56)	2.07 (0.74)	<.001		
FtM	28	4.18 (0.53)	4.13 (0.60)	2.89 (0.71)	<.001		
Secondary sex characteristics	45	2.73 (0.72)	2.86 (0.67)	2.27 (0.56)	<.001	<.001 <.001	.10 <.001
MtF	17	2.63 (0.60)	2.34 (0.68)	1.93 (0.63)	<.001		
FtM	28	2.80 (0.72)	3.18 (0.43)	2.48 (0.40)	.05		
Neutral body characteristics	45	2.35 (0.68)	2.49 (0.53)	2.23 (0.49)	.29	.29 .01	.007 .01
MtF	17	2.57 (0.70)	2.29 (0.50)	2.09 (0.56)	.014		
FtM	28	2.21 (0.64)	2.61 (0.52)	2.32 (0.44)	.40		

FtM, female to male transgender; MtF, male to female transgender; n/a, not applicable.

[a] Participants who had complete data at all 3 waves were included. Some assessments were added to the study later, yielding fewer total participants for those scales.

indicator. Other potential between-subjects factors (age, total IQ, parental marital status) were examined but excluded owing to a lack of relationship with the 14 indicators at T0. The 1 exception, age predicting secondary sex characteristics, is described below in the findings. We compared T2 sample means to population norms for subjective well-being using 1-sample *t* tests from previously published validation studies. Finally, we examined T2 subjective well-being correlations with residual change scores from T0 to T2 on the 14 indicators (an indicator of who improved relatively more or less over time).

All measures used were self-reported, except the CGAS (attending clinician) and the CBCL/ASR (parents). Each participant was given all measures at each of 3 assessments. Numbers varied across indicators owing to the later inclusion of the YSR, CGAS, BDI, TPI, and STAI, yielding 8 persons who had missing data at T0 and a clinician error yielding missing data at T1 for 10 participants on the UGDS. Dutch versions were used (see de Vries et al[16]).

RESULTS

Gender Dysphoria and Body Satisfaction

Figure 1 and Table 2 show that GD and body image difficulties persisted through puberty suppression (at T0 and T1) and remitted after the administration of CSH and GRS (at T2) (significant linear effects in 3 of 4 indicators, and significant quadratic effects in all indicators). Time by sex interactions revealed that transwomen reported more satisfaction over time with primary sex characteristics than transmen and a continuous improvement in satisfaction with secondary and neutral sex characteristics. Transmen reported more dissatisfaction with secondary and neutral sex characteristics at T1 than T0, but improvement in both from T1 to T2. Age was a significant covariate with secondary sex characteristics (the only significant demographic covariate with any outcome indicator in the study), indicating that older individuals were more dissatisfied at T0, but the age gap in body satisfaction narrowed over time ($F(1, 42) = 8.18$; $P < .01$).

Psychological Functioning

As presented in Table 3, significant linear effects showed improvement over time in global functioning (CGAS), CBCL/ABCL total, internalizing and externalizing *T* scores, and YSR/ASR total and internalizing *T* scores. Quadratic effects revealed decreases from T0 to T1 followed by increases from T1 to T2 in depression and YSR/ASR internalizing *T* scores. Quadratic trends revealed decreases from T0 to T1, followed by increases from T1 to T2 in depression and YSR/ASR internalizing *T* scores. For all CBCL/ABCL and YSR/ASR indicators except YSR/ASR externalizing, the percentage in the clinical range dropped significantly (McNemar's test, *P* value <0.05) from T0 to T1, from T0 to T2, or from T1 to T2.

Over time, transmen showed reduced anger, anxiety, and CBCL/ABCL externalizing *T* scores, whereas transwomen showed stable or slightly more symptomatology on these measures. Transwomen improved in CBCL/ABCL total *T* scores in a quadratic fashion (all the improvement between T1 and T2),

TABLE 3 Psychological Functioning of Adolescents at Intake (T0), While on Puberty Suppression (T1), and After Gender Reassignment (T2)

	N[a]	T0	T1	T2	T0–T2	Time	Time × Sex
					t test	Linear Effect Quadratic Effect	Linear Effect Quadratic Effect
		Mean (SD)	Mean (SD)	Mean (SD)	*P*	*P*	*P*
Global functioning (CGAS)	32	71.13 (10.46)	74.81 (9.86)	79.94 (11.56)	<.001	<.001	.89
						.61	.68
MtF	15	74.33 (7.53)	78.20 (9.56)	82.40 (8.28)	<.001		
FtM	17	67.65 (11.87)	70.65 (9.89)	76.29 (14.48)	.02		
Depression (BDI)	32	7.89 (7.52)	4.10 (6.17)	5.44 (8.40)	.21	.23	.66
						.04	.49
MtF	12	4.73 (4.20)	2.25 (3.54)	3.38 (4.40)	.12		
FtM	20	10.09 (8.34)	5.05 (7.08)	6.95 (9.83)	.32		
Anger (TPI)	32	17.55 (5.72)	17.22 (5.61)	16.01 (5.28)	.20	.15	.04
						.52	.12
MtF	12	14.17 (3.01)	14.00 (3.36)	5.58 (3.92)	.18		
FtM	20	19.55 (5.96)	19.25 (5.69)	16.56 (6.06)	.05		
Anxiety (STAI)	32	39.57 (10.53)	37.52 (9.87)	37.61 (10.39)	.45	.42	.05
						.47	.52
MtF	12	31.87 (7.42)	31.71 (8.36)	35.83 (10.22)	.14		
FtM	20	44.41 (9.06)	41.59 (9.03)	39.20 (10.53)	.12		
CBCL–ABCL							
Total *T* score	40	60.20 (12.66)	54.70 (11.58)	48.10 (9.30)	<.001	<.001	.25
% Clinical		38_x	20_y	5_y		.68	.03
MtF	15	57.40 (12.76)	49.67 (12.29)	48.13 (12.58)	.002		
FtM	25	61.88 (12.56)	57.72 (10.23)	48.08 (6.95)	<.001		
Int *T* score	40	60.83 (12.36)	54.42 (10.58)	50.45 (10.04)	<.001	<.001	.91
% Clinical		30_x	12.5_y	10_y		.42	.33
MtF	15	59.40 (10.03)	50.93 (11.15)	48.73 (12.61)	<.001		
FtM	25	61.68 (13.70)	56.52 (9.86)	51.48 (8.25)	<.001		
Ext *T* score	40	57.85 (13.73)	53.85 (12.77)	47.85 (8.59)	<.001	<.001	.19
% Clinical		40_x	25_x	2.5_y		.43	.12
MtF	15	52.53 (14.11)	47.87 (12.07)	46.33 (10.95)	.10		
FtM	25	61.04 (12.71)	57.44 (12.01)	48.76 (6.89)	<.001		
YSR-ASR							
Total *T* score	43	54.72 (12.08)	49.16 (11.16)	48.53 (9.46)	.005	.005	.28
% Clinical		30_x	14_{xy}	7_y		.07	.75
MtF	17	50.65 (12.19)	45.94 (12.24)	47.24 (12.28)	.28		
FtM	26	57.38 (11.47)	51.27 (10.08)	49.38 (7.21)	.01		
Int *T* score	43	55.47 (13.08)	48.65 (12.33)	50.07 (11.15)	.03	.03	.87
% Clinical		30_x	9.3_y	11.6_{xy}		.008	.73
MtF	17	54.00 (12.31)	47.59 (14.26)	48.12 (12.54)	.04		
FtM	26	56.42 (13.86)	49.35 (11.13)	51.35 (10.19)	.17		
Ext *T* score	43	52.77 (12.47)	49.44 (9.59)	49.44 (9.37)	.14	.14	.005
% Clinical		21_x	11.6_x	7_x		.09	.14
MtF	17	46.00 (11.58)	44.71 (9.53)	50.24 (11.18)	.17		
FtM	26	57.16 (11.14)	52.54 (8.43)	48.92 (8.18)	.006		

FtM, female to male transgender; MtF, male to female transgender.

$_{xy}$ Percent clinical range, shared subscripts indicate no significant difference in values. In no case was an increase in percent in the clinical range significant from 1 time point to any other time point, indicating an overall decline or stability of clinical symptoms over time.

[a] Participants who had complete data at all 3 waves were included. Some assessments were added to the study later, yielding fewer total participants for those scales.

whereas transmen improved steadily across the 3 time points (linear effect only).

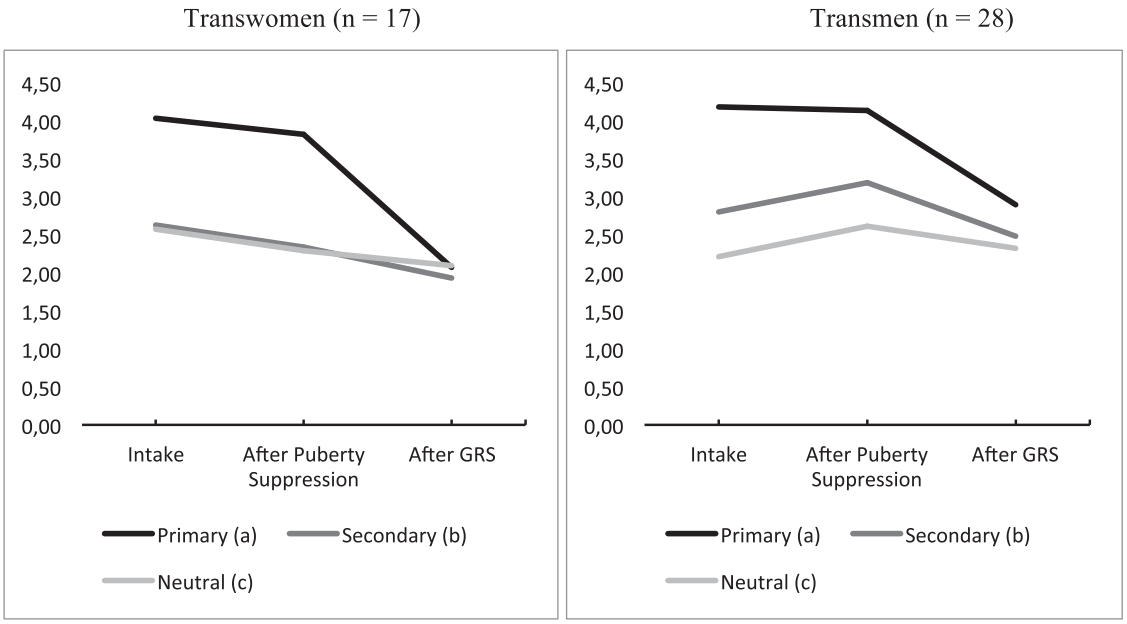
Objective Well-Being

At T2, the participants were vocationally similar to the Dutch population except they were slightly more likely to live with parents (67% vs 63%), and more likely, when studying, to be pursuing higher education (58% vs 31%).[33]

Families were supportive of the transitioning process: 95% of mothers, 80% of fathers, and 87% of siblings. Most (79%) young adults reported having 3 or more friends, were satisfied with their male (82%) and female peers (88%), and almost all (95%) had received support from friends regarding their gender reassignment. After their GRS, many participants (89%) reported having been never or seldom called names or harassed. The majority (71%) had experienced social transitioning as easy.

Subjective Well-Being

None of the participants reported regret during puberty suppression, CSH



Eta Squared for Linear and Quadratic Effects

(a) Primary sex characteristics
Time: .79 ($P < .001$), .66 ($P < .001$),
Time × sex: .14 ($P = .01$), .01 ($P = .45$),

(b) Secondary sex characteristics
Time: .31($P < .001$), .30 ($P < .001$),
Time × sex: .06 ($P = .10$), .22 ($P < .001$)

(c) Neutral body characteristics
Time: .07($P < .001$), .09 ($P = .29$)
Time × sex: .16 ($P = .007$), .15 ($P = .01$)

FIGURE 1
BIS[23] for transwomen and transmen at T0 (pretreatment, at intake), T1 (during treatment, at initiation of cross-gender hormones), and T2 (post-treatment, 1 year after GRS).

treatment, or after GRS. Satisfaction with appearance in the new gender was high, and at T2 no one reported being treated by others as someone of their assigned gender. All young adults reported they were very or fairly satisfied with their surgeries.

Mean scores on WHOQOL-BREF, the SWLS, and the SHS are presented in Table 4, together with scores from large validation and reliability studies of these measures,[17,19,34] revealing similar scores in all areas except WHOQOL-Environment subdomain, which was higher for the participants than the norm. There were some differences across gender; transwomen scored higher than transmen on the SWLS (mean = 27.7; SD = 5.0 vs mean = 23.2; SD = 6.0; t (52) = 2.82; $P < .01$) and on the psychological subdomain of the WHOQOL (mean = 15.77; SD = 2.0 vs mean = 13.92; SD = 2.5; t (53) = 2.95; $P < .01$).

Correlations With Residual Change Scores

The residual change scores of secondary sex characteristics, global functioning, depression, anger, anxiety, and YSR total, internalizing and externalizing from T0 to T2, were significantly correlated with the 6 T2 quality of life indicators. Most correlation coefficients were within the moderate to large magnitude (eg, 0.30–0.60), except depression, which was highly correlated (0.60–0.80) (see Table 5).

DISCUSSION

Results of this first long-term evaluation of puberty suppression among transgender adolescents after CSH treatment and GRS indicate that not only was GD resolved, but well-being was in many respects comparable to peers.

The effectiveness of CSH and GRS for the treatment of GD in adolescents is in line with findings in adult transsexuals.[35,36] Whereas some studies show that poor surgical results are a determinant of postoperative psychopathology and of dissatisfaction and regret,[37,38] all young adults in this study were generally satisfied with their physical appearance and none regretted treatment. Puberty suppression had caused their bodies to

TABLE 4 Subjective Well-Being: Quality of Life, Satisfaction With Life, and Subjective Happiness Mean Scores With Scores From Validation Studies

	N	Mean (SD)	Range	Validation Studies Scores Mean (SD)	Comparison *P*
WHOQOL[a] Physical	55	15.22 (2.49)	8.6–20.0	15.0 (2.9)[b]	.56
WHOQOL Psychological	55	14.66 (2.44)	6.67–20.0	14.3 (2.8)[b]	.24
WHOQOL Social Relations	55	14.91 (2.35)	9.3–20.00	14.5 (3.4)[b]	.18
WHOQOL Environment	55	15.47 (2.06)	10.5–20.00	13.7 (2.6)[b]	<.001
SWLS	54	24.98 (6.0)	9.0–35.0	26.18 (5.7)[c]	.16
SHS	54	4.73 (0.77)	2.75–6.0	4.89 (1.1)[d]	.17

[a] WHOQOL, Bref, Skevington et al.[16]
[b] International field trial, ages 21 to 30 years, Skevington et al.[16]
[c] Dutch young adults, Arindell et al.[33]
[d] US Public College Students, Lyubomirsky.[18]

not (further) develop contrary to their experienced gender.

Psychological functioning improved steadily over time, resulting in rates of clinical problems that are indistinguishable from general population samples (eg, percent in the clinical range dropped from 30% to 7% on the YSR/ASR[30]) and quality of life, satisfaction with life, and subjective happiness comparable to same-age peers.[17,19,34] Apparently the clinical protocol of a multidisciplinary team with mental health professionals, physicians, and surgeons gave these formerly gender dysphoric youth the opportunity to develop into well-functioning young adults. These individuals, of whom an even higher percentage than the general population were pursuing higher education, seem different from the transgender youth in community samples with high rates of mental health disorders, suicidality and self-harming behavior, and poor access to health services.[21,22,39,40]

In this study, young adults who experienced relatively greater improvements in psychological functioning were more likely to also report higher levels of subjective postsurgical well-being. This finding suggests value to the protocol that involves monitoring the adolescents' functioning, physically and psychologically, over many years, and providing more support whenever necessary.

This clinic-referred sample perceived the Environmental subdomain (with items like "access to health and social care" and "physical safety and security") of the WHOQOL-BREF as even better than the Dutch standardization sample.[17] Whereas in some other contexts transgender youth may experience gender-related abuse and victimization,[22,41,42] the positive results may also be attributable to supportive parents, open-minded peers, and the social and financial support (treatment is covered by health insurance) that gender dysphoric individuals can receive in the Netherlands.

Both genders benefitted from the clinical approach, although transwomen showed more improvement in body image satisfaction (secondary sex characteristics) and in psychological functioning (anger and anxiety). None of the transmen in this study had yet had a phalloplasty because of waiting lists or

TABLE 5 Correlations Between Residual Change in Psychological Functioning Over Time and Young Adult Subjective Well-Being

	WHOQOL BREF					
	Physical	Psychological	Social	Environment	SWLS	SHS
Gender dysphoria (UGDS)	0.01 (.97)	0.05 (.75)	−0.09 (.57)	−0.02 (.89)	0.06 (.71)	0.30 (.04)
Body image subscales (BIS)						
Primary sex characteristics	−0.22 (.14)	−0.25 (.09)	−0.35 (.02)	−0.04 (.78)	−0.22 (.14)	−0.21 (.17)
Secondary sex characteristics	−0.39 (.006)	−0.45 (<.001)	−0.47 (<.001)	−0.34 (.02)	−0.35 (.02)	−0.26 (.08)
Neutral body characteristics	−0.21 (.16)	−0.27 (.07)	−0.15 (.32)	−0.28 (.06)	−0.26 (.08)	−0.16 (.28)
Psychological functioning						
Global functioning (CGAS)	0.60 (<.001)	0.52 (.002)	0.52 (.002)	0.27 (.14)	0.58 (<.001)	0.50 (.004)
Depression (BDI)	−0.76 (<.001)	−0.72 (<.001)	−0.51 (.002)	−0.49 (.003)	−0.61 (<.001)	−0.77 (<.001)
Trait anger (TPI)	−0.37 (.03)	−0.18 (.31)	−0.22 (.20)	−0.29 (.09)	−0.33 (.07)	−0.35 (.05)
Trait anxiety (STAI)	−0.58 (<.001)	−0.64 (<.001)	−0.38 (.03)	−0.44 (.01)	−0.49 (.004)	−0.57 (<.001)
CBCL–ABCL						
Total *T* score	−0.20 (.20)	−0.12 (.45)	−0.07 (.65)	−0.14 (.35)	−0.32 (.03)	−0.16 (.29)
Internalizing *T* score	−0.29 (.06)	−0.29 (.06)	−0.23 (.14)	−0.12 (.44)	−0.48 (<.001)	−0.36 (.02)
Externalizing *T* score	−0.13 (.40)	−0.05 (.75)	0.16 (.29)	−0.20 (.19)	−0.15 (.36)	0.00 (.99)
Youth Self Report (YSR–ASR)						
Total *T* score	−0.53 (<.001)	−0.45 (.002)	−0.33 (.03)	−0.42 (.005)	−0.52 (<.001)	−0.55 (<.001)
Internalizing *T* score	−0.62 (<.001)	−0.61 (<.001)	−0.47 (<.001)	−0.40 (.007)	−0.66 (<.001)	−0.60 (<.001)
Externalizing *T* score	−0.23 (.13)	−0.10 (.53)	−0.07 (.67)	−0.37 (.02)	−0.22 (.15)	−0.35 (.02)

P values are in parentheses.

a desire for improved surgery techniques. This finding warrants further study of the specific concerns of young transmen.

Despite promising findings, there were various limitations. First, the study sample was small and came from only 1 clinic. Second, this study did not focus on physical side effects of treatment. Publications on physical parameters of the same cohort of adolescents are submitted or in preparation. A concurring finding exists in the 22-year follow-up of the well-functioning first case now at age 35 years who has no clinical signs of a negative impact of earlier puberty suppression on brain development, metabolic and endocrine parameters, or bone mineral density.[43] Third, despite the absence of pretreatment differences on measured indicators, a selection bias could exist between adolescents of the original cohort that participated in this study compared with nonparticipants.

Age criteria for puberty suppression and CSH are under debate, although they worked well for adolescents in the current study. Especially in natal females, puberty will often start before the age of 12 years. Despite the fact that developing evidence suggests that cognitive and affective cross-gender identification, social role transition, and age at assessment are related to persistence of childhood GD into adolescence, predicting individual persistence at a young age will always remain difficult.[44] The age criterion of 16 years for the start of CSH may be problematic especially for transwomen, as growth in height continues as long as cross-sex steroids are not provided (causing the growth plates to close). Therefore, psychological maturity and the capacity to give full informed consent may surface as the required criteria for puberty suppression and CSH[45] in cases that meet other eligibility criteria.

CONCLUSIONS

Results of this study provide first evidence that, after CSH and GRS, a treatment protocol including puberty suppression leads to improved psychological functioning of transgender adolescents. While enabling them to make important age-appropriate developmental transitions, it contributes to a satisfactory objective and subjective well-being in young adulthood. Clinicians should realize that it is not only early medical intervention that determines this success, but also a comprehensive multidisciplinary approach that attends to the adolescents' GD as well as their further well-being and a supportive environment.

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ORIGINAL RESEARCH

Psychological Support, Puberty Suppression, and Psychosocial Functioning in Adolescents with Gender Dysphoria

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ABSTRACT

Introduction. Puberty suppression by gonadotropin-releasing hormone analogs (GnRHa) is prescribed to relieve the distress associated with pubertal development in adolescents with gender dysphoria (GD) and thereby to provide space for further exploration. However, there are limited longitudinal studies on puberty suppression outcome in GD. Also, studies on the effects of psychological support on its own on GD adolescents' well-being have not been reported.

Aim. This study aimed to assess GD adolescents' global functioning after psychological support and puberty suppression.

Methods. Two hundred one GD adolescents were included in this study. In a longitudinal design we evaluated adolescents' global functioning every 6 months from the first visit.

Main Outcome Measures. All adolescents completed the Utrecht Gender Dysphoria Scale (UGDS), a self-report measure of GD-related discomfort. We used the Children's Global Assessment Scale (CGAS) to assess the psychosocial functioning of adolescents.

Results. At baseline, GD adolescents showed poor functioning with a CGAS mean score of 57.7 ± 12.3. GD adolescents' global functioning improved significantly after 6 months of psychological support (CGAS mean score: 60.7 ± 12.5; $P < 0.001$). Moreover, GD adolescents receiving also puberty suppression had significantly better psychosocial functioning after 12 months of GnRHa (67.4 ± 13.9) compared with when they had received only psychological support (60.9 ± 12.2, $P = 0.001$).

Conclusion. Psychological support and puberty suppression were both associated with an improved global psychosocial functioning in GD adolescents. Both these interventions may be considered effective in the clinical management of psychosocial functioning difficulties in GD adolescents. **Costa R, Dunsford M, Skagerberg E, Holt V, Carmichael P, Colizzi M. Psychological support, puberty suppression, and psychosocial functioning in adolescents with gender dysphoria. J Sex Med 2015;12:2206–2214.**

Key Words. Gender Dysphoria; Adolescents; Psychosocial Functioning; Puberty Suppression

Introduction

Gender dysphoria (GD) individuals experience a marked incongruence between their assigned gender and their experienced gender [1]. GD refers to this stressful condition resulting in clinically significant distress or impairment in

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The study was conducted in the Gender Identity Development Service, Tavistock and Portman NHS Foundation Trust, Tavistock Centre, 120 Belsize Lane, London NW3 5BA.

important areas of functioning [2,3]. When supporting and treating children and adolescents with GD, health professionals should broadly conform to the Standards of Care of the World Professional Association for Transgender Health (WPATH) [4]. These guidelines indicate that psychological support should focus on exploring gender identity, role, and expression; addressing the negative impact of GD and stigma on mental health; alleviating internalized transphobia; enhancing social and peer support; improving body image; promoting resilience. Psychological interventions such as individual, couple, family, or group therapy should be provided within a multidisciplinary gender identity specialty service [4].

Studies indicate that cross-sex hormonal treatment (CSHT) improves well-being in GD adults [5,6]. However, it has been observed that despite many years of psychotherapy the GD of most adolescents does not often abate. Rather, once these young persons, who are already experiencing considerable distress over their gender identity, undergo the pubertal development of their biological sex, their psychological well-being deteriorates significantly [7]. Because this risk can be so great, the need for an early intervention has become paramount.

Delemarre-van de Waal and Cohen-Kettenis have proposed an early intervention approach, the Dutch model [8], which aims to eliminate the exposure to unwanted pubertal hormones, limit GD, and improve the ability to "pass" as the desired gender in adulthood. It considers adolescents, after a comprehensive psychological evaluation with many sessions over a longer period of time, eligible for puberty suppression, cross-sex hormonal treatment (CSHT), and gender reassignment surgery (GRS) at the respective ages of 12, 16, and 18 years when there is a history of GD; no psychosocial problems interfering with assessment or treatment; adequate family or other support; and good comprehension of the impact of medical interventions. According to this protocol, suppressing puberty and allowing young individuals the opportunity to explore their gender identity would provide some relief from the distress associated with the development of secondary characteristics [8]. Consistently, some studies indicate that puberty suppression leads to a better psychosocial outcome [2,9].

Since the release of the Dutch model, there has been disagreement about the appropriateness of treatment in minors. Some practitioners have questioned the ethics and safety of this intervention. Conversely, other health care professionals have argued they have an obligation to alleviate suffering and it would be unethical to allow a patient to suffer through the distress of pubertal development when there is a way of preventing it [10]. Anyway, puberty suppression by gonadotropin-releasing hormone analogs (GnRHa) has increasingly become accepted in clinical management of adolescents with GD. Even if further studies are needed, GnRHa are considered a safe and putatively reversible intervention which should be provided to people in need of it, especially if allowing puberty to progress appears likely to harm the young person [7].

There are limited longitudinal studies on the psychosocial functioning of GD adolescents after puberty suppression [2,9]. Also, studies on the effects of psychological support on its own on GD adolescents' psychosocial functioning have not been reported.

Aims

The aim of this study was to assess GD adolescents' psychosocial functioning in follow-up evaluations. Based on previous literature [2,9] and our clinical experience, we hypothesized a poor general functioning at baseline, an improvement after psychological support, and a further improvement after the beginning of the GnRHa.

Methods

Study Design and Participants

This longitudinal study was conducted at the Gender Identity Development Service (GIDS) in London. The health care pathway provided at the GIDS is described in Figure 1. A consecutive series of 436 adolescents (mean age = 15.74 ± 1.38 years; natal male/natal female ratio = 1:1.7) were referred between 2010 and 2014 to the GIDS. 201 adolescents (mean age = 15.52 ± 1.41 years; natal male/natal female ratio = 1:1.6) completed the diagnostic procedure (about 6 months) and were invited to take part in the follow-up evaluations. No GD adolescent refused to participate and all participants and their parents gave informed consent. By clinical interview, all adolescents fulfilled DSM-IV-TR criteria in use at the time for Gender Identity Disorder. The GIDS has adopted the WPATH Standards of Care [4]. There were no significant differences in socio-demographic characteristics as well as baseline CGAS scores

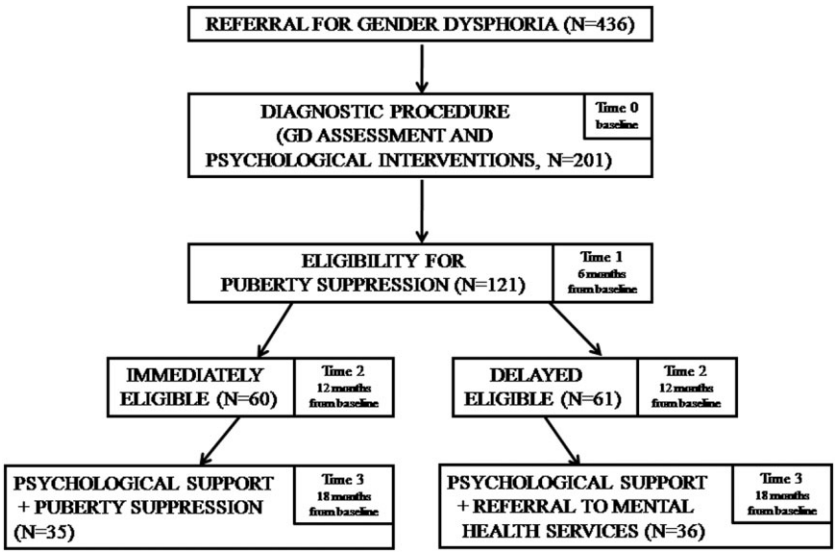

Figure 1 Health care pathway at the Gender Identity Development Service (GIDS)

between adolescents with a GD diagnosis enrolled in this study (N = 201) and adolescents who did not complete the diagnostic procedure (N = 235; all $P > 0.1$).

Psychological Support

The GIDS has developed a standardized psychological assessment which is part of the diagnostic procedure, in accordance with the WPATH guidelines [4]. This model emphasizes the early recognition and non-judgmental acceptance of gender identity problems as well as the importance of ameliorating associated behavioral, emotional and relationship difficulties [11]. Ample room is given to adolescents to explore different options for gender expression. Together with their families GD adolescents are supported in making difficult decisions regarding the extent to which they are allowed to express a gender role that is consistent with their gender identity. Also the timing of changes in gender role and possible social transition are extensively explored. This ensures that decisions about gender expression and the treatment of GD are thoughtfully and recurrently considered. Health care professionals help families to make decisions regarding the timing and process of any gender role changes for their young children. Information is provided to parents to weigh the potential benefits and challenges of choices.

The aims outlined are achieved through various psychotherapeutic interventions, ranging from individual to family and group therapy, which are carried out on a regular basis (at least once a month). Social and educational interventions are also provided if necessary. All these interventions are well coordinated and integrated in a comprehensive management plan agreed with local services (The Network Model). Moreover, the care pathway provides continuous psychological support to the patients' emotional and behavioral changes that may occur during the puberty suppression treatment. All adolescents received psychological support for the entire duration of the study.

Eligibility for Puberty Suppression

In accordance with the WPATH Standards of Care [4], adolescents were able to commence puberty suppression with GnRHa if they met the following criteria: (i) a presence of GD from early childhood on; (ii) an increase of the GD after the first pubertal changes; (iii) an absence of psychiatric comorbidity that interferes with the diagnostic work-up or treatment; (iv) adequate psychological and social support during treatment; and (v) a demonstration of knowledge and understanding of the effects of GnRHa, cross-sex hormone treatment, surgery, and the social consequences of sex reassignment. All GD adolescents were considered eligible for puberty suppression. Eligible adolescents were divided into two groups: immediately eligible and delayed eligible adolescents, consistently with Cohen-Kettenis and colleagues [12]. Immediately eligible adolescents started GnRHa at the end of the diagnostic procedure (0.75 ± 0.59 years from baseline). On the contrary, some adolescents were considered delayed eligible and continued to receive psychological support without

any type of physical intervention until they felt ready to make a decision in collaboration with their families and the clinicians. In those specific cases clinicians needed more time to make the decision of starting GnRHa because of possible comorbid psychiatric problems and/or psychological difficulties. If concomitant problems were observed (e.g., psychiatric problems, substantial problems with peers, or conflicts with parents or siblings), the young person was referred to a local mental health service. All possible medical and/or psychosocial interventions were well coordinated, integrated in a comprehensive management plan agreed with local services, and tended to be individualized in relation to the psychopathology/difficulty. The primary aim was for the child and the family to function better. After being assessed and, if necessary, treated for a psychiatric comorbidity, all delayed eligible GD individuals received puberty suppression. The interval from the start of the diagnostic procedure to the start of puberty suppression took about 1.5 years (1.5 ± 0.63 years from baseline). None of the delayed eligible individuals received puberty suppression at the time of this study.

Main Outcome Measures

Socio-Demographic Information

The data collected included: natal gender (male–female ratio), age (at assessment, at start of GnRHa), education level (yes/no), living arrangement (both parents, one parents, other), living in the chosen gender (partly, i.e., by wearing clothing and having a hairstyle that reflects gender identity/completely, i.e., by also using a name and pronouns congruent with gender identity/no), and change of name (yes/no).

GD-Related Discomfort

The Utrecht GD Scale (UGDS) was used to measure adolescents' GD-related discomfort. This is a 12-item questionnaire specifically developed to measure GD in a dimensional way. In particular, the UGDS focuses on core aspects of GD and gender identity. The adolescents are asked to rate their agreement on a 5-point scale. The total score ranges from 12 to 60. Higher UGDS total scores indicate high level of GD [13]. The scale has shown a high reliability (a Cronbach's alpha of 0.66–0.80 in one sample, and 0.78–0.92 in another); as reported by the authors, the lower alphas on the scale were only found among control subjects, which may be related to the lower variability of GD in these groups [13]. Cronbach's alpha for UGDS in our sample was 0.76–0.88. The UGDS has also shown a good discriminant validity, when adolescents and adults with and without a GD diagnosis were compared.

Measure of Global Psychosocial Functioning

The Children's Global Assessment Scale (CGAS) was used to assess adolescents' psychosocial functioning. The CGAS is one of the most widely used rating scales designed to measure how children and adolescents function psychosocially in daily life [14]. This clinical-rated instrument is divided into 10-point intervals and ranges from 1 to 100, with higher scores indicating better psychosocial functioning. The CGAS is useful to assess psychosocial/psychiatric outcomes, socio-cognitive competence and changes because of treatment [15]. In particular, it has been used in several longitudinal and epidemiological studies in clinical and non-clinical populations, naturalistic cohorts [16], and young GD individuals [9]. The inter-rater reliability was tested by Shaffer and his colleagues [14] before publication of CGAS, in order to minimize variation because of clinician background. Test–retest has been described in different studies with raters' consistence over time [16].

All CGAS were administered by qualified psychologists, psychotherapists, and psychiatrists who attended training and intra-class correlation assessment ($0.76 \leq$ Cronbach's $\alpha \leq 0.94$). Participants were assessed at baseline (Time 0) and every following 6 months, for a total of four evaluations over an 18-month period. Follow-up evaluations were performed 6 months from the baseline (Time 1: after 6 months of psychological support); 12 months from the baseline (Time 2: after 12 months of psychological support for delayed eligible GD adolescents, and after 12 months of psychological support + 6 months of puberty suppression for immediately eligible GD adolescents); 18 months from the baseline (Time 3: after 18 months of psychological support for delayed eligible GD adolescents, and after 18 months of psychological support + 12 months of puberty suppression for immediately eligible GD adolescents).

Participants were compared with a sample of young individuals without observed psychological/psychiatric symptoms ($N = 169$), using the same methodology of this study, the CGAS scale [16]. This sample was part of a large naturalistic cohort

of children/adolescents who attended child and adolescent mental health services (CAMHS; N = 12,613) in Stockholm in order to be evaluated for their psychosocial functioning.

Statistical Analysis

Chi-squared and independent *t*-tests were used to test for possible differences in socio-demographic characteristics and CGAS scores between natal men and natal women; adolescents who did not complete the diagnostic procedure and adolescents who received a GD diagnosis; immediately eligible and delayed eligible individuals. Dependent and independent *t*-tests were used to test for possible differences in CGAS scores between baseline and follow-up evaluations, in both immediately eligible and delayed eligible individuals.

Finally, independent *t*-tests were used to compare GD adolescents' CGAS scores with CGAS scores from a sample of children/adolescents without observed psychological/psychiatric symptoms [16].

Ethics

The study received ethical approval from the National Research Ethics Service (NRES) Committee London-Camden and Islington.

Results

Socio-Demographic Characteristics of the Sample

Socio-demographic characteristics of the sample (N = 201) are reported in Table 1. The majority of GD adolescents were living with one parent, were in education, were living as a member of the desired gender, and had changed their names. However, compared with natal women, a higher proportion of natal men did not live with their biological parents, had left school, were not living as a member of the desired gender, and had not changed their names. Moreover, natal women reported a significantly higher GD-related discomfort than natal men. Natal men and women did not differ in their age, both at assessment and when GnRHa was started (Table 1).

Table 1 General characteristics of 201 adolescents with gender dysphoria

Age in years, M (SD)	All participants	Natal men	Natal women	Statistical comparisons *t*-test; *P* value
Baseline	15.52 (1.41)	15.61 (1.70)	15.46 (1.22)	0.73; 0.47
Range	12–17	12–17	12–17	
At start of GnRHa	16.48 (1.26)	16.64 (1.22)	16.39 (1.28)	0.74; 0.46
Range	13–17	13–17	13–17	
Living arrangement, N (%)				χ^2; *P*
Both parents	78 (41.5)	25 (33.7)	53 (44.2)	8.95; 0.01
One parent	100 (53.2)	35 (51.5)	65 (54.2)	
Other*	10 (5.3)	8 (11.8)	2 (1.6)	
No details	13	8	5	3.47; 0.06
Education				
Yes	168 (89.8)	56 (83.6)	112 (93.3)	20.52; <0.001
No	19 (10.2)	11 (16.4)	8 (6.7)	
No details	14	9	5	
Living in role				
Completely	117 (62.6)	29 (42.6)	88 (73.9)	23.14; <0.001
Partly	27 (14.4)	12 (17.7)	15 (12.6)	
No	43 (23.0)	27 (39.7)	16 (13.5)	
No details	14	8	6	
Change name				
Yes	107 (57.5)	23 (33.8)	84 (71.2)	
No	79 (42.5)	45 (66.2)	34 (28.8)	
No details	15	8	7	
	Mean (SD)	Mean (SD)	Mean (SD)	*t*-test; *P* value
UGDS†	54.7. (6.8)	51.6 (9.7)	56.1 (4.3)	4.07; <0.001
CGAS at baseline	57.7 (12.3)	55.4 (12.7)	59.2 (11.8)	2.15; 0.03

*Living in children's home, living with other family's members
†Data available in 160 individuals, 50 natal men (31.25%), 110 natal women (68.75%)
M (SD) = mean (standard deviation); UGDS = Utrecht Gender Dysphoria Scale; CGAS = Children's Global Assessment Scale; GnRHa = gonadotropin-releasing hormone analogs

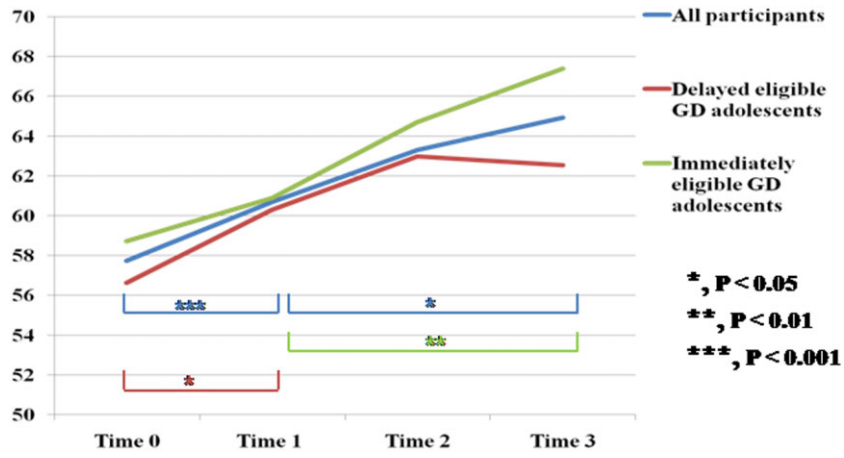

Figure 2 Gender dysphoria adolescents' psychosocial functioning (CGAS) at baseline, after psychological support, and after puberty suppression

CGAS, Children's Global Assessment Scale; Time 0, baseline; Time 1, 6 months from baseline (after 6 months of psychological support); Time 2, 12 months from baseline (delayed eligible gender dysphoria [GD] adolescents, after 12 months of psychological support; immediately eligible GD adolescents, after 12 months of psychological support + 6 months of puberty suppression); Time 3, 18 months from baseline (delayed eligible GD adolescents, after 18 months of psychological support; immediately eligible GD adolescents, after 18 months of psychological support + 12 months of puberty suppression)

CGAS at Baseline

GD adolescents' CGAS at baseline (Time 0, $M = 57.7 \pm 12.3$) revealed a score suggestive of "variable functioning with sporadic difficulties or symptoms in several but not all social areas" (range 50–59). Natal men had a significantly lower functioning than natal women at baseline ($P = 0.03$; Table 1). CGAS scores were not associated with any demographic variable, in both natal men and women (all $P > 0.1$). GD adolescents' CGAS scores at baseline were significantly lower ($t = 7.4$, $P < 0.001$) than that found in a sample of children/adolescents without observed psychological/psychiatric symptoms ($N = 169$, 67.1 ± 12) [16].

CGAS at Follow-Up

Compared with baseline, GD adolescents' psychosocial functioning was increasingly higher at each of the following evaluations (Figure 2). In particular, CGAS scores were significantly higher after 6 months of psychological support (Time 0 vs. Time 1, $P < 0.001$). Also there was a further significant improvement 18 months from baseline (Time 1 vs. Time 3, $P = 0.02$; Table 2).

Delayed eligible GD adolescents, who received only psychological support for the entire duration of the study, had a significantly better psychosocial functioning after six months of psychological support (Time 0 vs. Time 1, $P = 0.05$). However, despite scoring better at the following evaluations they did not show any further significant improvement in their psychosocial functioning (Table 2). Also, the delayed eligible group continued to score lower than a sample of children/adolescents without observed psychological/psychiatric symptoms [16], even after 18 months of psychological support (Time 3, $t = 2.0$, $P = 0.04$).

On the contrary, the immediately eligible group, who at baseline had a higher, but not significantly different psychosocial functioning than the delayed eligible group, did not show any significant improvement after 6 months of psychological support. However, immediately eligible adolescents had a significantly higher psychosocial functioning after 12 months of puberty suppression compared with when they had received only psychological support (Time 1 vs. Time 3 $P = 0.001$; Table 2). Also, their CGAS scores after 12 months of puberty suppression (Time 3) coincided almost perfectly with those found in a sample of children/adolescents without observed psychological/psychiatric symptoms ($t = 0.01$, $P = 0.99$) [16].

There were no significant differences in CGAS scores between GD natal men and women in all the follow-up evaluations (all $P > 0.1$). Also delayed eligible and immediately eligible GD adolescents did not differ in their demographic variables (all $P > 0.1$). Finally, even if at the end of the

Table 2 Gender dysphoria adolescents' psychosocial functioning (CGAS) at baseline, after psychological support, and after puberty suppression

	Time 0 N M/F ratio M (SD)	Time 1 N M/F ratio M (SD)	Time 2 N M/F ratio M (SD)	Time 3 N M/F ratio M (SD)	Statistical comparisons *t*-test; *P* value
All participants	N = 201 1:1.6 57.73 (12.27)	N = 201 1:1.6 60.68 (12.47)	N = 121 1:1.6 63.31 (14.41)	N = 71 1:1.6 64.93 (13.85)	4.87*; <0.001 3.70†; <0.001 4.11‡; <0.001 1.73§; 0.08 2.40¶; 0.02 0.76**; 0.45
Delayed eligible GD adolescents	N = 100 1:1.6 56.63 (13.14)	N = 100 1:1.6 60.29 (12.81)	N = 61 1:1.6 62.97 (14.10)	N = 36 1:1.6 62.53 (13.54)	1.99*; 0.05 2.89†; 0.005 2.29‡; 0.02 1.24§; 0.22 0.89¶; 0.37 0.15**; 0.88
Immediately eligible GD adolescents	N = 101 1:1.7 58.72 (11.38)	N = 101 1:1.7 60.89 (12.17)	N = 60 1:1.7 64.70 (13.34)	N = 35 1:1.7 67.40 (13.93)	1.31*; 0.19 3.02†; 0.003 3.66‡; <0.001 1.85§; 0.07 2.63¶; 0.001 0.94**; 0.35
Statistical comparisons *t*-test; *P* value	1.21††; 0.23	0.34††; 0.73	0.69†; 0.49	1.49†; 0.14	

*Comparison between baseline and Time 1
†Comparison between baseline and Time 2
‡Comparison between baseline and Time 3
§Comparison between Time 1 and Time 2
¶Comparison between Time 1 and Time 3
**Comparison between Time 2 and Time 3
††Comparison between delayed eligible GD adolescents and immediately eligible GD adolescents
CGAS = Children's Global Assessment Scale; M/F = natal male/natal female; M (SD) = mean (standard deviation)

follow-up study (Time 3) the immediately eligible group had a 5-point higher CGAS score than the delayed eligible group, this difference failed to reach significance, possible because of sample size (Table 2).

Discussion

Results from this study indicate that psychological support is associated with a better psychosocial functioning in GD adolescents, especially if presenting psychological/psychiatric problems. Moreover, puberty suppression was associated with a further improvement in global functioning. Finally, global functioning improved steadily over time in GD adolescents receiving both psychological support and GnRHa.

Medical and surgical interventions are considered to be necessary components of effective management in GD adults. These partially reversible/irreversible treatments aim to align the individuals' physical appearance with their internal gender identity and have been shown to improve the patients' psychosocial well-being [3,5,6]. GD adolescents may experience psychosocial problems at puberty onset because of an intensification of feelings of incongruence between self-perception and their natal gender [2,9]. Therefore, in the prepubertal population, the suppression of puberty using continuous GnRHa is a fully reversible treatment which has the fundamental benefit for children of gaining time to reflect over their gender identity, have a real-life experience living as the other gender (i.e., in dress and behavior) and determine whether or not they desire the transition [12,13]. Preventing the development of a body contrary to the experienced gender, puberty suppression allows GD adolescents to experience a smooth transition into their desired gender role. This translates into an improvement in many aspects of their psychosocial functioning, such as mood improvement and school integration [2,9]. Consistently, these results underline the importance of puberty suppression for GD adolescents' well-being.

The GD adolescents' improved global functioning after only 6 months of psychological support may have different explanations. First, it

could indicate that the timely addressing of psychosocial problems contributes to enhanced psychological well-being. Second, as also reported in previous studies among both GD adults and adolescents [2,3,5,9], our clinical experience suggests that patients attending a gender unit are pleased in the knowledge that the puberty suppression will be performed within a reasonable time and refer a distress reduction because of their accepted and understood requirements. Moreover, the initiation of the puberty suppression may have a psychological meaning which *per se* could be fundamental in reducing distress. In any case, data are too limited to express conclusively.

Both natal men and women benefited from the clinical approach, although natal men had a significantly worse functioning than natal women at baseline. It is even more important if we consider that natal men reported more social difficulties than natal women (higher dropout from school and more frequently not living with their parents). Interestingly, natal women reported significantly more GD-related discomfort than natal men. As already suggested [2], with a mean of 15 years most natal women had developed their breasts and had their menarche, which are likely to be associated with higher levels of distress. Therefore, natal men and women may need to be thought about separately and may require different interventions. Also, as the revised Dutch model [8] encourages considering GD individuals eligible for puberty suppression when they are 12 years old, studies are ongoing at our service to explore the possible benefit of further reducing the age for being eligible for puberty suppression. Even if the absence of a control group in our study does not allow us to pronounce conclusively on these comparisons, GD adolescents undergoing puberty suppression in addition to the psychological support result in psychosocial functioning levels that are impossible to differentiate from a sample of peers. These additional findings further indicate the effectiveness of both psychological support and puberty suppression in enabling young GD individuals to reach a satisfactory psychosocial functioning.

In the present study, there are some limitations. Even if psychosocial functioning is of crucial importance to identify clinical or sociocognitive difficulties [17], we focused only on a measure of psychosocial well-being. Also, the study sample was relatively small and came from only one clinic. Most importantly, despite the findings seem to suggest a cumulative and increasing over time positive effect of psychological support and GnRHa on young GD patients' well-being, results could have also different explanations because of the study design. For instance, getting older has been positively associated with maturity and well-being [18]. Ideally, a blinded randomized controlled trial design should have been performed. However, it is highly unlikely that adolescents would be motivated to participate. Also, disallowing puberty suppression, resulting in irreversible development of secondary sex characteristics, may be considered unethical [2]. Moreover, we cannot be conclusive on the higher GD-related distress in natal women compared with natal men. There are different versions of the UGDS scale for men and women, with specific items reversely coded because of gender. These differences do not allow drawing strong conclusions from the gender difference analysis.

Conclusions

In conclusion, this study confirms the effectiveness of puberty suppression for GD adolescents. Recently, a long-term follow-up evaluation of puberty suppression among GD adolescents after CSHT and GRS has demonstrated that GD adolescents are able to maintain a good functioning into their adult years [2]. The present study, together with this previous research [2], indicate that both psychological support and puberty suppression enable young GD individuals to reach a psychosocial functioning comparable with peers.

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ORIGINAL ARTICLE

Psychosocial assessment in transgender adolescents☆

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KEYWORDS
Transgender;
Adolescent;
Gender dysphoria;
Gender identity

Abstract
Objectives: To evaluate the psychosocial status of the patients who attend a paediatric endocrinology clinic due to gender incongruity (GI), and to establish the impact on this after one-year of cross hormonal therapy (CHT).
Material and methods: An analytical and prospective study conducted on adolescents between 14 and 18 years old with GI, and who attended the Endocrinology Clinic during 2018–2019. The sample included 23 transgender cases (16 male and 7 female cases) and 30 cisgender controls. Study variables were collected at T0 (pre-treatment) and T1 (after one year of CHT) and included sociodemographic data, Utrecht test, SDQ-Cas test, family APGAR test, STAI scale-anxiety Grade, and BDI-II depression assessment test.
Results: A significant improvement ($P < .05$) was found between T0 and T1 in the transgender group in terms of emotional symptoms, behaviour problems, hyperactivity symptoms, pro-social conduct, as well as in the degree of anxiety and depression measured by the SDQ-Cas test, the STAI and the BDI-II scale. There were significant differences in these scales between the transgender group and the controls at T0, however, the scores equalised at T1. The families in this sample of transgender patients provided a very favourable environment according to the scores obtained on the family APGAR scale.

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Conclusions: The rates of anxiety, emotional and behaviour distress, depressive symptomatology, as well as the feeling of gender dysphoria of these transgender patients were similar to those of non-transsexual population of the same age after one year of CHT initiated at ages between 14 and 18 years old.

PALABRAS CLAVE
Transgénero;
Adolescente;
Disforia de género;
Identidad de género

Evaluación psicosocial en adolescentes transgénero

Resumen
Objetivos: Evaluar el estado psicosocial de los pacientes que acudan a consulta de endocrinología pediátrica por incongruencia de género y determinar el impacto en este sentido de la terapia hormonal cruzada (THC) después de un año.
Material y métodos: Se trata de un estudio analítico, prospectivo realizado en adolescentes con incongruencia de género de entre 14 y 18 años que acuden a endocrinología infantil durante 2018-2019. Tamaño muestral: 23 casos transgénero (16 masculinos y 7 femeninos) y 30 controles cis. Variables del estudio en T0 (pretratamiento) y T1 (tras un año de THC): datos sociodemográficos, Test de Utrecht, Test SDQ-Cas, APGAR familiar, Escala STAI, Test de evaluación de depresión BDI-II.
Resultados: Se encuentra mejoría significativa ($p < 0,05$) entre T0 y T1 en el grupo trans en cuanto a los síntomas emocionales, los problemas de conducta, los síntomas de hiperactividad y la conducta prosocial, así como en el grado de ansiedad y depresión. Existen diferencias significativas entre el grupo trans y los controles en T0 igualándose las puntuaciones en T1 en las escalas evaluadas. Las familias de nuestra muestra de pacientes transgénero proporcionan un entorno muy favorable según las puntuaciones obtenidas en la escala del APGAR familiar.
Conclusiones: Los índices de ansiedad, distrés emocional y comportamental, sintomatología depresiva, así como el sentimiento de disforia de género de nuestra muestra de pacientes transgénero fueron similares a los de población no transexual de su misma edad tras un año de THC iniciada en edades comprendidas entre los 14-18 años.

Introduction

Transgender individuals are individuals whose gender identity or gender expression does not conform to that typically associated with the sex to which they were at birth, in the absence of an underlying mental disorder or chromosomal abnormality that could be the cause of this experience. The concept of gender dysphoria featured in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) and the International Classification of Diseases, Tenth Revision (ICD-10)[1,2] refers to the distress caused by this incongruence between gender identity and the sex assigned at birth (and the associated gender role and/or primary and secondary sex characteristics),[3,4] and not all transgender individuals experience it. During the development of the International Classification of Diseases, Eleventh Revision (ICD-11), the World Health Organization (WHO) redefined gender identity-related health, replacing categories like ''transsexualism'' and introducing the concept of ''gender incongruence''. This category is included in the so-called Z codes, which are codes used to define a variety of psychosocial factors or life events and do not fit into a diagnostic category.[5]

In transgender adolescents, puberty suppression at an early age (Tanner stages 2 and 3) seeks to alleviate the suffering caused by the development of secondary sex characteristics, to widen the temporal window for decision-making, as at this stage the treatment is still reversible, and to facilitate social transition to the new gender role.[6,7] Thus, a study conducted in the Netherlands by Cohen-Kettenis et al in transgender youth that had undergone puberty suppression analysed behavioural problems, depression, anxiety and overall functioning and found considerable improvement in every scale following treatment.[8,9]

In a study published in *Pediatrics*, Spack et al. reported similar outcomes applying the 'Dutch model' to those found by De Vries and Cohen-Kettenis in 2014.[10]

Outside the works we have just mentioned, the literature on the psychosocial impact of hormone therapy in transgender youth is scarce. More specifically, no such study has been conducted in Spain, and none of those conducted elsewhere included a control group. For this reason, the objectives of our study were to assess the psychosocial status of patients seeking care in the paediatric endocrinology clinic for gender incongruence and the impact on psychosocial status of cross-sex hormone therapy (CSHT) at 1 year of treatment.

Materials and methods

Study design

We conducted a prospective analytical study in adolescents with gender incongruence aged 14–18 years managed as new patients in the paediatric endocrinology clinic of the Hospital Clínico San Carlos. In our unit, the hormone therapy approach used for male-to-female (MTF) transition starts with gonadotropin-releasing hormone (GnRH) analogues in the intermediate pubertal stages (Tanner 2–3), adding CSHT with oral estradiol starting from age 14 years, with the specific timing determined on a case-by-case basis. The approach to female-to-male (FTM) transition starts with GnRH analogues in the intermediate pubertal stages with addition of CSHT with intramuscular testosterone starting from age 14 years. We analysed the cases of 23 trans patients (16 FTM and 7 MTF) and 30 cisgender controls matched for age, ethnicity and socioeconomic status. We recruited both cases and controls in the paediatric endocrinology clinic of the Hospital Clínico San Carlos simply by requesting that they volunteer to participate in the study. We followed up patients in both groups for a year after initiation of CHST in the trans cases.

Variables under study at T0 (before hormone therapy) and T1 (1 year after initiation of cross-sex hormone therapy)

1. *Sociodemographic characteristics*. Family: age, country of origin, ethnicity, educational attainment and income level.

   Personal: age, country of origin, ethnicity, sexual orientation and past use of mental health services.
2. *Severity of gender dysphoria – Utrecht Gender Dysphoria Scale* (*UGDS*).[11] Filled out for the sex assigned at birth at T0 and the self-identified gender at T1.
3. *Patient strengths and difficulties – Strengths and Difficulties Questionnaire, Spanish Version* (*SDQ*-Cas).[12] This questionnaire detects potential emotional and behavioural problems in children and adolescents. A score of more than 20 is considered indicative of risk of having a disorder (normal: 0–15; borderline: 16–19, abnormal: 20–40).
4. *Family functioning – Family APGAR test*.[13] The family APGAR test assesses how family members perceive overall family functioning. It is interpreted as follows: functional, 17–20 points; mildly dysfunctional, 16–13 points; moderately dysfunctional, 12–10 point; severely dysfunctional, <9 points.
5. *Level of anxiety – State-Trait Anxiety Inventory*.[14] This instrument is based on a theoretical model with 2 components: state anxiety and trait anxiety. It is composed of 2 separate self-report subscales, each with 20 items, to assess these components. Specific cut-off points have not been established for its interpretation, and instead the result is reported as the percentile corresponding to the raw score.
6. *Mood – Beck Depression Inventory II* (*BDI*-II).[15] The 21 items of the inventory describe the most frequent symptoms found in patients with depression (psychological or affective-cognitive items, and somatic-vegetative items). The instrument was developed mainly for use in clinical practice as a means to assess severity of depression in adolescent and adult patients. The ranges used to interpret the score are: no depression, 0–9; mild depression, 10–18; moderate depression, 19–29; severe depression, >30.

Inclusion criteria

- Adolescents with gender incongruence at a stage of pubertal development of Tanner 2 or higher that were willing to participate.
- Absence of psychiatric comorbidity that could affect the experience of gender dysphoria.
- Having demonstrated an understanding of the potential risks and benefits of CSHT.

Ethical considerations

We obtained the written informed consent of the parents and the assent of the minor as a requisite for participation in the study. We provided an informational document and explained the protocol in detail to all participants. We did not include any personally identifiable information in the study dataset. Thus, the study adhered to international regulations for data protection and current Spanish law on personal data protection. The protocol was approved by the Ethics and Clinical Research Committee of the Hospital Clínico San Carlos de Madrid.

Statistical analysis

We did a descriptive analysis of all study variables, using measures of central tendency and dispersion for quantitative variables and absolute and relative frequency distributions for quantitative variables. We used the mean and standard deviation (SD) to summarise quantitative variables. We compared the mean scores at baseline (T0) in both groups using the two-sample t test and the changes in scores between baseline (T0) and 1 year of treatment (T1) by one-way repeated measures analysis of variance (ANOVA), introducing the group variable as an intergroup factor and the T0 and T1 timepoints as an intragroup factor. We set a level of significance of 5% for all tests. Data were handled and analysed with the software SPSS 23.0.

Results

We analysed data for 53 participants aged 14–18 years, of who 23 were trans gender (16 [69%] trans male and 7 [31%] trans female) and 30 were healthy cisgender controls (12 [40%] female and 18 [60%] male). All were Caucasian of Spanish descent except for 2 trans participants, 1 Asian participant of Chinese descent and 1 black participant from Colombia. We did not find significant differences in the socioeconomic status between the trans participants and the cis controls ($P = .2$). Approximately 40% to 50% of participants in each group were of middle socioeconomic status and had parents with a university education (Table 1).

Table 1 Sociodemographic characteristics.

	Trans group	Cis group	
Mean age (range)	16 (14–18 years)	16 (14–18 years)	NS
Sex assigned at birth	Female (69%), male (31%)	Female (60%), male (40%)	NS
Caucasian and of Spanish descent	91%	100%	NS
Parents with university education	52%	40%	NS
Previous use of mental health services	30.4%	30%	NS
Sexual orientation	Heterosexual (65%), homosexual (13%), bisexual (21%)	Heterosexual (90%), homosexual (10%), bisexual (0%)	$P < .05$

Table 2 Results of the Strengths and Difficulties Questionnaire in trans adolescents and the control group before hormone therapy (T0) and at 1 year of cross-sex hormone therapy (T1).

Variable	Trans					Cis					Group comparison	
	T0		T1			T0		T1			T0	T1
	Mean	SD	Mean	SD	*P*	Mean	SD	Mean	SD	*P*	*P*	*P*
Prosocial	8	1.6	9	1.2	<0.001	7.7	1.2	7.5	1.2	.3	.4	<.001
Emotional symptoms	5.2	1.6	3.4	1.2	<0.001	3.7	1	3.7	1	1	<.001	.3
Conduct problems	2.7	0.8	1.8	1	<0.001	2.3	1.2	2.6	1.6	.1	.1	.05
Hyperactivity	4	1.9	2.6	1.8	<0.001	3.8	0.9	3.9	0.8	.8	.5	.002
Peer problems	2.6	1.3	2.3	0.8	0.1	1.3	0.4	1	0.2	.07	<.001	<.001
Total difficulties	14.7	3.3	10.3	2.9	<0.001	11.3	2.3	11.3	2.3	.9	<.001	.1

Cis, cisgender control group; SD, standard deviation; Trans, transgender case group.

We found that 30.4% of the trans participants ($n = 7$) and 30% of the cis controls ($n = 9$) had previously used mental health services, while only 1 trans participant (4.3%) had ever received psychiatric medication (Table 1).

The trans participants had a supportive social environment, as 100% had disclosed their transgender identity to their parents and 82% (19 out of 22) had disclosed it in their respective schools. In addition, 95% (22 out of 23) reported being addressed by their chosen names at home and 82% in their school.

Severity of Gender Dysphoria-Utrecht Scale

Participants in the trans group had a mean score in the UGDS of 57.1 ± 4.1 at T0 (the cut-off point to identify dysphoria is 40 points, out of a total possible maximum of 60 points) compared to a mean score of 14.7 ± 3.2 at T1, which evinced significant improvement at 12 months of treatment ($P < .001$). Every trans participant had gender dysphoria at T0 and none had gender dysphoria at T1 applying the cut-off point established for definition of gender dysphoria in this scale.

Strengths and Difficulties Questionnaire

The mean overall score in the trans group was in the upper range of normal at T0 (14.7 ± 3.3), with a significant improvement at T1 (10.3 ± 2.8 DE) ($P < .001$). When we compared the trans and cis groups at T0, we found significant differences, with a mean difference in the questionnaire score of 3.3 ± 0.7 ($P < .001$), a difference that was nearly reversed after 1 year of treatment (-1.0 ± 0.7; $P = .153$), so that emotional symptoms and conduct problems had both become comparable to those of the control group at T1. Tables 2 and 3 summarise the scores in the SDQ.

When we analysed each of the 5 groups of difficulties that compose the SDQ, we found significant improvement between T0 and T1 in the trans group in the areas of emotional symptoms, conduct problems, hyperactivity and prosocial behaviour ($P < .001$), with no significant change in the area of peer relationship problems, with similar scores at T0 and T1.

Table 3 Percentage of trans participants with SDQ scores in the normal, borderline and abnormal range at T0 and T1.

SDQ in trans group	T0	T1
Normal (0–15 points)	61% ($n = 14$)	95.6% ($n = 22$)
Borderline (16–19 points)	34.7% ($n = 8$)	4.3% ($n = 1$)
Abnormal (20–40 points)	4.3% ($n = 1$)	0%

Table 4 Results of the State-Trait Anxiety Inventory (STAI) in the trans adolescent group and the cis adolescent control group before hormone therapy (T0) and at 1 year of cross-sex hormone therapy (T1).

Variable	Trans					Cis					Group comparison		
	T0		T1			T0		T1			T0	T1	
	Mean	SD	Mean	SD	*P*	Mean	SD	Mean	SD	*P*	*P*	*P*	
STAI-S	33.3	9.1	16.8	8.1	<0.001	11.8	3.8	12.3	3.8	0.6	< 0.001		0.008
STAI-T	33	7.2	18.5	8.4	<0.001	14.2	4.8	14.2	4.8	0.9	< 0.001		0.02

Cis, cisgender control group; SD, standard deviation; STAI-S, STAI state anxiety subscale; STAI-T, STAI trait anxiety subscale; Trans, transgender case group.

Table 5 State anxiety subscale percentiles in the trans group.

STAI-State in trans group	Mean (SD)	Percentile
T0	33.3 (9.1)	75th–85th
T1	16.8 (8.1)	<50th

SD, standard deviation; STAI, State-Trait Anxiety Inventory.

Table 6 Trait anxiety subscale percentiles in the trans group.

STAI-Trait in trans group	Mean (SD)	Percentile
T0	33.0 (7.2)	p 85–95
T1	18.5 (8.4)	<p50

SD, standard deviation; STAI, State-Trait Anxiety Inventory.

Family environment: Family Apgar test

We found a mean score of 17.9 at T0 and of 18 at T1 in the trans group, both within the normal range. We did not find differences between T0 and T1 or between the case and control groups.

Anxiety assessment: State-Trait Anxiety Inventory

State anxiety in the trans group improved significantly, with the mean score decreasing by 16.5 ± 1.1 points ($P < .001$), corresponding to a decrease from the 75th to 85th percentile at T0 to below the 50th percentile at T1. On the other hand, participants in the control group had similar scores at T0 and T1 (Tables 4 and 5).

Comparing the trans and cis groups at T0, we found a difference in the mean score of 21.5 ± 1.8 ($P < .001$), and there was still a mean difference at T1, in this case of 4.6 ± 1.6 points ($P < .008$), which indicated a higher level of anxiety in cases compared to controls at 1 year despite treatment (Table 4).

Trait anxiety decreased by a mean of 14.5 ± 0.9 points between T0 and T1 in the trans group ($P < .001$), with no difference between time points in the control group. We found a decrease from the 85th to 90th percentile at T0 to below the 50th percentile at T1. In contrast, controls had similar scores at T0 and T1, as was also the case with the state anxiety.

Comparing the trans and cis groups at T0, we found a mean difference of 18.8 ± 1.6 points ($P < .001$), and we also found differences between groups at T1, with a mean difference of 4.3 ± 1.8 points ($P < .02$). As was the case with state anxiety, while there was improvement in the score for trait anxiety, the level of anxiety continued to be higher in the trans group compared to the control group at T1 (Tables 4–6).

Assessment of depression: Beck Depression Inventory II

We found a decrease in symptoms of depression between T0 and T1 in the trans group, with a mean difference in the BDI-II score of 9.5 ± 0.6 points ($P < .001$), while there were no differences in the control group (Table 7). The mean score at T0 was 19.3 (at the lower limit of moderate depression) and decreased to 9.7 at T1 (at the lower limit of mild depression). In the cis control group, the mean at T0 was within the normal range and it remained normal at T1 (Table 7). In the trans group, we observed clear improvement at T1 at every level of depression (Table 8).

Comparing the trans and cis groups at T0, we found a mean difference of 12.0 ± 1.3 points in the score ($P < .001$) that had decreased to 2.4 ± 0.7 points at T1 ($P < .034$). Trans participants had more depression symptoms compared to controls at T0 and, despite improvement, also at T1 (Table 7).

Discussion

In many cases, both families and the health professionals that habitually work with trans adolescents need to make decisions without the support of clear scientific evidence. But, as any professional that works with trans youth and their families knows, in a population that faces this level of discrimination[16–18] and in which self-harm, suicidal ideation, anxiety and other problems are so prevalent, the risk associated with not performing any kind of intervention is very high.[19–21]

Medical treatment of transgender adolescents has been a controversial issue since it was first reported in the Netherlands in 1998.[22] Since 2013, our paediatric endocrinology clinic offers multidisciplinary treatment to patients with adolescent-onset gender dysphoria, with collaboration of social workers, psychologists, psychiatrists, gynaecologists, dermatologists, paediatricians and endocrinologists. At

Table 7 Results of the Beck Depression Inventory II in the trans and cis groups, before hormone therapy (T0) and at 1 year of cross-sex hormone therapy (T1).

Variable	Trans					Cis					Group comparison	
	T0		T1			T0		T1			T0	T1
	Mean	SD	Mean	SD	*P*	Mean	SD	Mean	SD	*P*	*P*	*P*
BDI-II	19.3	5.5	9.7	3.9	<.001	7.2	3.9	7.4	3.6	.7	<.001	.034

BDI, Beck Depression Inventory; SD, standard deviation.

Table 8 Percentage of trans participants with BDI-II scores in the normal, mild depression, moderate depression and severe depression range at T0 and T1.

BDI-II in trans group	T0	T1
Normal (0–9)	0%	69.5%
Mild (10–18)	60.8%	26.0%
Moderate (19–29)	34.7%	4.3%
Severe (>30)	4.3%	0%

present, our clinic manages 50 patients receiving hormone therapy for this indication, mostly following the latest recommendations of the World Professional Association for Transgender Health,[3] with a model similar to the one recommended by Hembree[4] and the Cohen-Kettenis group.[8] That is, patients that have reached a stage of pubertal development of at least Tanner 2 or 3, without psychiatric comorbidity that could play a role in gender dysphoria, with adequate social, family and psychological support and that have demonstrated an understanding of the risks and benefits of hormone therapy.

At present, the scientific community does not consider transgender identities pathological. Removing transgender identities from the classification of psychiatric disorders and placing related problems in the Z codes is a solution that allows their depathologisation, including them in the classification criteria related to factors that have an impact on health status.[5] Until recently, the few manuals available to guide the management of trans patients mainly focused on the incongruence between the sex assigned at birth and the gender identity of the individual, and particularly on the distress caused by this discrepancy.[2] This distress may or may not be directly associated with the possibility of freely expressing gender identity, being able to transition if so desired, the support received by the family and the general social environment and the degree of transphobia experienced. In our study, all trans participants experienced gender dysphoria at T0, which had resolved in all at 1 year of CSHT, which demonstrates that this dysphoria is not a necessary condition in transgender individuals and is not always present in transgender youth.

In our sample, the families of transgender participants provided a highly supportive environment, as demonstrated by the family APGAR scores. This could explain the highly favourable outcomes observed at 1 year of treatment with CSHT. The support of families and physicians is essential to the adequate and healthy neuropsychological development of transgender adolescents.[6,7,23] Initiation of CSHT and the associated physical changes at younger ages than currently recommended in management protocols (16 years) may have psychological benefits, given the particular importance of fitting in the peer group during adolescence. In fact, we found excellent results in the SDQ, with a significant improvement between T0 and T1 in the trans group in emotional symptoms, conduct problems, hyperactivity and prosocial behaviour, which were comparable to those of the control group at T1 (Tables 2 and 3).

We know that a high proportion of transgender youth experience anxiety and depression, and there is evidence in the literature on the mental health of trans children and youth whose desired identities are affirmed and supported by their families. In this sense, the family plays an essential role in improving the lives of these minors, acting as a protective factor against depression, which is why it is important to implement strategies that promote the support of families due to their impact on mental health.[24–31]

We found substantial improvement in the mean scores and percentiles in the STAI state anxiety and trait anxiety scales in the trans group after 1 year of CSHT. We also found differences at T0 compared to the control group that had improved at T1, as the differences had decreased, although not disappeared (Tables 4 and 5). We also found substantial improvement in the BDI-II scores. Before initiation of hormone therapy, all trans participants had scores corresponding to some level of depression. After 1 year of CSHT, 70% had scores in the normal range. These findings suggest that initiation of CSHT at earlier ages than recommended at present, with adequate family support in general or specifically expressed in the decision of allowing an early social transition, may be associated with better mental health outcomes in transgender children.

Our findings are consistent with those of the longitudinal study published in *Pediatrics* by Annelou de Vries in 2014.[8] The levels of anxiety, emotional distress and behavioural disturbances and depressive symptoms and the experience of gender dysphoria in transgender participants were similar or better compared to those of their cisgender peers matched for age at 1 year of CSHT. Based on this body of evidence, it is essential for paediatric providers to have updated knowledge and an unbiased attitude on this reality, the concerns regarding the future impact of these interventions and the lack of evidence on their long-term adverse effects.[32] We ought to mention the recent position statement of the Asociación Española de Pediatría (Spanish Association of Paediatrics) on the approach to gender diverse and transgender identities in children and adolescents.[33] This document does not simply adopt the depathologising perspective that is increasingly espoused by health professionals, but pushes

beyond, calling for a necessary shift in social perception, as it considers that diversity in gender identity and expression enriches humankind.

Keeping in mind that age should not be the main criterion for initiation of hormone therapy in transgender minors, we, as other authors before us, hope for the development of more flexible management protocols.[34]

Limitations of the study

Selection bias: the selected sample is a key element in any study, and use of an inadequate sampling method is one of the most frequent sources of error in designing a study, as most statistical methods in use assume that the data source is a random sample. The simplest and most appropriate way of selecting a sample is completely random selection, but under real world conditions this is nearly impossible to do. We resorted to obtaining a convenience sample of individuals that volunteered to participate. Without forgetting that the sample in our study may not be representative of the general adolescent transgender population, as many transgender adolescents do not have a supportive family and many others do not need referral to a paediatric endocrinology clinic, we do not believe that the internal validity of our study was affected by the sampling method.

Conflicts of interest

The authors have no conflicts of interest to declare.

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Pubertal Suppression for Transgender Youth and Risk of Suicidal Ideation

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abstract

BACKGROUND AND OBJECTIVES: Gonadotropin-releasing hormone analogues are commonly prescribed to suppress endogenous puberty for transgender adolescents. There are limited data regarding the mental health benefits of this treatment. Our objective for this study was to examine associations between access to pubertal suppression during adolescence and adult mental health outcomes.

METHODS: Using a cross-sectional survey of 20 619 transgender adults aged 18 to 36 years, we examined self-reported history of pubertal suppression during adolescence. Using multivariable logistic regression, we examined associations between access to pubertal suppression and adult mental health outcomes, including multiple measures of suicidality.

RESULTS: Of the sample, 16.9% reported that they ever wanted pubertal suppression as part of their gender-related care. Their mean age was 23.4 years, and 45.2% were assigned male sex at birth. Of them, 2.5% received pubertal suppression. After adjustment for demographic variables and level of family support for gender identity, those who received treatment with pubertal suppression, when compared with those who wanted pubertal suppression but did not receive it, had lower odds of lifetime suicidal ideation (adjusted odds ratio = 0.3; 95% confidence interval = 0.2–0.6).

CONCLUSIONS: This is the first study in which associations between access to pubertal suppression and suicidality are examined. There is a significant inverse association between treatment with pubertal suppression during adolescence and lifetime suicidal ideation among transgender adults who ever wanted this treatment. These results align with past literature, suggesting that pubertal suppression for transgender adolescents who want this treatment is associated with favorable mental health outcomes.

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Dr Turban conceptualized and designed the study, drafted the initial manuscript, and incorporated all revisions and comments; Ms King conducted statistical analyses and reviewed and revised the manuscript for important intellectual content, with a focus on statistical aspects of the manuscript; Dr Carswell assisted in the design of the study and in interpretation of the data analyses and critically reviewed and revised the manuscript for important intellectual content, with a focus on relevant clinical endocrinology; Dr Keuroghlian supervised and contributed to the conceptualization and design of the study and the design of the statistical analyses and reviewed and revised the manuscript for important intellectual content as it relates to mental health considerations for transgender people; and all authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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WHAT'S KNOWN ON THIS SUBJECT: Gonadotropin-releasing hormone analogues are commonly used to suppress endogenous puberty for transgender adolescents. Small studies have revealed that pubertal suppression results in favorable mental health outcomes. No studies to date have examined associations between pubertal suppression and suicidality.

WHAT THIS STUDY ADDS: In this study, using the largest survey of transgender adults to date, we show that access to pubertal suppression during adolescence is associated with lower odds of lifetime suicidal ideation among transgender young adults.

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According to the Centers for Disease Control and Prevention's Youth Risk Behavior Surveillance System, ~1.8% of adolescents in the United States identify as transgender.[1] These youth suffer mental health disparities that include higher rates of internalizing psychopathology (ie, anxiety and depression) and suicidality, theorized to be due to a combination of dysphoria toward their bodies and minority stress.[2–5] In a large study of transgender adults in the United States, 40% endorsed a lifetime suicide attempt.[6]

Over the past 2 decades, protocols have been developed to provide transgender adolescents with gender-affirming medical interventions that align their bodies with their gender identities. Most prominent among these are the Endocrine Society guidelines[7] and the World Professional Association for Transgender Health (WPATH) Standards of Care.[8] Both sets of guidelines recommend that transgender adolescents be offered gonadotropin-releasing hormone analogues (GnRHas), colloquially referred to as "puberty blockers," once they reach Tanner 2 of puberty. These medications are provided as subcutaneous implants or are administered as either 1- or 3-month depot injections. GnRHa therapy effectively halts the production of gonadal sex steroids (testosterone and estrogen) by persistently activating and thereby desensitizing the gonadotropin-releasing hormone receptor, which in turn leads to suppression of luteinizing hormone and follicle-stimulating hormone release from the anterior pituitary gland.[9] This process inhibits endogenous puberty for the duration of GnRHa use. Once further pubertal development is delayed, youth are able to explore gender identities without the pressure of dysphoria associated with gender-incongruent physical development.[10] GnRHa therapy is unique among gender-affirming medical interventions in that the resultant pubertal suppression is fully reversible, with the resumption of endogenous puberty after their discontinuation.[7,8]

Since the publication of the WPATH Standards of Care and the Endocrine Society guidelines, the use of pubertal suppression for transgender youth has become more common in the United States[9] There are limited data, however, regarding the mental health outcomes of pubertal suppression. To date, there have been 2 published studies in which the effects of this treatment on the mental health of transgender youth were examined. In the first study, the authors assessed changes in mental health among 55 Dutch adolescents who received pubertal suppression.[11] This study, which notably lacked a control group, revealed that internalizing psychopathology improved after treatment with pubertal suppression. In the second study, researchers followed a group of 201 adolescents with gender dysphoria and found that those who received pubertal suppression in addition to psychological support (n = 101) had superior global functioning, measured by the Children's Global Assessment Scale, when compared with those who received psychological support alone (n = 100).[12]

In the current study, we use the largest survey of transgender people to date, a community-recruited sample of transgender adults in the United States, to conduct the first-ever investigation into associations between pubertal suppression and suicidality.

Transgender youth present to clinicians with a range of concerns. Some have minimal body dysphoria and do not desire pubertal suppression, whereas others report significant dysphoria around the physical changes related to puberty. Because not all transgender and gender-diverse youth desire medical interventions, we examined only those youth who desired pubertal suppression because these are the young people who would present to care and for whom clinicians would need to decide about whether to initiate pubertal suppression. We specifically examined measures of past-year suicidality, lifetime suicidality, past-month severe psychological distress, past-month binge drinking, and lifetime illicit drug use. We hypothesized that among those who wanted pubertal suppression, those who received it would have superior mental health outcomes when compared with those who wanted but did not receive it.

METHODS

Study Design and Data Source

The 2015 US Transgender Survey (USTS) was conducted over a 1-month period in 2015 by the National Center for Transgender Equality (NCTE). It is, to our knowledge, the largest existing data set of transgender adults and includes data regarding demographics, past gender-affirming medical treatment, family support, and mental health outcomes. Participants were recruited through community outreach in collaboration with >400 lesbian, gay, bisexual, and transgender organizations and were provided with a Web address to complete the survey online. Details regarding outreach efforts are further described in the NCTE report on the survey.[6] The USTS protocol was approved by the University of California, Los Angeles Institutional Review Board. For the purposes of the current study, data were obtained via a data-sharing agreement with the NCTE, and the current protocol was reviewed by The Fenway Institute

Institutional Review Board and determined to not comprise human subjects research.

Study Population

The USTS data set contains responses from 27 715 US transgender adults, with respondents from all 50 states, the District of Columbia, American Samoa, Guam, Puerto Rico, and US military bases overseas. Given that pubertal suppression for transgender youth was not available in the United States until 1998,[4] only participants who were 17 or younger in 1998 would have had health care access to GnRHa for pubertal suppression. We thus restricted the analysis to participants who were 36 or younger at the time of the survey, resulting in a sample of 20 619 participants. Data were further restricted to those who selected "puberty blocking hormones (usually used by youth ages 9–16)" in response to the question "Have you ever wanted any of the health care listed below for your gender identity or gender transition? (Mark all that apply)." Response options for this question were "counseling/therapy," "hormone treatment/HRT," "puberty blocking hormones (usually used by youth ages 9–16)," or "none of the above." This resulted in a sample of 3494 individuals between the ages of 18 and 36 who ever wanted pubertal suppression as part of their gender-affirming medical care.

Exposures

Exposure to pubertal suppression was defined as selecting "puberty blocking hormones (usually used by youth ages 9–16)" in response to the question "Have you ever had any of the health care listed below for your gender identity or gender transition? (Mark all that apply)." Response options for this question were "counseling/therapy," "hormone treatment/HRT," "puberty blocking hormones (usually used by youth ages 9–16)," and "none of the above." Participants who reported having pubertal suppression were also asked, "At what age did you begin taking Puberty Blocking Hormones?" Those who reported beginning treatment after age 17 were excluded to only include participants who likely had pubertal suppression during active endogenous puberty. The vast majority of adolescents would have reached Tanner 5, the final stage of puberty, by age 17.[13,14]

Outcomes

Comparing those who received pubertal suppression with those who did not, we examined past-month severe psychological distress (defined as a score of ≥13 on the Kessler Psychological Distress Scale [K6], a cutoff previously validated among US adults[15]), past-month binge drinking (operationalized as drinking ≥5 standard alcoholic beverages during 1 occasion; the rationale for this threshold when studying alcohol use among transgender people has been discussed previously[16]), lifetime illicit drug use (not including marijuana), past-year suicidal ideation, past-year suicidal ideation with a plan, past-year suicide attempts, past-year suicide attempts resulting in inpatient care, lifetime suicidal ideation, and lifetime suicide attempts.

Control Variables

Demographic variables collected included age, age of social transition, age of initiation of gender-affirming hormone therapy, current gender identity, sex assigned at birth, sexual orientation, race, education level, employment status, relationship status, total household income at the time of data collection in 2015, family support for gender identity, and current hormone treatment.

Statistical Analysis

Data were analyzed by using SPSS software version 25 (IBM SPSS Statistics, IBM Corporation, Armonk, NY). Descriptive statistics were conducted and are presented as frequency (percentage) or mean (SD). Analysis of variance and χ^2 tests were used to assess significance by age, gender identity, sex assigned at birth, race, education level, employment status, relationship status, total household income, family support for gender identity, and current hormone treatment between those who received pubertal suppression and those who did not. We used univariate logistic regression to examine associations between receiving pubertal suppression and each mental health outcome, as well as between age and both ever wanting and receiving pubertal suppression. $P < .05$ defined statistical significance. Multivariable logistic regression models were adjusted for using the demographic variables associated with each outcome at the level of $P \leq .20$. Because all outcomes were associated with level of family support, sexual orientation, education level, employment status, and total household income, all models were adjusted for these variables. Lifetime suicide attempts were associated with gender identity, and this model was therefore additionally adjusted for this variable. Past-month severe psychological distress and past-year suicidal ideation were additionally associated with age, gender identity, and relationship status, and therefore models were adjusted for these variables as well. Race was found to be associated with lifetime suicidal ideation and lifetime suicide attempts; therefore models were therefore additionally adjusted for race.

RESULTS

Of the 20 619 survey respondents 18 to 36 years of age, 3494 (16.9%) reported that they had ever wanted pubertal suppression. Of those who wanted pubertal suppression, only 89 (2.5%) had

received this treatment. The following variables were found to be associated with those who wanted and received pubertal suppression compared with those who wanted pubertal suppression but did not receive it: younger age, age of social transition, age of initiation of hormone therapy, feminine gender identity, male sex assigned at birth, heterosexual sexual orientation, higher total household income, and greater family support of gender identity (Table 1).

In univariate analyses, when comparing those who received pubertal suppression with those who did not, receiving pubertal suppression was associated with decreased odds of past-year suicidal ideation, lifetime suicidal ideation, and past-month severe psychological distress (Table 2). After controlling for demographic variables from Table 1, pubertal suppression was associated with decreased odds of lifetime suicidal ideation. Raw

TABLE 1 Sample Demographics

		Have You Ever Had [Pubertal Suppression] for Your Gender Identity or Gender Transition?			
	All (N = 3494)	Yes (n = 89; 2.5%)	No (n = 3405; 97.5%)	F	P
n (%)	n (%)	n (%)			
Age	23.4 (5.0)	21.7 (4.7)	23.4 (5.0)	10.3	.001*
Age of social transition	20.0 (5.5)	15.2 (4.5)	20.1 (5.5)	67.5	<.001*
Age began hormone therapy	22.1 (4.5)	15.7 (2.4)	22.5 (4.3)	217.4	<.001*
Gender identity				25.5[a]	<.001*
Woman		23 (25.8)	617 (18.2)		
Man		19 (21.3)	383 (11.3)		
Transgender woman		25 (28.1)	720 (21.3)		
Transgender man		16 (18.0)	795 (23.5)		
Nonbinary or genderqueer		6 (6.7)	866 (25.6)		
Sex assigned at birth				4.4[a]	.04*
Female		39 (43.8)	1874 (55.0)		
Male		50 (56.2)	1531 (45.0)		
Sexual orientation				36.5[a]	<.001*
Heterosexual or straight		27 (30.3)	350 (10.3)		
Asexual		9 (10.1)	437 (12.8)		
Pansexual or queer		36 (40.4)	1784 (52.4)		
Gay or lesbian		12 (13.5)	539 (15.8)		
Not listed		5 (5.6)	295 (8.7)		
Race, n (%)				3.5[a]	.06
Racial minority		28 (31.5)	782 (23.0)		
Not racial minority (white or European American)		61 (68.5)	2623 (77.0)		
Education level				2.9[a]	.41
Less than high school		9 (10.1)	220 (6.5)		
High school graduate or GED		20 (22.5)	683 (20.1)		
Some college or associate degree		39 (43.8)	1729 (50.8)		
Bachelor's degree or higher		21 (23.6)	773 (22.7)		
Employment status				0.6[a]	.45
Employed		51 (79.7)	1976 (75.6)		
Unemployed		13 (20.3)	638 (24.4)		
Relationship status				0.5[a]	.47
Partnered		35 (40.2)	1447 (44.1)		
Unpartnered		52 (59.8)	1834 (55.9)		
Total household income, $				21.9[a]	<.001*
<25 000		21 (26.3)	1153 (38.3)		
25 000–49 999		13 (16.3)	652 (21.7)		
50 000–99 000		14 (17.5)	630 (20.9)		
>100 000		32 (40.0)	574 (19.1)		
Family support for gender identity					
Supportive		71 (81.6)	1551 (55.8)	24.3[a]	<.001*
Neutral		11 (12.6)	573 (20.6)		
Unsupportive		5 (5.7)	658 (23.7)		
Current hormone treatment		87 (97.8)	1617 (96.3)	0.5[a]	.48

Descriptive statistics for transgender adults in the United States who ever wanted pubertal suppression for their gender identity or gender transition when comparing those who received this treatment with those who did not receive this treatment (total N = 3494). Percentages were calculated from the total of nonmissing values.
*Indicates statistical significance.
[a] χ^2.

TABLE 2 Mental Health Outcomes Among Those Who Received Pubertal Suppression

	Univariate Analyses		Multivariable Analyses	
	OR (95% CI)	*P*	aOR (95% CI)	*P*
Suicidality, past 12 mo				
Ideation	0.6 (0.4–0.8)	.006*	0.6 (0.3–1.1)	0.09
Ideation with plan	0.9 (0.5–1.6)	.73		
Ideation with plan and attempt	1.2 (0.6–2.3)	.64		
Attempt resulting in inpatient care	2.8 (0.8–9.4)	.09		
Suicidality, lifetime				
Ideation	0.3 (0.2–0.5)	<.001*	0.3 (0.2–0.6)	0.001*
Attempts	0.7 (0.4–1.0)	.08		
Mental health and substance use				
Past-month severe psychological distress, K6 ≥13	0.5 (0.3–0.8)	.001*	0.8 (0.4–1.4)	0.38
Past-month binge drinking	0.3 (0.8–2.0)	.29		
Lifetime illicit drug use	1.1 (0.7–1.8)	.67		

Univariate and multivariable analyses of mental health outcomes among transgender adults in the United States who ever wanted pubertal suppression when comparing those who received this treatment with those who did not. Multivariable logistic regression models were adjusted for using the demographic variables associated with each outcome at the level of $P \leq .20$. Because all outcomes were associated with family support, sexual orientation, education level, employment status, and total household income, all models were adjusted for these variables. Lifetime suicide attempts were associated with gender identity, and this model was additionally adjusted for this variable. Past-month severe psychological distress and past-year suicidal ideation were additionally associated with age, gender identity, and relationship status, and thus these models were adjusted for these variables as well. Race was found to be associated with lifetime suicidal ideation and lifetime suicide attempts, and thus these models were additionally adjusted for race. Models for psychological distress and past-year suicidal ideation were also adjusted for age, gender identity, and relationship status. aOR, adjusted odds ratio.

[a] Indicates statistical significance.

frequency outcomes are presented in Table 3.

To examine associations between age, ever wanting, and ever receiving pubertal suppression, we divided participants into 2 age groups with the cutoff point at the median, 18 to 22 and 23 to 36, in light of the skewed distribution of age.[17] The younger age group had increased odds both of ever wanting pubertal suppression (odds ratio [OR] = 1.4, $P < .001$, 95% confidence interval [CI]: 1.3–3.5) and of receiving pubertal suppression (OR = 2.1, $P = .001$, 95% CI: 1.4–3.4).

Among those who had ever received pubertal suppression, 60% reported traveling <25 miles for gender-affirming health care, 29% traveled between 25 and 100 miles, and 11% traveled >100 miles.

TABLE 3 Raw Frequencies of Outcome Variables

	Have You Ever Had [Pubertal Suppression] for Your Gender Identity or Gender Transition?	
	Yes (*n* = 89; 2.5%)	No (*n* = 3405; 97.5%)
	n (%)	*n* (%)
Suicidality (past 12 mo)		
Ideation	45 (50.6)	2204 (64.8)
Ideation with plan	25 (55.6)	1281 (58.2)
Ideation with plan and attempt	11 (24.4)	473 (21.5)
Attempt resulting in inpatient care	5 (45.5)	108 (22.8)
Suicidality (lifetime)		
Ideation	67 (75.3)	3062 (90.2)
Attempts	37 (41.6)	1738 (51.2)
Mental health and substance use		
Past-month severe psychological distress (K6 ≥13)	32 (37.2)	1847 (55.1)
Past-month binge drinking	26 (29.2)	825 (24.3)
Lifetime illicit drug use	24 (27.3)	850 (25.3)

Raw frequencies of mental health outcomes among transgender adults in the United States who ever wanted pubertal suppression. Percentages were calculated from the total of nonmissing values.

DISCUSSION

This study is the first in which the association between access to pubertal suppression and measures of suicidality is examined. Treatment with pubertal suppression among those who wanted it was associated with lower odds of lifetime suicidal ideation when compared with those who wanted pubertal suppression but did not receive it. Suicidality is of particular concern for this population because the estimated lifetime prevalence of suicide attempts among transgender people is as high as 40%.[6] Approximately 9 of 10 transgender adults who wanted pubertal suppression but did not receive it endorsed lifetime suicidal ideation in the current study (Table 3). Access to pubertal suppression was associated with male sex assignment at birth, heterosexual sexual orientation, higher total household income, and higher level of family support for gender identity.

Results from this study suggest that the majority of transgender adults in the United States who have wanted pubertal suppression did not receive it. Of surveyed transgender adults in

the current study, 16.9% reported ever desiring pubertal suppression as part of their gender-related care; however, only 2.5% of these respondents indicated they had in fact received this wanted treatment. This was the case even for the youngest survey respondents, who were 18 years old at the time of data collection in 2015. Only 4.7% of 18-year-olds who wanted the treatment reported receiving it.

Although rates both of desiring and of receiving pubertal suppression were higher among younger respondents, results from the current study indicate that still only 29.2% of the youngest participants in the study (ie, those who were 18 years of age in the year 2015) reported ever desiring pubertal suppression as part of gender-related care. No individuals <18 years of age were captured by this data set; future research should investigate the rate of desiring pubertal suppression among younger populations. Some respondents may have simply never been aware of the possibility of puberty suppression while still within the range of developmentally suitable candidates for receiving this treatment, or they may have believed that they were not suitable candidates. This finding may also reflect the diversity of experience among transgender and gender-diverse people, highlighting that not all will want every type of gender-affirming intervention.[7,8] Future research is needed to understand why younger participants reported desiring pubertal suppression at higher rates; we hypothesize that this is likely due in part to recent increased public awareness about and access to gender-affirming interventions.[5]

Access to pubertal suppression was associated with a greater total household income. Without insurance, the annual cost of GnRHa therapy ranges from $4000 to $25 000.[18] Among adolescents treated with pubertal suppression at the Boston Children's Hospital Gender Management Service before 2012, <20% obtained insurance coverage.[19] More recently, insurance coverage for these medications has increased: a study from 2 academic medical centers in 2015 revealed that insurance covered the cost of GnRHa therapy in 72% of cases.[18] This is 1 potential explanation for why younger age was found to be associated with accessing pubertal suppression in the current study (Table 1). It is also plausible that those who receive pubertal suppression experience more improvement in mental health, which in turn may contribute to greater socioeconomic advancement.[20] This study's cross-sectional design limits further interpretation.

Participants who endorsed a heterosexual sexual orientation were more likely to have received pubertal suppression. This is in line with past research revealing that nonheterosexual transgender people are less likely to access gender-affirming surgical interventions.[21] Some clinicians may be biased against administering pubertal suppression to patients whose sexual orientation identities do not align with society's heteronormative assumptions.[21] In the current study, nonbinary and genderqueer respondents were also less likely to have accessed pubertal suppression, suggesting that clinicians may additionally be uncomfortable with delivering this treatment to patients whose gender identities defy more traditional binary categorization. Of note, because research on gender-affirming hormonal interventions for adolescents has been focused on transgender youth with binary gender identities,[11] some clinicians have reservations about prescribing pubertal suppression interventions to nonbinary youth in the event of a potentially prolonged state of low sex-steroid milieu.

Family support was also associated with receiving pubertal suppression among those who wanted this treatment. This finding is unsurprising given that most states require parental consent for adolescents to receive pubertal suppression.[22] Past studies have revealed that family support of gender identity is associated with favorable mental health outcomes.[6] Of note, treatment with pubertal suppression in the current study was associated with lower odds of lifetime suicidal ideation, even after adjustment for family support (Table 2).

We did not detect a difference in the odds of lifetime or past-year suicide attempts or attempts resulting in hospitalization. It is possible that we were underpowered to detect these differences given that suicide attempt items were less frequently endorsed than suicidal ideation items (Table 3). Given this study's retrospective self-report survey design, we were unable to capture information regarding completed suicides, which may have also reduced the number of suicide attempts we were able to account for. Given that suicidal ideation alone is a known predictor of future suicide attempts and deaths from suicide, the current results warrant particular concern.[23]

This study adds to the existing literature[11,12] on the relationship of pubertal suppression to favorable mental health outcomes. The theoretical basis for these improved mental health outcomes is that pubertal suppression prevents irreversible, gender-noncongruent changes that result from endogenous puberty (eg, bone structure, voice changes, breast development, and body hair growth) and that may cause significant distress among transgender youth. Pubertal suppression allows these adolescents more time to decide if they wish to either induce exogenous gender-congruent puberty or allow

endogenous puberty to progress.[7,8] Some have also theorized that gender-affirming medical care may have mental health benefits that are separate from its physical effects because it provides implied affirmation of gender identity from clinicians, which may in turn buffer against minority stress.[24]

Strengths of this study include its large sample size and representation of a broad geographic area of the United States. It is the first study in which associations between pubertal suppression for transgender youth and suicidality are examined. Limitations include the study's cross-sectional design, which does not allow for determination of causation. Longitudinal clinical trials are needed to better understand the efficacy of pubertal suppression. Because the 2015 USTS data do not contain the relevant variables, we were unable to examine associations between access to pubertal suppression and degree of body dysphoria in this study. Notably, past studies have revealed that body image difficulties persist through pubertal suppression and remit only after administration of gender-affirming hormone therapy with estrogen or testosterone.[11] It is also limited by its nonprobability sample design. Future researchers should work toward the collection of population-based survey data that include variables related to gender-affirming medical interventions. Of note, because pubertal suppression for transgender youth is a relatively recent intervention, some participants might not have known that these interventions existed and thus would not have reported ever wanting them. Had these individuals known about pubertal suppression, it is possible that they might have desired it. Because we do not have data on whether individuals who did not desire pubertal suppression would have wanted it had they known about it, we restricted our analysis to those who reported ever desiring pubertal suppression. Reverse causation cannot be ruled out: it is plausible that those without suicidal ideation had better mental health when seeking care and thus were more likely to be considered eligible for pubertal suppression. The Endocrine Society guidelines for pubertal suppression eligibility recommend that other mental health concerns be "reasonably well controlled."[7] Because this study includes only adults who identify as transgender, it does not include outcomes for people who may have initiated pubertal suppression and subsequently no longer identify as transgender. Notably, however, a recent study from the Netherlands of 812 adolescents with gender dysphoria revealed that only 1.9% of adolescents who initiated pubertal suppression discontinued this treatment without proceeding to gender-affirming hormone therapy with estrogen or testosterone.[25]

CONCLUSIONS

Among transgender adults in the United States who have wanted pubertal suppression, access to this treatment is associated with lower odds of lifetime suicidal ideation. This study strengthens recommendations by the Endocrine Society and WPATH for this treatment to be made available for transgender adolescents who want it.

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ABBREVIATIONS

CI: confidence interval
GnRHa: gonadotropin-releasing hormone analogue
K6: Kessler Psychological Distress Scale
NCTE: National Center for Transgender Equality
OR: odds ratio
USTS: US Transgender Survey
WPATH: World Professional Association for Transgender Health

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RESEARCH ARTICLE

Access to gender-affirming hormones during adolescence and mental health outcomes among transgender adults

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Abstract

Objective

To examine associations between recalled access to gender-affirming hormones (GAH) during adolescence and mental health outcomes among transgender adults in the U.S.

Methods

We conducted a secondary analysis of the 2015 U.S. Transgender Survey, a cross-sectional non-probability sample of 27,715 transgender adults in the U.S. Using multivariable logistic regression adjusting for potential confounders, we examined associations between access to GAH during early adolescence (age 14–15), late adolescence (age 16–17), or adulthood (age ≥18) and adult mental health outcomes, with participants who desired but never accessed GAH as the reference group.

Results

21,598 participants (77.9%) reported ever desiring GAH. Of these, 8,860 (41.0%) never accessed GAH, 119 (0.6%) accessed GAH in early adolescence, 362 (1.7%) accessed GAH in late adolescence, and 12,257 (56.8%) accessed GAH in adulthood. After adjusting for potential confounders, accessing GAH during early adolescence (aOR = 0.4, 95% CI = 0.2–0.6, p < .0001), late adolescence (aOR = 0.5, 95% CI = 0.4–0.7, p < .0001), or adulthood (aOR = 0.8, 95% CI = 0.7–0.8, p < .0001) was associated with lower odds of past-year suicidal ideation when compared to desiring but never accessing GAH. In post hoc analyses, access to GAH during adolescence (ages 14–17) was associated with lower odds of past-year suicidal ideation (aOR = 0.7, 95% CI = 0.6–0.9, p = .0007) when compared to accessing GAH during adulthood.

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Competing interests: I have read the journal's policy and the authors of this manuscript have the following competing interests: Dr. Turban reports receiving textbook royalties from Springer Nature and Dr. Keuroghlian reports receiving textbook royalties from McGraw Hill. Dr. Turban has received expert witness payments from the ACLU.

Conclusion

Access to GAH during adolescence and adulthood is associated with favorable mental health outcomes compared to desiring but not accessing GAH.

Introduction

A recent representative sample of adolescents in the United States (U.S.) found that 1.8% identified as transgender [1]. Unfortunately, these young people face a range of mental health disparities, including elevated rates of anxiety, depression, and suicide attempts [2]. Suicide attempt prevalence among transgender young adults has been estimated to be as high as 40% [3]. These disparities are generally thought to be due to two processes: gender minority stress and dysphoria related to one's body developing in ways that are incongruent with one's gender identity (i.e., a person's psychological sense of their own gender) [2].

Gender minority stress refers to the ways in which society's mistreatment of transgender people results in worse mental and physical health outcomes. This includes distal factors (gender-related discrimination, gender-related rejection, gender-related victimization, and non-affirmation of gender identity), as well as subsequent proximal factors (internalized transphobia, negative expectations, and concealment) [4]. Creating safe and affirming social environments for transgender adolescents is thus considered paramount in preventing adverse mental health outcomes [5].

In addition to creating safe and affirming environments, care for transgender people often involves the provision of gender-affirming medical interventions to alleviate the psychological distress related to one's body developing in ways that do not align with one's gender identity [6, 7]. This may include pubertal suppression for younger adolescents and gender-affirming hormones (GAH, e.g., estrogen and testosterone) from adolescence onward to induce physical changes that match the person's gender identity [6–8]. Some adolescents may undergo gender-affirming surgery to reduce psychological distress [9, 10]. Of note, past Endocrine Society guidelines recommended that GAH not be considered until an adolescent reaches age 16 [11]. More recent guidelines state that initiation of GAH can be considered as early as age 14, to allow transgender adolescents to undergo puberty at ages more comparable to their peers, and to reduce the risk of delayed bone development due to prolonged pubertal suppression [7]. In this article, we therefore consider two age groups of adolescents who initiated GAH: those who started GAH during late adolescence (i.e., between their 16^{th} and 18^{th} birthdays) and those who started GAH during early adolescence (i.e., between their 14^{th} and 16^{th} birthdays).

To date, there have been six longitudinal cohort studies examining the impact of GAH initiation during adolescence on mental health [12–17]. These studies have generally found improvement in mental healh following adolescent GAH initiation, including decreases in internalizing psychopathology, improved general wellbeing, and decreased suicidality. Of note, these studies did not include a comparison group of adolescents who did not access GAH. Furthermore, these studies did not examine separately those who initiated GAH during early or late adolescence, nor did they compare initiation of GAH during adolescence with initiation of GAH during adulthood.

The impact of GAH initiated in adolescence on the mental health of transgender adults is of particular policy relevance today, as several U.S. states have introduced legislation to limit access to GAH for transgender adolescents, despite opposition from major medical organizations including The American Medical Association, The American Academy of Pediatrics,

The American Psychiatric Association, The American Academy of Child & Adolescent Psychiatry, The Endocrine Society, The Pediatric Endocrine Society, and others [18]. This is an area of active policy debate where additional quantitative data are needed to guide policy decisions. Parents of transgender youth have been particularly concerned about these restrictive legislative efforts, with a parent in one recent qualitative sudy noting, "this could mean death for my child" [19].

The current study uses the largest survey of transgender people conducted to date to examine associations between recalled access to GAH during early adolescence (ages 14–15), late adolescence (ages 16–17), or adulthood (age ≥18), and adult mental health outcomes including measures of suicidality. It is the first study of GAH initiation during adolescence that includes a comparison group of those who desired but never accessed GAH. It is also the first to compare access to GAH during adolescence with access to GAH during adulthood. Given the large sample size, we were able to adjust for a wide range of potential confounding variables known to be associated with mental health outcomes for transgender people. We hypothesized that access to GAH during both early and late adolescence would be associated with more favorable mental health outcomes reported in adulthood, when compared to desiring but never accessing GAH.

Methods

Study population

The 2015 U.S. Transgender Survey (USTS) is the largest existing dataset of transgender people to date [3]. The cross-sectional non-probability survey was conducted between August and September of 2015. Transgender adults ages 18 years or older were recruited in collaboration with over 400 community organizations and completed measures online. The final survey had 27,715 participants from all 50 U.S. states, as well as Washington D.C., Puerto Rico, and U.S. territories abroad. Because not all transgender people necessarily desire GAH, we restricted the current study to participants who reported ever desiring GAH for gender affirmation, as this is a more clinically relevant group. This was assessed by choosing "hormone therapy/HRT (an acronym for 'Hormone Replacement Therapy')" in response to the question, "Have you ever wanted any of the health care listed below for your gender identity or gender transition? (Mark all that apply)." Options included "counseling/therapy," "hormone treatment/HRT," "puberty blocking hormones (usually used by youth ages 9–16)," and "none of the above." This resulted in inclusion of 21,598 participants.

Ethical considerations

The protocol for the USTS was approved by the University of California Los Angeles Institutional Review Board. The protocol for the current study was reviewed by The Fenway Institute Institutional Review Board. All participants provided informed consent for study participation.

Age of initiation of GAH

Participants were divided into four categories. The first group, "wanted but never accessed GAH" (No GAH), reported never accessing GAH despite desiring these medications. The second group consisted of participants who reported they first accessed GAH during early adolescence, defined as the period between their 14th and 16th birthdays (GAH 14–15), which corresponds to the age group most recently added to the Endocrine Society Guidelines [7]. The third group consisted of participants who reported they first accessed GAH during late

adolescence, defined as the period between their 16th and 18th birthdays (GAH 16–17), corresponding to the narrower age group in the prior, 2009 Endocrine Society Guidelines [11]. The fourth group consisted of participants who reported they first accessed GAH after their 18th birthday (GAH $\geq$ 18).

Outcomes

Severe psychological distress in the month prior to the survey was defined as a score $\geq$ 13 on the Kessler-6 Psychological Distress Scale [20]. Binge drinking in the month prior to the survey was defined as drinking 5 or more standard alcoholic drinks on a single occasion, a threshold for use in research with transgender adults that has been discussed in prior reports [21]. Lifetime illicit drug use (excluding marijuana) was also assessed as a binary "yes" or "no" self-report outcome. Measures of suicidality were examined, including suicidal ideation during the year prior to the survey, suicidal ideation with plan during the prior year, suicide attempt during the prior year, and suicide attempt requiring hospitalization during the prior year [8]. All suicidality measures were binary outcome variables in which participants reported "yes" or "no."

Demographic and other potential confounding variables

Demographic and other potential confounding variables that are known to be associated with adverse mental health outcomes among transgender people were collected for participants and included age at time of survey completion (U.S. census categories), gender identity, sex assigned at birth, sexual orientation, race/ethnicity (U.S. census categories), level of family support for gender identity (unsupportive, neutral, supportive, or not asked because participant had not disclosed being transgender to their family) [22], relationship status, level of education, employment status, household income, having ever received pubertal suppression (e.g., treatment with gonadotropin-releasing hormone agonists) [8], having ever been exposed to gender identity conversion efforts [23], and having experienced any harassment based on gender identity in K-12 (verbal, physical, or sexual) [5].

Statistical analyses

All statistical analyses were performed with SAS 9.4. The data in the analytic sample had minimal missing data for both exposure and outcome variables. Each control variable had under 8% missing data within all comparison groups. Therefore no imputation was performed, since listwise deletion with missingness as high as 10% can be acceptable under particular assumptions of missingness [24].

Analyses were performed for the three age groups of participants who accessed GAH and participants who desired but never accessed GAH, on demographic variables listed above. Variables were analyzed with Rao-Scott χ^2 tests. Logistic regression tests were used to identify demographics and other potential confounding variables associated with each outcome.

Multivariable logistic regression was then performed, comparing mental health outcomes for participants who reported access to GAH during early adolescence, late adolescence, or adulthood with those for participants who desired but never accessed GAH. Models were fit to test associations with mental health outcomes, after adjusting for demographic and potential confounding variables that were found to be associated with each outcome. All hypothesis tests were 2-sided. The percentage decrease in adjusted odds for the outcomes was calculated from the model coefficients for each age group.

In order to account for multiple comparisons, a modified Bonferroni correction was applied for the approximately 50 comparisons performed. A significance threshold of 0.001 (.05/50) was used for our analyses.

After all aforementioned analyses were completed, we identified further analyses of interest that were not included in the original study design, and therefore not included in the Bonferroni correction. In these post hoc analyses, we compared access to GAH during adolescence (ages 14–17) to access during adulthood (ages ≥18), and access to GAH during early adolescence (ages 14–15) to access during late adolescence (ages 16–17).

Results

Demographic differences & potential confounding variables

In total, 21,598 participants (77.9%) reported ever desiring GAH. Of these, 8,860 (41.0%) never accessed GAH, 119 (0.6%) reported access to GAH in early adolescence, 362 (1.7%) reported access to GAH in late adolescence, and 12,257 (56.8%) reported access to GAH in adulthood. Significant differences were found based on age at time of study participation, gender identity, sex assigned at birth, sexual orientation, race/ethnicity, family support of gender identity, relationship status, level of education, employment status, household income, having ever received pubertal suppression, having ever been exposed to gender identity conversion efforts, and having experienced verbal, physical, or sexual harassment based on gender identity in K-12 (Table 1).

GAH during early adolescence

The median age of participants who reported accessing GAH during early adolescence was 21.0 (IQR 18.0–35.0). After adjusting for demographic and potential confounding variables, recalled access to GAH during early adolescence was associated with lower odds of past-month severe psychological distress (aOR = 0.3, 95% CI = 0.2–0.4, $p < .0001$) and past-year suicidal ideation (aOR = 0.4, 95% CI = 0.2–0.6, $p < .001$) when compared to desiring GAH but never accessed them. For participants who recalled GAH access in early adolescence, these results represent a 222% decrease in adjusted odds for past-month severe psychological distress and a 135% decrease for past-year suicidal ideation. We detected no difference for other mental health variables measured (Table 2).

GAH during late adolescence

The median age of participants who reported accessing GAH during late adolescence was 19.0 (IQR 18.0–22.0). After adjusting for demographic and potential confounding variables, recalled access to GAH during late adolescence was associated with lower odds of past-month severe psychological distress (aOR = 0.3, 95% CI = 0.3–0.4, $p < .0001$) and past-year suicidal ideation (aOR = 0.5, 95% CI = 0.4–0.7, $p < .0001$) when compared to desiring GAH but never accessing them. These results represent a 153% decrease in the adjusted odds for past-month severe psychological distress and a 62% decrease for past-year suicide ideation. We detected no difference for other mental health variables measured (Table 2).

GAH during adulthood

The median age of participants who reported accessing GAH during adulthood was 31.0 (IQR 25.0–45.0). After adjusting for demographic and potential confounding variables, participants who recalled access to GAH during adulthood had lower odds of past-month severe psychological distress (aOR = 0.6, 95% CI = 0.5–0.6, $p < .0001$) and past-year suicidal ideation

Table 1. Sample demographics.

Total N = 21,598		No GAH	GAH 14–15	GAH 16–17	GAH ≥ 18	
		n = 8860	n = 119	n = 362	n = 12257	
		n (%)	n (%)	n (%)	n (%)	p
Age (Census)						<**0.001**
	18–24	5315 (60.0)	75 (63.03)	297 (82.04)	2856 (23.30)	
	25–44	2653 (29.9)	23 (19.33)	54 (14.92)	6285 (51.28)	
	45–64	753 (8.5)	19 (15.97)	11 (3.04)	2660 (21.70)	
	65+	139 (1.57)	2 (1.68)	0 (0.00)	456 (3.72)	
Gender Identity						<**0.001**
	Trans man / male	02620 (29.57)	00048 (40.34)	00214 (59.12)	04713 (38.45)	
	Trans woman / female	02324 (26.23)	00054 (45.38)	00109 (30.11)	06340 (51.73)	
	AFAB GQ/NB	02829 (31.93)	00013 (10.92)	00035 (9.67)	00834 (6.80)	
	AMAB GQ/NB	00766 (8.65)	00004 (3.36)	00004 (1.10)	00330 (2.69)	
	Other	00321 (3.62)	00000 (0.00)	00000 (0.00)	00040 (0.33)	
Sex Assigned at Birth						<**0.001**
	Female	05475 (61.79)	00061 (51.26)	00249 (68.78)	05561 (45.37)	
	Male	03385 (38.21)	00058 (48.74)	00113 (31.22)	06696 (54.63)	
Sexual Orientation						<**0.001**
	Asexual	01220 (13.77)	00006 (5.04)	00022 (6.08)	00771 (06.29)	
	Bisexual	01391 (15.70)	00007 (5.88)	00056 (15.47)	01900 (15.50)	
	Gay/Lesbian/Same Gender Loving	01337 (15.09)	00022 (18.49)	00064 (17.68)	02535 (20.68)	
	Heterosexual/Straight	00743 (8.39)	00031 (26.05)	00071 (19.61)	02019 (16.47)	
	Pansexual	01875 (21.16)	00021 (17.65)	00066 (18.23)	01877 (15.31)	
	Queer	01573 (17.75)	00019 (15.97)	00058 (16.02)	02525 (20.60)	
	Other	00721 (08.14)	00013 (10.92)	00025 (6.91)	00630 (5.14)	
Race / Ethnicity						<**0.001**
	Alaska Native/American Indian	00105 (1.19)	00002 (1.68)	00003 (0.83)	00149 (1.22)	
	Asian/Native Hawaiian/Pacific Islander	00273 (3.08)	00008 (6.72)	00010 (2.76)	00292 (2.38)	
	Biracial/Multiracial	00475 (5.36)	00009 (7.56)	00027 (7.46)	00571 (4.66)	
	Black/African American	00210 (2.37)	00011 (9.24)	00016 (4.42)	00378 (3.08)	
	Latin/Hispanic	00499 (5.63)	00008 (6.72)	00025 (6.91)	00572 (4.67)	
	White/Middle Eastern/North African	07298 (82.37)	00081 (68.07)	00281 (77.62)	10295 (83.99)	
Family Support of Gender Identity						<**0.001**
	Not Asked (Not Out to Family as Transgender)	03067 (34.64)	00003 (2.52)	00015 (4.14)	00901 (7.36)	
	Neutral	01564 (17.66)	00012 (10.08)	00032 (8.84)	01980 (16.16)	
	Supportive	02904 (32.80)	00091 (76.47)	00291 (80.39)	07321 (59.77)	

(*Continued*)

Table 1. (Continued)

Total N = 21,598		No GAH	GAH 14–15	GAH 16–17	GAH ≥ 18	
		n = 8860	n = 119	n = 362	n = 12257	
		n (%)	n (%)	n (%)	n (%)	p
	Unsupportive	01319 (14.90)	00013 (10.92)	00024 (6.63)	02047 (16.71)	
	Missing	6 (0.07)	0 (0.00)	0 (00.00)	8 (0.08)	
Relationship Status						<**0.001**
	Partnered	04028 (46.90)	00049 (43.36)	00135 (38.03)	06257 (52.99)	
	Unpartnered	04560 (53.10)	00064 (56.64)	00220 (61.97)	05551 (47.01)	
	Other	272 (3.07)	6 (5.04)	7 (1.93)	449 (3.66)	
Education						<**0.001**
	Bachelor's degree or higher	02219 (25.05)	00023 (19.33)	00048 (13.26)	05911 (48.23)	
	Some college (no degree)/Associate's	04555 (51.41)	00061 (51.26)	00171 (47.24)	05199 (42.42)	
	High school grad (including GED)	01617 (18.25)	00023 (19.33)	00099 (27.35)	00975 (7.95)	
	Less than high school	00469 (5.29)	00012 (10.08)	00044 (12.15)	00172 (1.40)	
Employment Status						<**0.001**
	Employed	05213 (59.10)	00060 (50.85)	00189 (52.50)	08788 (72.01)	
	Out of the labor force	02038 (23.10)	00039 (33.05)	00108 (30.00)	02283 (18.71)	
	Unemployed	01570 (17.80)	00019 (16.10)	00063 (17.50)	01133 (9.28)	
	Excluded (status unclear)	4 (0.05)	0 (0)	2 (00.55)	2 (0.02)	
	Missing	35 (0.40)	1 (0.48)	0 (0)	51 (0.42)	
Household Income						<**0.001**
	$1 to $9,999	01163 (14.75)	00016 (14.81)	00041 (12.65)	01160 (10.10)	
	$10,000 to $24,999	01714 (21.73)	00013 (12.04)	00053 (16.36)	02252 (19.62)	
	$100,000 or more	01136 (14.40)	00023 (21.30)	00079 (24.38)	02064 (17.98)	
	$25,000 to $49,999	01717 (21.77)	00028 (25.93)	00059 (18.21)	02652 (23.10)	
	$50,000 to $100,000	01772 (22.47)	00024 (22.22)	00071 (21.91)	03035 (26.44)	
	No income	00385 (4.88)	00004 (3.70)	00021 (6.48)	00317 (2.76)	
	Excluded	275 (3.10)	7 (5.88)	11 (3.04)	313 (2.55)	
	Missing	698 (7.88)	4 (3.36)	27 (7.46)	464 (3.79)	
Ever Received Pubertal Suppression						<**0.001**
	Yes	00031 (0.36)	00041 (34.45)	00044 (12.15)	00221 (01.80)	
	No	08659 (99.64)	00078 (65.55)	00318 (87.85)	12036 (98.20)	
	Missing	00170 (1.92))	0 (0.00))	0 (0.00))	0 (0.00))	
Ever Experienced Gender Identity Conversion Efforts						<**0.001**

(*Continued*)

Table 1. (Continued)

Total N = 21,598		No GAH	GAH 14–15	GAH 16–17	GAH ≥ 18	
		n = 8860	n = 119	n = 362	n = 12257	
		n (%)	n (%)	n (%)	n (%)	p
	Yes	00998 (11.28)	00031 (26.27)	00092 (25.48)	02208 (18.03)	
	No	07852 (88.72)	00087 (73.73)	00269 (74.52)	10037 (81.97)	
	Missing	10 (0.11)	1 (0.84)	1 (0.28)	12 (0.10)	
K-12 Harassment						**<0.001**
	Verbal, physical or sexual	2026 (22.9)	80 (67.2)	226 (62.4)	2612 (21.3)	
	None	6834 (77.1)	39 (32.8)	136 (37.6)	9645 (78.7)	

Descriptive statistics for transgender adults in the U.S. who ever desired gender-affirming hormones (GAH) for their gender identity or gender transition, comparing those who never accessed this treatment (No GAH), those who accessed GAH between their 14th and 16th birthdays (GAH 14–15), those who accessed GAH after their 16th birthday and before their 18th birthday (GAH 16–18) and those who accessed GAH after their18th birthday (GAH ≥ 18).

Abbreviations: AFAB (assigned female at birth), AMAB (assigned male at birth), GQ/NB (gender queer or non-binary).

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(aOR = 0.8, 95% CI = 0.7–0.8, p < .0001) when compared to those who desired GAH but never accessed them. Access to GAH during adulthood was associated with an 81% decrease in adjusted odds of past-month severe psychological distress and a 21% decrease in past-year suicidal ideation. Access to GAH during adulthood was also associated with greater odds of past-month binge drinking (aOR = 1.2, 95% CI = 1.1–1.3, p < .0001) and lifetime illicit drug use (aOR = 1.7, 95% CI = 1.6–1.8, p < .0001) when compared to desiring but never accessing GAH. Results indicated an adjusted odds increase of 20% for past-month binge drinking and 70% increase for lifetime illicit drug use. We detected no difference for other mental health variables measured (Table 2).

Raw frequencies of outcome variables

Raw frequencies for outcome variables are shown in Table 3.

Post hoc analyses

GAH during adolescence vs. GAH during adulthood. After adjusting for demographic and potential confounding variables, access to GAH during adolescence (ages 14–17) was associated with lower odds of past-month severe psychological distress (aOR = 0.6, 95% CI = 0.5–0.8, p < .0001), past-year suicidal ideation (aOR = 0.7, 95% CI = 0.6–0.9, p = .0007), past-month binge drinking (aOR = 0.7, 95% CI = 0.5–0.9, p = .001), and lifetime illicit drug use (aOR = 0.7, 95% CI = 0.5–0.8, p = .0003) when compared to access to GAH during adulthood. We detected no difference for other mental health variables measured (Table 4).

Access to GAH during early vs. late adolescence. After adjusting for demographic and potential confounding variables, we detected no difference in odds of any mental health variables measured when comparing access to GAH during early adolescence with access to GAH during late adolescence (Table 4).

Lifetime but no past year suicidality. Due to the cross-sectional nature of the study, it was possible that we detected an association between favorable mental health outcomes and access to GAH because people with better mental health were more likely to be able to access GAH. Given that baseline mental health status could confound associations between access to GAH and mental health outcomes, in post hoc analyses we examined two outcome measures

Table 2. Outcomes for participants who accessed gender-affirming hormones (estrogen or testosterone).

	Participants who Accessed GAH											
	N = 12,598											
	Accessed GAH at Age 14 or 15				Accessed GAH at Age 16 or 17				Accessed GAH at Age ≥ 18			
	n = 119				n = 362				n = 12257			
	OR (95% CI)	p	aOR (95% CI)	p	OR (95% CI)	p	aOR (95% CI)	p	OR (95% CI)	p	aOR (95% CI)	p
Suicidality (Past 12 months)												
Past-year suicidal ideation [a]	0.5 (0.3–0.7)	.0001	0.4 (0.2–0.6)	< **.0001**	1.0 (0.8–1.2)	.73	0.5 (0.4–0.7)	< **.0001**	0.5 (0.5–0.6)	< .0001	0.8 (0.7–0.8)	< **.0001**
Past-year suicidal ideation with plan [b]	1.3 (0.8–2.4)	.31	0.8 (0.4–1.6)	.58	1.1 (0.9–1.5)	.41	0.9 (0.7–1.2)	.49	0.8 (0.8–0.9)	< .0001	0.9 (0.8–1.0)	.09
Past-year suicide attempt [c]	1.0 (0.5–2.2)	.99	0.4 (0.2–1.1)	.08	1.4 (1.0–2.0)	.04	0.9 (0.6–1.4)	.79	0.8 (0.8–0.9)	.002	1.0 (0.9–1.1)	.89
Past-year suicide attempt requiring inpatient hospitalization [d]	––	––	––	––	2.2 (1.2–4.0)	.01	2.2 (1.2–4.2)	.01	1.4 (1.1–1.7)	.002	1.2 (0.9–1.5)	.26
Mental Health & Substance Use												
Past-month severe psychological distress (K6 ≥ 13) [c]	0.5 (0.3–0.7)	.0004	0.3 (0.2–0.4)	< **.0001**	0.6 (0.5–0.8)	< .0001	0.3 (0.3–0.4)	< **.0001**	0.4 (0.3–0.4)	< .0001	0.6 (0.5–0.6)	< **.0001**
Past-month binge drinking [e]	1.6 (1.1–2.3)	.02	1.6 (1.0–2.4)	.04	0.8 (0.6–1.1)	.17	0.9 (0.6–1.1)	.27	1.2 (1.1–1.2)	< .0001	1.2 (1.1–1.3)	< **.0001**
Lifetime illicit drug use [f]	1.8 (1.2–2.6)	.003	1.5 (1.0–2.2)	.08	1.2 (1.0–1.6)	.08	1.3 (1.0–1.6)	.07	2.1 (1.9–2.2)	< .0001	1.7 (1.6–1.8)	< **.0001**

Mental health outcomes of transgender adults who recalled access to gender-affirming hormones (GAH) during various age groups. Reference group for all analyses is participants who desired GAH but did not access them. All models adjusted for age, partnership status, employment status, K-12 harassment, and having experienced gender identity conversion efforts.

Abbreviations: OR (odds ratio), aOR (adjusted odds ratio), 95% CI (95% confidence interval).

[a] Model also adjusted for gender identity, sex assigned at birth, sexual orientation, race/ethnicity, family support of gender identity, educational attainment, and total household income.

[b] Model also adjusted for sexual orientation, race/ethnicity, educational attainment, and total household income.

[c] Model also adjusted for gender identity, sex assigned at birth, sexual orientation, race/ethnicity, family support of gender identity, educational attainment, total household income, and having received pubertal suppression.

[d] Model also adjusted for family support of gender identity. Only one participant in the GAH < 16 group endorsed a past–year suicide attempt requiring inpatient hospitalization, precluding calculation of an aOR for this outcome.

[e] Model also adjusted for gender identity, sex assigned at birth, sexual orientation, family support of gender identity, educational attainment, and total household income.

[f] Model also adjusted for gender identity, sex assigned at birth, sexual orientation, race/ethnicity, family support of gender identity, and educational attainment.

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relevant to this question of temporality: lifetime but no past-year suicidal ideation, and lifetime but no past-year suicide attempt. We found that access to GAH in adulthood was associated with greater odds of lifetime but no past-year suicidal ideation (aOR = 1.4, 95% CI = 1.3–1.5, p < .0001) when compared to desiring but not accessing GAH (Table 5). The association of access to GAH during late adolescence with lifetime but no past year suicidal ideation (aOR = 1.4, 95% CI = 1.1–1.8, p = .005) was no longer significant after Bonferroni correction, though some have noted that Bonferroni adjustment may be overly conservative, suggesting that this finding may be considered significant [25].

Discussion

In this large national cross-sectional non-probability study, transgender people who accessed GAH during early adolescence, late adolescence, or adulthood had better mental health

Table 3. Raw outcome frequencies of mental health outcomes.

Total N = 21,598	No GAH	GAH 14–15	GAH 16–17	GAH ≥ 18
	n = 8860	n = 119	n = 362	n = 12257
	n (%)	n (%)	n (%)	n (%)
Suicidality (Past 12 months)				
Past-year suicidal ideation	5144 (58.1)	48 (40.3)	40 (33.6)	5237 (42.7)
Past-year suicidal ideation with plan	2731 (30.8)	29 (24.3)	39 (32.8)	02537 (20.7)
Past-year suicide attempt	853 (9.6)	8 (6.7)	40 (33.6)	756 (6.2)
Past-year suicide attempt requiring inpatient hospitalization	220 (2.5)	1 (0.8)	40 (33.6)	247 (2.0)
Mental Health & Substance Use				
Past-month severe psychological distress (K6 ≥ 13)	4545 (51.3)	40 (33.6)	145 (40.1)	3419 (27.9)
Past-month binge drinking	2083 (23.5)	39 (32.8)	74 (20.4)	3214 (26.2)
Lifetime illicit drug use	1918 (21.6)	40 (33.6)	93 (25.7)	4455 (36.3)

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outcomes when compared to those who desired but were unable to access GAH. Given the substantial mental health disparities faced by transgender people, these results are of particular importance [26].

For each time period of GAH initiation examined (early adolescence, late adolescence, and adulthood), access to GAH was associated with lower odds of past-year suicidal ideation and past-month severe psychological distress. When we compared participants who accessed GAH during adolescence (ages 14–17) with those who accessed GAH during adulthood (18+),

Table 4. Outcomes for participants who accessed gender-affirming hormones (estrogen or testosterone).

	Accessed GAH at Age 14–17 (compared to GAH access at age ≥ 18) n = 481				Accessed GAH at Age 14 or 15 (compared to GAH access at age 16 or 17) n = 119			
	OR (95% CI)	p	aOR (95% CI)	p	OR (95% CI)	p	aOR (95% CI)	p
Suicidality (Past 12 months)								
Past-year suicidal ideation [a]	1.5 (1.3–1.8)	< .0001	0.7 (0.6–0.9)	**.0007**	0.5 (0.3–0.8)	.002	0.7 (0.4–1.2)	.16
Past-year suicidal ideation with plan [b]	1.4 (1.1–1.8)	.009	1.1 (0.8–1.5)	.51	1.2 (0.6–2.3)	.58	1.0 (0.5–1.9)	.88
Past-year suicide attempt [c]	1.6 (1.2–2.2)	.003	1.0 (0.7–1.4)	.82	0.7 (0.3–1.6)	.40	0.4 (0.1–1.3)	.12
Past-year suicide attempt requiring inpatient hospitalization [d]	1.3 (0.7–2.3)	.35	1.7 (0.9–3.2)	.08	0.2 (0.0–1.6)	.13	0.2 (0.0–2.1)	.19
Mental Health & Substance Use								
Past-month severe psychological distress (K6 ≥ 13) [c]	1.7 (1.4–2.0)	< .0001	0.6 (0.5–0.8)	**< .0001**	0.8 (0.5–1.2)	.26	0.7 (0.4–1.3)	.30
Past–month binge drinking [e]	0.9 (0.7–1.1)	.17	0.7 (0.5–0.9)	**.001**	1.9 (1.2–3.0)	.006	2.0 (1.2–3.5)	.01
Lifetime illicit drug use [f]	0.7 (0.5–0.8)	< .001	0.7 (0.5–0.8)	**.0003**	1.4 (0.9–2.3)	.10	1.0 (0.6–1.7)	.98

All models adjusted for age, partnership status, employment status, K-12 harassment, and having experienced gender identity conversion efforts.

Abbreviations: OR (odds ratio), aOR (adjusted odds ratio), 95% CI (95% confidence interval).

[a] Model also adjusted for gender identity, sex assigned at birth, sexual orientation, race/ethnicity, family support of gender identity, educational attainment, and total household income.

[b] Model also adjusted for sexual orientation, race/ethnicity, educational attainment, and total household income.

[c] Model also adjusted for gender identity, sex assigned at birth, sexual orientation, race/ethnicity, family support of gender identity, educational attainment, total household income, and having received pubertal suppression.

[d] Model also adjusted for family support of gender identity.

[e] Model also adjusted for gender identity, sex assigned at birth, sexual orientation, family support of gender identity, educational attainment, and total household income.

[f] Model also adjusted for gender identity, sex assigned at birth, sexual orientation, race/ethnicity, family support of gender identity, and educational attainment.

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Table 5. Lifetime but no past-year suicide ideation and attempts for participants who accessed gender-affirming hormones (estrogen or testosterone).

	Participants who Accessed GAH					
	N = 12,598					
	Accessed GAH at Age 14 or 15		Accessed GAH at Age 16 or 17		Accessed GAH at Age ≥ 18	
	n = 119		n = 362		n = 12,257	
	aOR (95% CI)	p	aOR (95% CI)	p	aOR (95% CI)	p
Lifetime suicidal ideation and no past-year ideation [a]	1.3 (0.8–2.0)	.28	1.4 (1.1–1.8)	.005	1.4 (1.3–1.5)	< **.0001**
Lifetime suicide attempt and no past-year attempt [b]	0.8 (0.5–1.2)	.24	0.7 (0.6–1.0)	.03	1.0 (0.9–1.1)	.67

Mental health outcomes of transgender adults who recalled access to gender-affirming hormones (GAH) during various age groups. Reference group for all analyses is participants who desired GAH but did not access them. Both models adjusted for age, partnership status, employment status, K-12 harassment, and having experienced gender identity conversion efforts.

[a] Model also adjusted for gender identity, sex assigned at birth, sexual orientation, race/ethnicity, family support of gender identity, educational attainment, and total household income.

[b] Model also adjusted for gender identity, sex assigned at birth, sexual orientation, race/ethnicity, family support of gender identity, educational attainment, total household income, and having received pubertal suppression.

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participants who accessed GAH earlier had better mental health outcomes, including lower odds of past-year suicidal ideation, past-month severe psychological distress, past-month binge drinking, and lifetime illicit drug use. These results argue against waiting until adulthood to offer GAH to transgender adolescents and suggest that doing so may put patients at greater mental health risk.

The current study has a few advantages over past published studies in this area. While past studies have not included a comparison group of people who did not access GAH and were also underpowered to adjust for potential cofounders, this large sample size enabled comparison of participants who reported access to GAH to those who desired but did not access GAH, while adjusting for a wide range of potential confounding variables known to be associated with mental health outcomes for transgender people.

One unexpected finding was that participants who initiated GAH during adulthood, compared to those who desired but never accessed GAH, had greater odds of past-month binge drinking and lifetime illicit substance use. Transgender people often become more socially engaged following the increased confidence that results from gender affirmation, which may partly explain these results [27]. Given the high prevalence of substance use disorders in this population, clinicians ought to routinely screen for substance use disorders among transgender people, and researchers ought to focus on development of culturally responsive substance use disorder prevention and treatment interventions with transgender communities [27].

Notably, even participants who recalled access to GAH had high rates of past-year suicidal ideation. Though access to GAH during adolescence appears to be related to more favorable mental health outcomes, transgender people face a range of other psychosocial stressors that contribute to chronic minority stress, including but not limited to employment discrimination, lack of safe access to public facilities, and physical violence [4]. Future epidemiological and interventional research is needed to understand and address chronic minority stress among transgender people who access GAH as well as those who do not. For transgender adolescents, creating safe and affirming school environments appears to be of particular importance [28], in addition to providing gender-affirming medical care, as well as psychological, legal and surgical gender affirmation as needed [6].

This study also suggests that a large proportion of transgender people desire but never access GAH. Though prevalence in a non-probability sample should be interpreted with

caution, 41% of those who desired GAH in this study reported that they were unable to access them. Barriers to accessing prescribed GAH, in addition to leaving many without treatment, may also drive use of non-prescribed GAH, which is highly prevalent and associated with stigmatizing healthcare policies [29]. Future studies ought to examine if non-prescribed GAH use, when compared to prescribed GAH, is linked to worse mental health outcomes or adverse physical health outcomes (e.g., blood clot risk from estradiol use without standard medical monitoring).

Strengths and limitations

Strengths of this study include its large sample size and broad geographic representation within the U.S. The large sample size enabled adjustment for a wide range of potential confounding variables. Limitations include its non-probability cross-sectional design, which reduces generalizability and limits determination of causality. It is possible that people with better mental health status at baseline are more likely to be able to access GAH, thus confounding associations between GAH access and adult mental health outcomes measured: we therefore examined lifetime but no past-year suicidal ideation as an outcome, with results suggesting a lack of reverse causation due to such confounding. Nonetheless, this method is imperfect for investigating mental health changes following GAH, and future longitudinal studies are needed. Longitudinal waitlist control studies would be of particular value. Though a randomized controlled trial would help determine causality, many have noted that such a trial design is unethical in this context [2]. Age of GAH initiation reported by participants at time of data collection is vulnerable to recall bias. It is possible that participants in older age cohorts (45–65; 65+) were more vulnerable to recall bias; in our clinical experience, however, starting GAH is a major event in one's life, making it less susceptible to recall bias than more routine events [30]. It was unexpected that the median age at time of survey completion for participants who recalled accessing GAH in early adolescence was older than for those in the late adolescence group, which may be indicative of recall bias. Of note, though it is often presumed that GAH were not offered to adolescents in the U.S. until the past three decades, recent historical analyses have pointed out that adolescents have been receiving GAH as early as the 1970s [31]. The 2015 USTS sample is younger, with fewer racial minorities, fewer heterosexual participants, and higher educational attainment when compared with probability samples of TGD people in the U.S [32]. Because all participants identified as non-cisgender, those who initiated GAH and subsequently identified as cisgender would not necessarily be represented in this study; existing literature, however, suggests that this is a rare occurrence [2, 33].

Conclusion

This study found that transgender people who accessed GAH during early or late adolescence had a lower odds of past-month suicidal ideation and past-month severe psychological distress in adulthood, when compared to those who desired but did not access GAH, after adjusting for a range of potential confounding variables. The findings support updated 2017 recomendations from The Endocrine Society [7] and WPATH [6] that these medical interventions be made available for transgender adolescents. The results also provide additional evidence to suggest that legislation restricting transgender adolescents' access to gender-affirming medical care would result in adverse mental health outcomes [18].

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Author Contributions

Conceptualization: Jack L. Turban, Dana King, Sari L. Reisner, Alex S. Keuroghlian.

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Investigation: Jack L. Turban, Dana King.

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Resources: Alex S. Keuroghlian.

Supervision: Sari L. Reisner, Alex S. Keuroghlian.

Writing – original draft: Jack L. Turban.

Writing – review & editing: Jack L. Turban, Dana King, Julia Kobe, Sari L. Reisner, Alex S. Keuroghlian.

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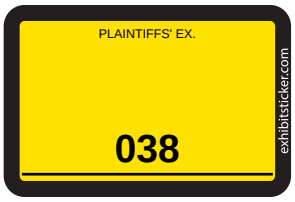

Neutral Citation Number: [2021] EWCA Civ 1363

Appeal No. C1/2020/2142
Case No: CO/60/2020

IN THE COURT OF APPEAL (CIVIL DIVISION)
ON APPEAL FROM THE HIGH COURT OF JUSTICE
QUEEN'S BENCH DIVISION
ADMINISTRATIVE COURT
Dame Victoria Sharp DBE, President of the Queen's Bench Division, Lewis LJ and Lieven J

Royal Courts of Justice
Strand
London WC2A 2LL

Date: 17/09/2021

Before:

THE LORD BURNETT OF MALDON
LORD CHIEF JUSTICE OF ENGLAND AND WALES
SIR GEOFFREY VOS, MASTER OF THE ROLLS
and
LADY JUSTICE KING

BETWEEN:

(1) QUINCY BELL
(2) MRS A

Claimants/Respondents

-and-

THE TAVISTOCK AND PORTMAN NHS FOUNDATION TRUST

Defendant/Appellant

-and-

NHS ENGLAND

Interested Party

-and-

(1) UNIVERSITY COLLEGE LONDON HOSPITALS NHS FOUNDATION TRUST
(2) LEEDS TEACHING HOSPITALS NHS TRUST
(3) TRANSGENDER TREND LTD
(4) BROOK
(5) GENDERED INTELLIGENCE
(6) THE ENDOCRINE SOCIETY

(7) DR DAVID BELL
(8) THE ASSOCIATION OF LAWYERS FOR CHILDREN
(9) LIBERTY

Interveners

- - - - - - - - - - - - - - - - - - - -

Ms Fenella Morris QC and **Ms Nicola Kohn** (instructed by **DAC Beachcroft**) appeared on behalf of the **Appellant** ("Tavistock")
Mr Jeremy Hyam QC, Mr Alasdair Henderson, and **Mr Darragh Coffey** (instructed by **Sinclairslaw**) appeared on behalf of the **Respondents** (the "Respondents")
The Interested Party did not appear and was not represented
Mr John McKendrick QC (instructed by **Hempsons**) appeared on behalf of the **first and second Interveners**
Mr Paul Skinner and **Mr Aidan Wills** (instructed by **AI Law**) appeared on behalf of the **third Intervener**
The remaining **Interveners** made written submissions

Hearing dates: 23 and 24 June 2021

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JUDGMENT

"Covid-19 Protocol:
This judgment was handed down remotely by circulation to the parties' representatives by email, release to BAILII and publication on the Courts and Tribunals Judiciary website. The date and time for hand-down is deemed to be 2:00pm, Friday 17 September 2021."

The Lord Burnett of Maldon CJ:

Introduction

1. This is the judgment of the court to which we have all contributed.

2. Since 1989, The Tavistock and Portman NHS Foundation Trust ("Tavistock") has operated a Gender Identity Development Service (GIDS) for patients up to the age of 18 suffering from gender dysphoria. We shall refer to both those aged under 16 and those aged 16 and 17 as "children" in this judgment. Gender dysphoria is a complex condition that occurs in both children and adults. It involves, in the simplest terms, a strong desire to be and to be treated as being of the gender other than their natal sex at birth. Those diagnosed with it suffer associated significant distress or impairment in function. A range of clinical interventions may be prescribed.

3. The treatment of children for gender dysphoria is controversial. Medical opinion is far from unanimous about the wisdom of embarking on treatment before adulthood. The question raises not only clinical medical issues but also moral and ethical issues, all of which are the subject of intense professional and public debate. Such debate, when it spills into legal proceedings, is apt to obscure the role of the courts in deciding discrete legal issues. The present proceedings do not require the courts to determine whether the treatment for gender dysphoria is a wise or unwise course or whether it should be available through medical facilities in England and Wales. Such policy decisions are for the National Health Service, the medical profession and its regulators and Government and Parliament. The treatment of children for gender dysphoria is lawful in this jurisdiction. It was no part of the claim advanced before the Divisional Court that the prescription of puberty blockers and then cross-sex hormones (two common steps in treatment for gender dysphoria in children) was in itself unlawful. Instead, the claim advanced was that the sanction of the court should always be obtained before they were prescribed.

4. The first claimant in the underlying judicial review proceedings is a former patient of Tavistock who was treated with puberty blockers as a 16-year old, progressed to cross-sex hormones and began surgical intervention as an adult to transition from female to male. She terminated her treatment having changed her mind and regrets having embarked upon the treatment pathway. The second claimant is the mother of a child who suffers from gender dysphoria and has been referred to Tavistock, but has not yet had an appointment. As the Divisional Court noted in para [89] of its judgment, her interest in these proceedings is "largely theoretical". The amended claim form challenged "the continuing practice of [Tavistock] through its [GIDS], to prescribe puberty-suppressing hormone blockers to children under the age of 18 who experience gender dysphoria". It was described as a "continuing activity or policy". The relief sought was a declaration that Tavistock's "current practice of prescribing hormone blocking treatment to children which is anticipatory of, and inextricably linked to, cross-sex hormone treatment, absent an order from the Court in its welfare jurisdiction that the treatment is in the child's best interest, is unlawful." The aim of the litigation was to require, as a matter of law, the involvement of the court before anyone under the age of 18 was prescribed puberty blockers thus denying the opportunity of consent to such treatment either individually or with the support of their parents or legal guardians. The argument was that those under 18 were not capable in law of giving valid consent to the treatment.

5. There is an odd feature of the claim. Contrary to its underlying premise, Tavistock does not prescribe puberty blockers. Patients with gender dysphoria are referred to Tavistock from all over the country for assessment. There is usually a wait of between 22 and 24 months before they can be seen for a series of assessment appointments. If, following assessment, Tavistock is satisfied that it is medically appropriate to do so, the patient is referred to the paediatric endocrinologists at either University College London Hospitals NHS Foundation Trust ("UCH") or Leeds Teaching Hospitals NHS Trust ("Leeds") (together the "Trusts"). A referral takes place only if Tavistock assesses that the child would benefit from treatment and is capable of giving consent to puberty blockers (the first step in any such treatment). Referral requires the consent of the child and of the parents. Each Trust thereafter, independently of Tavistock, makes its own clinical assessment and prescribes puberty blockers only after deciding that to be the proper medical course and after obtaining what each considers to be valid consent from the child. Consent is obtained not only from the child in question but also the parents of the child. It was not suggested that there was any criticism of the consent-taking process at either of the Trusts. Neither Trust was joined by the claimants as a defendant or interested party in these proceedings but instead intervened because it was their actions in prescribing puberty blockers that were under attack. The puberty blocking drug treatment at issue in this case is gonadotropin-releasing hormone agonists. They suppress the physical developments that would otherwise occur during puberty. The next step in treatment, for which UCH and Leeds obtain further informed consent from child and parents, is to prescribe cross-sex hormones and then, in adulthood, consideration of surgery.

6. As Mr Jeremy Hyam QC for the claimants readily accepted, the Divisional Court (Sharp P, Lewis LJ and Lieven J) found no illegality in the policy or practice of Tavistock or of UCH or Leeds. It considered the competence of persons under 16 to consent to the administration of puberty blockers on the basis of the decision of the House of Lords in *Gillick v. West Norfolk and Wisbech Health Authority* [1986] AC 112 ("*Gillick*"). In relation to 16 and 17 year olds, the court considered the impact of section 8 of the Family Law Reform Act 1969 ("the 1969 Act"), which provides that the consent of a minor over 16 "to any surgical [or] medical treatment shall be as effective as it would be if he were of full age". In answer to the central question before the court, which it identified at [7] of its judgment as "whether informed consent in the legal sense can be given by such children and young persons" it rejected the claim and said "yes"; but it did so in qualified terms.

7. The Divisional Court also rejected a subsidiary claim "that the information provided by [Tavistock] and the Trusts is inadequate to form the basis of informed consent." The court found "no problem" with the information given but expressed concern about the ability of children to understand and weigh it: para [150].

8. Rather than dismissing the claim for judicial review as Ms Fenella Morris QC for Tavistock supported by Mr John McKendrick QC for UCH and Leeds submitted was the correct course, the Divisional Court made a declaration specifying precisely what informed consent would require in these circumstances. It also gave extensive "guidance". The declaration was in these terms:

> "It is declared that the relevant information that a child under the age of 16 would have to understand, retain and weigh up in order to have competence to consent to the administration of puberty

> blocking drugs is that set out in paragraph 138 of the judgment handed down in this case on 1 December 2020."

That paragraph reads:

> "It follows that to achieve *Gillick* competence the child or young person would have to understand not simply the implications of taking [puberty blockers] but those of progressing to cross-sex hormones. The relevant information therefore that a child would have to understand, retain and weigh up in order to have the requisite competence in relation to [puberty blockers], would be as follows: (i) the immediate consequences of the treatment in physical and psychological terms; (ii) the fact that the vast majority of patients taking [puberty blockers] go on to [cross-sex hormones] and therefore that s/he is on a pathway to much greater medical interventions; (iii) the relationship between taking [cross-sex hormones] and subsequent surgery, with the implications of such surgery; (iv) the fact that [cross-sex hormones] may well lead to a loss of fertility; (v) the impact of [cross-sex hormones] on sexual function; (vi) the impact that taking this step on this treatment pathway may have on future and life-long relationships; (vii) the unknown physical consequences of taking [puberty blockers]; and (viii) the fact that the evidence base for this treatment is as yet highly uncertain."

9. The declaration affects only those under 16, although para [138] did cover those aged 16 and 17. The guidance went much wider. It covered children of all ages and recommended that the sanction of the court should be sought before prescribing puberty blockers albeit that there was no legal requirement to do so. The guidance, which does not have the effect of declaring the law, followed an extensive discussion in the judgment (starting at [139]) of some of the difficulties that a child would have in understanding the implications of loss of fertility and full sexual function if the further steps beyond puberty blockers were taken. The Divisional Court stated in para [145] that:

> "the conclusion we have reached is that it is *highly unlikely* that a child aged 13 or under would ever be *Gillick* competent to give consent to being treated with [puberty blockers]. In respect of children aged 14 or 15 we are also *very doubtful* that a child of this age could understand the long-term risks and consequences of treatment in such a way as to have sufficient understanding to give consent" (emphasis added).

10. In para [146] the Divisional Court recognised the legal force of section 8 of the 1969 Act but observed that the court could still intervene to protect a child. It continued by saying that "in the light of the evidence that has emerged, and the terms of this judgment, clinicians may well consider that it is not appropriate to move to treatment, such as [puberty blockers] or [cross-sex hormones] without the involvement of the court." Although couched in terms of "may well consider it appropriate" this part of the judgment has been understood by clinicians, and understandably so, as suggesting that an application to the court (by the child, the parents or the Trust in question) should

be the norm. That is indeed what the court was suggesting given its factual conclusion that under 14s were "highly unlikely" to give valid consent and that it was improbable that 14 or 15 year olds could do so. The court continued by indicating that even in respect of 16 and 17 year olds an application to the court would be appropriate if there were any doubt about the long-term best interests of the child in question.

11. We inquired of counsel about the circumstances in which the guidance came to be given by the court. It was not the subject of submissions below but Mr Paul Skinner, who appears for the Third Intervener, Transgender Trend Ltd, drew our attention to the transcript where he said, "in so far as the court finds against the claimant, then it would be useful to give some guidance as to the salient factors which ought to be considered in the consent process."

12. Tavistock appeal against the declaration and submit that the guidance given by the Divisional Court was wrong in law. There are eight grounds of appeal clarified in Tavistock's skeleton argument. Grounds one and two are that the court misapplied the law in *Gillick*. Ground three is that the court's conclusions were inconsistent with the 1969 Act. Grounds four and five challenge the court's factual conclusion that the prescription of puberty blockers for gender dysphoria is "experimental" and that their effects are "lifelong" and "life-changing". Grounds six and seven challenge the court's reliance on expert evidence adduced by the claimants without permission, which contradicted the evidence of Tavistock and the Trusts; and making findings of fact upon it and relying on it to resolve clinical differences of opinion. Ground 8 contends that that the approach of the court discriminates against children with gender dysphoria which cannot be justified and therefore breaches article 14 of the European Convention on Human Rights.

The practice and policy under challenge

13. The "practice" challenged was referring children to the Trusts and the Trusts then prescribing puberty blockers without the intervention of the court exercising its powers to protect children. In reality, it was a challenge to the policy of the National Health Service regarding treatment of children for gender dysphoria. The Divisional Court noted in paras [13] and [14] that GIDS is provided as part of the NHS Standard Contract and commissioned by the NHS Commissioning Board in accordance with a service specification. The referral process conducted by Tavistock is carried out under the auspices of that service specification. This was agreed before us as "the document encompassing the decision which was the subject of the judicial review" although it was not mentioned in the claimants' amended grounds. The service specification comprises 61 pages of detailed provisions, including in para 3.2.5 and appendix 6 provisions about informed consent. It required the GIDS service to be delivered in accordance with relevant national and international guidelines for the care of children and adolescents with gender dysphoria, such as the World Professional Association for Transgender Health ("WPATH") *Standards of Care for the Health of Transsexual, Transgender and Gender Nonconforming people* and the Endocrine Society's Clinical Guidelines, as well as the UK National Institute for Health and Care Excellence guidelines (the "NICE Guidelines") specific to the treatment of mental and emotional health and wellbeing.

14. The Divisional Court also referred to Tavistock's Standard Operating Procedure ("SOP") dated 31 January 2020 that had taken two years to develop. It formed part of

the written material which contained the policy challenged in these proceedings. It incorporated guidance and documentation in relation to consent for referral to UCH's and Leeds's endocrine liaison clinics "for consideration of [puberty blockers]". Mr Hyam suggested that the court's judgment must have implicitly determined that the procedure was inadequate, at least in relation to its expressed views that the vast majority of patients taking puberty blockers go on to cross-sex hormones and that the evidence base for puberty blockers was highly uncertain. There was no analysis of these documents in the claimants' materials before the court nor in the judgment. Indeed, it is clear that the court below did not have the benefit of the focus on these documents that we have had. In particular, Mr Hyam placed an emphasis on the service specification that was absent before the Divisional Court.

The factual background in more detail

15. Tavistock employs specialist staff including child psychologists, psychotherapists, psychiatrists, social workers, family therapists and nurses. Section 3B of the NHS Act 2006 requires NHS England to arrange such services as might be prescribed by regulations. Regulation 11 of the National Health Service Commissioning Board and Clinical Commissioning Groups (Responsibilities and Standing Rules) Regulations 2012/2296 concerns services for rare and very rare conditions, which included GIDS for children and adolescents. The service specification provides that the purpose of the treatment is to "help reduce the distressing feelings of a mismatch between their natal (assigned) sex and their gender identity."

16. GIDS recognises three stages of physical intervention that may be appropriate in cases of gender dysphoria. Stage 1 is the administration of puberty blockers, which is clinically appropriate for children who have reached Tanner stage 2 of puberty and above. Tanner stage 2 is marked in natal females by the start of breast development, and in natal males by the enlargement of the testicles and the scrotum. Stage 2 of the intervention is the administration of cross-sex hormones which can only be prescribed from around the age of 16. Stage 3 is gender reassignment surgery which is only available via adult services to people aged over 18.

17. At the end of the assessment period at Tavistock the clinicians will agree a care plan with the patient and their family. Where the patient fulfils the criteria in the service specification, they will be referred to UCH or Leeds for consultation and physical assessment by endocrinologists with a view to being prescribed puberty blockers.

18. Dr Polly Carmichael, the director of GIDS, Professor Gary Butler, consultant in paediatric endocrinology at UCH, and Dr Nurus-Sabah Alvi, consultant in paediatric endocrinology at Leeds, described in their detailed evidence the process that patients go through.

19. Puberty blockers were first prescribed at UCH in 2012 for a cohort of 12 to 15 year olds with established and persistent gender dysphoria under an approved research study: the *Early Intervention Study*. A pre-print version was placed online on the day the judgment of the Divisional Court was handed down; the paper itself was published in February 2021.

20. In 2019/2020, 161 children under 16 were referred by GIDS to the Trusts for puberty blockers, of whom three were aged 10 or 11, thirteen were aged 12, ten were aged 13,

twenty four were aged 14, forty five were aged 15, fifty one were aged 16, and fifteen were aged 17 or 18. The number of referrals to GIDS has increased from 97 in 2009 to 2,519 in 2019. It is important to keep in mind the difference between the number of children referred to GIDS and the number who are eventually referred after assessment by Tavistock to the Trusts for evaluation for treatment. We have noted the delay of up to two years between referral to GIDS and subsequent assessment which precedes an onward referral to the Trusts. It follows that the comparison between 2,519 referrals to GIDS and 161 onward referrals does not relate precisely to the same group of children. Yet it illuminates the reality that only a fraction of those who come to GIDS are referred on for possible treatment. Evidence from 2019/20 (see [26] below) put the figure at about 16 based on a random sample selection.

21. Patients of GIDS give their consent for referral to Tavistock in the first place. They then give their consent to referral on to UCH or Leeds for consideration of the prescription of puberty blockers. The service specification says that "[a]ll efforts will be made to ensure that clients are aware of the longer term consequences of the endocrine treatments, including implications for fertility, and the decision of the competence of the client will be jointly made by the endocrine and psychological members of the Service's integrated team", and that "[t]he current context of treatment decisions about [cross-sex hormones] in adolescence is that there is limited scientific evidence for the long-term benefits versus the potential harms of the intervention. There are also concerns that it is uncertain whether or not a young person will continue to identify as transgender in the future, given that some subsequently identify in a different way." The SOP also deals with consent.

22. Dr Carmichael and Professor Butler provided evidence about the way in which the risks of loss of fertility, sexual function and the effect of puberty blockers on relationships were explained to patients within the consent process. We do not set out the evidence in as much detail as did the Divisional Court for two reasons: (i) a court hearing a judicial review will generally accept the evidence of the public authority: and will not normally decide contested issues of fact: see, for example, *R v. Board of Visitors of Hull Prison ex p St. Germain (No. 2)* [1979] 1 WLR 1401 at page 1410H and *R (Watkins-Smith) v. Aberdare Girls High School* [2008] EWHC 1865 (Admin), [2008] FCR 203 at para [135]; and (ii) the court did not hold that the policies and practice themselves were unlawful or that the information provided by Tavistock and the Trusts was misleading. Dr Carmichael summarised the steps taken by Tavistock before referral to the Trusts and described some of the written materials used by the Trusts with those referred. Professor Butler also did so. This passage from Professor Butler's evidence dealing with fertility and sexual relationships, quoted by the Divisional Court at paras [42] and [43], bears repetition:

> "It is also relevant for the consultation purposes that matters of fertility are discussed and counselling by the team takes place, and the option of meeting a fertility specialist is offered, and often taken up. The options of fertility preservation are discussed with all the young people and it is requirement of the consent process that they fully understand this at an appropriate level. This understanding must include that they are unable to have the typical sexual relationship of their identified gender with another person on account of their biological sex organ

> development, and that other surgical procedures may be necessary later on to achieve that possibility. ... It is an absolute requirement before starting any treatment that a young person can fully understand this effect on fertility and sexual functioning according to their age and level of maturation."

23. The Divisional Court expressed itself as either surprised or concerned by the lack of data year on year of the number of patients referred for puberty blockers [28], the number of GIDS patients suffering from autism (of those referred to GIDS a disproportionate number are autistic) [34], the numbers and percentages of patients progressing from puberty blockers to cross-sex hormones [59], and the (apparently low) number of patients not considered *Gillick* competent to make a decision [44]. In that latter connection, the court referred to expert evidence produced by the claimants from Professor Scott, the director of University College London's Institute of Cognitive Neuroscience, expressing significant doubts about the ability of under-18s adequately to weigh and appreciate the significant consequences that will result from the decision to accept puberty blockers for gender dysphoria.

24. Puberty blockers have been used for many years to stop precocious puberty and are discontinued when the child reaches the normal biological age for the onset of puberty. Their withdrawal does not interfere with the onset of puberty or with the normal development of pubertal changes through adolescence.

25. The first use of puberty blockers to treat gender dysphoria was in the late 1990s at a Dutch gender clinic. It published the *Dutch protocol* in the European Journal of Endocrinology in 2006 suggesting commencement of puberty suppression at age 12 after a diagnosis of gender dysphoria. Dr Carmichael said that the primary purpose of puberty blockers was to give the patient time to think about gender identity. There are other views expressed by other experts. The evidence from Tavistock, UCH and Leeds was that treatment with puberty blockers was separate from later treatment with cross-sex hormones. UCH and Leeds go through a distinct consent process before prescribing those. The median ages at which puberty blockers and cross-sex hormones are prescribed are about 14 and 17 respectively.

26. There were limited data of how many GIDS patients proceeded from puberty blockers to cross-sex hormones. Dr de Vries, who filed evidence on behalf of Tavistock describing international practice, is a member of WPATH's Committee on Children and Adolescents and was its Chair between 2010 and 2016 and said that, of the adolescents who started puberty suppression, only 1.9 per cent stopped the treatment and did not proceed to cross-sex hormones. Dr Carmichael said that of a random sample of 312 of 1648 patients discharged from GIDS between March 2019 and March 2020, 16 of patients (49 individuals) had accessed the endocrinology service during their time with GIDS. Of those 49 children and young people, only 55 (27 individuals) were subsequently approved for or accessed cross-sex hormones during their time with GIDS. Of the 49 patients referred to endocrinology for puberty blockers whilst at GIDS, two did not commence treatment and a further five were discharged without being referred on to another gender service.

27. These judicial review proceedings were directed at the policy and practice of Tavistock and the Trusts. The evidence ranged widely, indeed much more widely than necessary to determine the legal issues. The statements from clinicians and extracts from learned

journals are peppered with statistics. Even from within the evidence filed on behalf of Tavistock, there is an apparent disconnect between the international experience that 1.6 of children who started puberty blockers did not go on to cross-sex hormones and the figures which arose from the random sample, namely that of 49 referred to the Trusts only 27 were approved for or accessed cross-sex hormones. This is one example of the difficulty in drawing conclusions from statistics which are not fully explained or explored in an evidential context where they were peripheral to the legal dispute before the Divisional Court and where any apparent differences were not capable of being tested forensically.

28. No empirical data are available which explain the reasons why most children who are referred to GIDS are not referred on to UCH and Leeds. We note that in its guidelines WPATH says that gender dysphoria disappears in many before or during early puberty. The Endocrine Society similarly says that it does not persist into adolescence in the large majority (85) of pre-pubertal children diagnosed with it. There is no evidence of the proportion of those who are thought to have gender dysphoria by general practitioners and other agencies who can refer to GIDS who are not in fact referred.

29. Professor Butler, Dr Alvi, WPATH and the Endocrine Society described puberty blockers as a safe reversible treatment although WPATH notes in its guidance that neither puberty suppression nor allowing puberty to occur can be regarded as a neutral act. There was some debate before the Divisional Court about what was meant by "reversible". WPATH said that long term effects can only be determined when the earliest treated patients reach an appropriate age.

30. Other experts relied upon by the claimants pointed to uncertainty about the effect of puberty blockers on bone density, fertility, and brain development. GIDS set out the benefits and risks of puberty blockers. The benefits include feeling less worried about growing up in the wrong body and giving more time and space to think about gender identity. The risks include hot flushes, headache, nausea and weight gain. Uncertainty is expressed about how puberty blockers affect bone strength, the development of sexual organs, body shape, final adult height, fertility, memory, concentration and the likelihood of a change of mind about gender identity. The Divisional Court pointed to other evidence relied upon by the claimants from Professor Levine (Clinical Professor of Psychiatry at Western Reserve University, Ohio) and Professor Hruz (Associate Professor of Paediatrics, Endocrinology and Diabetes at Washington University, St Louis) that patients on puberty blockers will have missed a period of normal biological, psychological and social experience through adolescence, which can never truly be reversed.

The Divisional Court's decision

The approach to the evidence

31. In dealing with factual issues, the Divisional Court said repeatedly (for example at paras [9], [70] and [74]) that it was not the "court's role to judge the weight to be given to various different experts" and "not for this court to determine clinical disagreements between experts about the efficacy of a treatment." "[M]ore important [was] the evidence from [Tavistock] and the evidence base *it* relies upon for the use of puberty blockers." Clinical disagreements about efficacy were for the relevant NHS and regulatory bodies to decide.

32. The Divisional Court explained at para [9] that "[t]he court is not deciding on the benefits or disbenefits of treating children with [gender dysphoria] with [puberty blockers], whether in the long or short term. The court has been given a great deal of evidence about the nature of [gender dysphoria] and the treatments that may or may not be appropriate. That is not a matter for us." We agree. Despite these expressions of intent, we accept Ms Morris's submission that the court did make factual findings, some on the basis of impression and some on the basis of disputed evidence. The more important examples follow.

33. At para [44], the Divisional Court recorded its request for information about those who Tavistock, UCH or Leeds had "assessed to be suitable for [puberty blockers] but who were *not* prescribed them because the young person was considered not to be *Gillick* competent." It said that it had "gained the strong impression that it was extremely unusual for either GIDS [or UCH or Leeds] to refuse to give [puberty blockers] on the ground that the young person was not competent to give consent. The approach adopted [appeared] to be to continue giving the child more information and to have more discussions until s/he is considered *Gillick* competent or is discharged."

34. At para [56], the Divisional Court determined on the evidence that "practically all children/young people who start [puberty blockers] progress on to [cross-sex hormones]." At para [68], it determined that "a very high proportion of those who start [puberty blockers] move on to [cross-sex hormones] and thus in statistical terms once a child or young person starts on [puberty blockers] they are on a very clear clinical pathway to [cross-sex hormones]."

35. At para [134], the Divisional Court concluded that "[t]he administration of [puberty blockers] to people going through puberty [was] a very unusual treatment" and was "properly described as experimental" because there was "real uncertainty over the short and long-term consequences of the treatment with very limited evidence as to its efficacy, or indeed quite what it [was] seeking to achieve." In addition, there was a lack of clarity over the purpose of the treatment, and the consequences of the treatment were "highly complex and potentially lifelong and life changing in the most fundamental way imaginable. The treatment goes to the heart of an individual's identity, and [was] thus, quite possibly, unique as a medical treatment." It made these findings, having said at para [74] that "the degree to which the treatment is experimental and has, as yet, an unknown impact, does go to the critical issue of whether a young person can have sufficient understanding of the risks and benefits to be able lawfully to consent to that treatment." The court cited at various places in its judgment from the disputed evidence of expert witnesses relied upon by the claimants. As it recorded at para [69], the claimants relied on "witness statements from a number of undoubted experts in various relevant fields and from academic institutions in the United Kingdom, the USA, Sweden and Australia who refer to the controversial nature of the treatment and its limited evidential support" in support of it being an experimental and highly controversial treatment with a very limited evidence base.

36. At para [77], the Divisional Court repeated that it was not its "role to adjudicate on the reasons for persistence or otherwise of [gender dysphoria]", before determining that the "treatment may be supporting the persistence of [gender dysphoria] in circumstances in which it is at least possible that without that treatment, [it] would resolve itself."

37. The Divisional Court cited Professor Hruz in relation to the treatment of gender dysphoria at paras [49] to [51], the neurological and psychological changes induced by puberty blockers at para [64] and the persistence of gender dysphoria at para [76]. Professor Levine is cited in relation to neurological and psychological changes at [64]. This body of evidence appears to have informed the court's conclusion that the treatment was "experimental" in the sense that its long-term consequences remain unclear. Professor Scott was cited at para [45] to [46] in connection with the ability of teenagers to make rational decisions in this context which underpinned the court's conclusion that it was highly unlikely that a child under 14 could give valid consent to puberty blockers and improbable that a child aged 14 or 15 could do so.

38. The claimants made no application for permission to rely upon the expert evidence they produced. Although some expert evidence was served with the claim the majority was served shortly before skeleton arguments were due to be lodged. None of it complied with the rules regarding expert evidence and a good deal of it is argumentative and adversarial. Tavistock sought to exclude the expert evidence on the grounds that it was inadmissible because it was not necessary to resolve the legal issue before the court; and also because it comprehensively failed to comply with the rules regarding expert evidence in any event. The issue was not resolved. Much of it was adduced to contradict the evidence given by Tavistock and the Trusts. Such evidence is rarely admitted but a particular difficulty here was that there was no way of resolving evidential disputes. The court supported the guidance it gave "in the light of the evidence as it has emerged": see para [147]. It would have been preferable for the status of the claimants' expert evidence to be resolved. It was controversial and would not, as we have said, ordinarily be preferred over that of a defendant in judicial review proceedings.

The Divisional Court's treatment of the law

39. Between paras [105] and [124], the Divisional Court reviewed authorities starting with *Gillick.* It cited from the speeches of Lord Fraser of Tullybelton and Lord Scarman.

40. In connection with section 8 of the 1969 Act it noted that in *Re W (a Minor) (Medical Treatment: Court's Jurisdiction)* [1993] Fam 64, Lord Donaldson MR held in the context of a 16 or 17 year old child refusing treatment for anorexia nervosa that "[n]o minor of whatever age has power by refusing consent to treatment to override a consent to treatment by someone who has parental responsibility for the minor and *a fortiori* a consent by the court." Balcombe LJ agreed that the parents of a child aged 16 or 17 could consent to treatment on his or her behalf even if the child had refused it and affirmed the court's inherent jurisdiction to do so. Nolan LJ expressed no view about the parents' ability to override a child's refusal to consent but expressly agreed that the court had power to do so.

41. The Divisional Court referred to *Re S (A Child) (Child Parent: Adoption Consent)* [2019] 2 Fam 177 (*Re S*). Cobb J considered the competence of a mother under the age of 16 to consent to her baby being placed for adoption. He held that it was appropriate and helpful in determining *Gillick* competence to read across and borrow from the relevant concepts and language in the Mental Capacity Act 2005, concluding: "It follows that in order to satisfy the *Gillick* test in this context the child parent should be able to demonstrate "sufficient" understanding of the "salient" facts around adoption;

she should understand the essential "nature and quality of the transaction" and should not need to be concerned with the peripheral."

42. The Divisional Court also had regard to *Montgomery v. Lancashire Health* Board [2015] AC 1430 where, in an action for negligence brought by a mother on behalf of her child, Lord Kerr set out the requirements placed on a doctor in providing information on risks of injury from treatment in the following terms at para [87]:

> "An adult person of sound mind is entitled to decide which, if any, of the available forms of treatment to undergo, and her consent must be obtained before treatment interfering with her bodily integrity is undertaken. The doctor is therefore under a duty to take reasonable care to ensure that the patient is aware of any material risks involved in any recommended treatment, and of any reasonable alternative or variant treatments. The test of materiality is whether, in the circumstances of the particular case, a reasonable person in the patient's position would be likely to attach significance to the risk, or the doctor is or should reasonably be aware that the particular patient would be likely to attach significance to it."

The Divisional Court's conclusions

43. We have foreshadowed the central conclusions of the Divisional Court (paras [6] to [10] above) and some of its factual conclusions (paras [31] to [38]). The court was particularly concerned with difficulties it thought that under-16s would have in understanding and weighing up information. At para [139] it said:

> "[a]lthough a child may understand the concept of the loss of fertility for example, this is not the same as understanding how this will affect their adult life. A child's attitude to having biological children and their understanding of what this really means, is likely to change between childhood and adulthood. For many children, certainly younger children, and some as young as 10 and just entering puberty, it will not be possible to conceptualise what not being able to give birth to children (or conceive children with their own sperm) would mean in adult life. Similarly, the meaning of sexual fulfilment, and what the implications of treatment may be for this in the future, will be impossible for many children to comprehend."

44. It recognised that the cohort of children treated at GIDS suffered from psychological distress by reason of their gender dysphoria and were highly vulnerable. It considered that the difficulty of achieving informed consent was further exacerbated by the lack of evidence as to the efficacy of puberty blockers in treating gender dysphoria and the long-term outcomes of taking them. Although the fact that a treatment was experimental, or that the long-term outcomes were not yet known, did not of itself prevent informed consent being given, "the combination here of lifelong and life-changing treatment being given to children, with very limited knowledge of the degree to which it will or will not benefit them, is one that gives significant grounds for concern."

45. At para [144], the Divisional Court concluded that it was not an answer "to give the child more, and more detailed, information", because "in many cases, however much information the child is given as to long-term consequences, s/he will not be able to weigh up the implications of the treatment to a sufficient degree. There is no age-appropriate way to explain to many of these children what losing their fertility or full sexual function may mean to them in later years."

46. It was for these reasons that the Divisional Court gave guidance about the application of the *Gillick* test to the treatment and the cohort of children in question:

> "[t]he decisions in respect of [puberty blockers] have lifelong and life-changing consequences for the children. Apart perhaps from life-saving treatment, there will be no more profound medical decisions for children than whether to start on this treatment pathway. In those circumstances we consider that it is appropriate that the court should determine whether it is in the child's best interests to take [puberty blockers]. There is a real benefit in the court, almost certainly with a child's guardian appointed, having oversight over the decision ." [149]

Parental consent

47. The Divisional Court considered the issue of parental consent at para [47] and noted that "the normal position in law would be that someone with parental responsibility could consent on their behalf." Mr Hyam for the claimants had originally been disposed to argue that parental consent would be inadequate without court intervention in circumstances where the child was incapable of giving informed consent. But as the court noted in the same paragraph, the service specification requires the informed consent of the child themself before puberty blockers can be prescribed. The evidence from Tavistock and the Trusts was that there could be no question of prescribing puberty blockers on the say so of parents without the informed consent of the child. This was a concern which did not arise in these judicial review proceedings.

48. Lieven J has recently decided in *AB v. CD* [2021] EWHC 741 (Fam) that, unless the parents were overriding the wishes of the child, the parents of a child patient could consent to puberty blockers on their child's behalf, notwithstanding the court's decision in this case, without the need for a "best interests" application to the court. She rejected the suggestion that the prescription of puberty blockers was in a special category of medical intervention which always required the sanction of the court, despite the controversial nature of the treatment. We respectfully agree.

49. Lieven J cited the judgment of Lady Black in *An NHS Trust v. Y* [2018] UKSC 46, [2019] AC 978 and expressed herself wary of "becoming too involved in highly complex moral and ethical issues on a generalised, rather than case specific basis."

50. That case was concerned with the issue whether an application need always be made to the court for approval to discontinue clinically assisted nutrition and hydration keeping a person with prolonged disorder of consciousness alive. The Supreme Court concluded that it was not necessary when the medical professionals and families agreed about withdrawal.

51. Lieven J accepted the uncontroversial proposition that whatever may be the difficulties in children understanding the consequences of medical treatment for gender dysphoria the same was not so of their parents. They "know their child best, and care for them most, [and] will be in a position to reach a fully informed decision." She added that the use of puberty blockers for gender dysphoria raised "controversial ethical issues" with a division of clinical and ethical views which have "become highly polarised." She continued "these are precisely the type of matters which are best assessed in a regulatory and academic setting and not through litigation" (paras [121] and [122]).

Gillick

52. *Gillick* was a challenge to the Department of Health and Social Security guidance to health authorities on family planning services. It included a section on contraceptive advice and treatment for young people. It stated that such advice and treatment should be available for people of all ages, but that for children under the age of 16 attempts would be made to persuade them to involve their parent or guardian at the earliest stage of consultation and that it would be most unusual to provide such advice or treatment without parental consent. However, it noted that to abandon the principle of confidentiality between doctor and patient in respect of children under 16 might cause them not to seek professional advice at all, thereby exposing them to risks such as pregnancy and sexually transmitted diseases. Thus, the guidance in *Gillick* noted that in exceptional cases it was for a doctor exercising his clinical judgement to decide whether to prescribe contraception without parental involvement. The claimant, the mother of girls under 16, objected and wrote to her area health authority seeking an assurance that no contraceptive advice or treatment would be given to her daughters while under 16 without her knowledge and consent. The health authority refused to give such an assurance. It stated that in accordance with the guidance the final decision must be for the doctor's clinical judgement. The claimant brought proceedings for a declaration that the guidance gave advice which was unlawful. The claim failed at first instance but succeeded in the Court of Appeal on the grounds that a girl under 16 was incapable either of consenting to treatment or of validly requiring a doctor not to seek the consent of her parents; and that the guidance was contrary to law in that any doctor who treated a girl under 16 without the consent of her parent or guardian, other than in an emergency, would be infringing their parental rights. By a majority (Lord Fraser of Tullybelton, Lord Scarman and Lord Bridge of Harwich; Lord Brandon of Oakbrook and Lord Templeman dissenting), the House of Lords allowed the appeal.

53. The Appellate Committee decided the approach to be adopted in a judicial review of a policy statement. Lord Scarman identified the question in the appeal in this way at (page 181F):

> "It is only if the guidance permits or encourages unlawful conduct in the provision of contraceptive services that it can be set aside as being the exercise of a statutory discretionary power in an unreasonable way."

54. In *Regina (Bayer plc) v. NHS Darlington Clinical Commissioning Group* [2020] EWCA Civ 449 the Court of Appeal explained that "permitting" unlawful conduct meant "sanctioning" it, and that a policy that left open the possibility of implementation by unlawful means would not itself be unlawful (see Underhill LJ at paras [199] to [200] and Rose LJ at para [214]). That approach was recently approved in the Supreme

Court in *R (A) v. Secretary of State for the Home Department* [2021] UKSC 37 at para [44] and summarised at para [84]: "a policy will be unlawful if it misdirects officials as to their legal obligations." As Mr Hyam accepts, neither the service specification (and national and international guidance it refers to) nor the SOP were unlawful if his original argument (that an application to the court should always be made) were rejected. Mr Hyam's criticism was that the written materials should have been more prescriptive in the factors that clinicians should consider. But the role of the court is not to draft policy documents. It is to test their lawfulness. The argument that, as a matter of law, there should always be an application to the court before puberty blockers are prescribed and that the policy documents were unlawful in failing to recognise that, was not pursued by cross appeal; and rightly so.

55. In *Gillick*, the House of Lords made clear that it was for the clinician to decide whether a child under 16 could give informed consent to the prescription of contraceptives. Lord Fraser said at page 174B-C that:

> "[t]he only practicable course is to entrust the doctor with a discretion to act in accordance with his view of what is best in the interests of the girl who is his patient."

He continued that:

> "the doctor will be justified in proceeding without the parents' consent or even knowledge provided he is satisfied on the following matters: (1) that the girl (although under 16 years of age) will understand his advice; (2) that he cannot persuade her to inform her parents ; (3) that she is very likely to begin or to continue having sexual intercourse with or without contraceptive treatment; (4) that unless she receives contraceptive advice or treatment her physical or mental health or both are likely to suffer; (5) that her best interests require him to give her contraceptive advice, treatment or both without the parental consent."

56. Lord Scarman said at page 186A to C:

> "Certainty is always an advantage in the law, and in some branches a necessity. But it brings with it an inflexibility and a rigidity which is some branches of the law can obstruct justice, impede the law's development, and stamp upon the law the mark of obsolescence where what is needed is capacity for development. The law relating to parent and child is concerned with the problems of the growth and maturity of the human personality. If the law should impose upon the process of "growing up" fixed limits where nature knows only a continuous process, the price would be artificiality and a lack of realism in an area where the law must be sensitive to human development and social change. If certainty be thought desirable, it is better that the rigid demarcations necessary to achieve it should be laid down by legislation after a full consideration of all the relevant factors than by the courts confined as they are by the forensic

> process to the evidence adduced by the parties and to whatever may properly fall within the judicial notice of judges."

At page 188B he added:

> "The modern law governing parental right and a child's capacity to make his own decisions was considered in Reg. v. D [1984] AC 77. The House must, in my view, be understood as having in that case accepted that, save where statute otherwise provides, a minor's capacity to make his or her own decision depends upon the minor having sufficient understanding and intelligence to make the decision and is not to be determined by reference to any judicially fixed age limit."

57. Lord Scarman observed at page 184B, "nor has our law ever treated the child as other than a person with capabilities and rights recognised by law" and continued at page 189C-E:

> "When applying these conclusions to contraceptive advice and treatment it has to be borne in mind that there is much that has to be understood by a girl under the age of 16 if she is to have legal capacity to consent to such treatment. It is not enough that she should understand the nature of the advice which is being given: she must also have a sufficient maturity to understand what is involved. There are moral and family questions, especially her relationship with her parents; long-term problems associated with the emotional impact of pregnancy and its termination; and there are the risks to health of sexual intercourse at her age, risks which contraception may diminish but cannot eliminate. It follows that a doctor will have to satisfy himself that she is able to appraise these factors before he can safely proceed upon the basis that she has at law capacity to consent to contraceptive treatment. and it further follows that ordinarily the proper course will be for him, as the guidance lays down, first to seek to persuade the girl to bring her parents into consultation, and if she refuses, not to prescribe contraceptive treatment unless he is satisfied that her circumstances are such that he ought to proceed without parental knowledge and consent."

He said at page 191B-C:

> "It can be said by way of criticism of this view of the law that it will result in uncertainty and leave the law in the hands of the doctors. The uncertainty is the price which has to be paid to keep the law in line with social experience, which is that many girls are fully able to make sensible decisions about many matters before they reach the age of 16. I accept that great responsibilities will lie on the medical profession. It is, however, a learned and highly trained profession regulated by statute and governed by a strict ethical code which is vigorously enforced. Abuse of the power to prescribe contraceptive treatment for girls under the age of 16 would render a doctor liable to severe professional penalty. The truth may well be that the rights of parents and children in this sensitive area are better protected by

> the professional standards of the medical profession than by "a priori" legal lines of division between capacity and lack of capacity to consent since any such general dividing line is sure to produce in some cases injustice, hardship, and injury to health."

The issues before the Court of Appeal

58. The Divisional Court accepted that children under 16 and young people aged between 16 and 18 could, upon a proper interpretation of *Gillick*, consent to embarking on a course of puberty blockers. It was lawful for Tavistock to refer such patients to UCH or Leeds and for those Trusts to prescribe puberty blockers following informed consent from the child. There was no legal obligation to seek a "best interests" ruling from the court.

59. Mr Hyam accepts that the only real question before us is whether the Divisional Court, not having held that Tavistock's (and the Trusts') policies and practices were unlawful, was right to make the declaration and give the guidance it did.

60. The arguments we have heard about the court's approach to the evidence provide the background to these two questions. We will address that issue first, before turning to whether the court was right to make the declaration and to give the guidance.

Did the Divisional Court approach the evidence appropriately?

61. We have considered that Divisional Court's approach to aspects of the evidence at paras [31] to [38] above.

62. The correct approach was not in dispute. It was not for the court hearing a judicial review to decide disputed issues of fact or expert evidence (see paras [9], [70] and [74]). That principle is only subject to exceptions that are not relevant to this case. The question is whether, notwithstanding its acceptance of the principle, the Divisional Court placed reliance on the contested and untested expert evidence of the claimants as Tavistock and the Trusts contend. The claimants submit that the salient facts decided by the court were taken from Tavistock's own evidence so that they were effectively common ground.

63. This dispute applies most significantly to the two findings to the effect that treatment of gender dysphoria with puberty blockers was "experimental" (see paras [28], [74], [93], and [134]), and that the vast majority of patients taking puberty blockers go on to cross-sex hormones and are on a pathway to much greater medical interventions (see paras [68] and [138]). The Divisional Court recorded at para [70] that Professor Butler had "explained that it is very common for paediatric medicines to be used off-label and that this factor does not render the treatment in any sense experimental." It nonetheless concluded at para [134] that the treatment was experimental in the sense it explained in that paragraph (real uncertainty over the short and long-term consequences of the treatment with very limited evidence as to its efficacy). The argument may, in one sense, be semantic, but, respectfully, we think that it would have been better to avoid controversial factual findings.

64. The same points apply to the finding that the vast majority of patients taking puberty blockers go on to cross-sex hormones and are on a pathway to much greater medical interventions. The evidence filed by Tavistock indicated that more than half of those who embark upon a course of puberty blockers go on to cross-sex hormones. For the Divisional Court to have reached with confidence the conclusion set out at [138] that the "vast majority of patients taking [puberty blockers] go on to [cross-sex hormones] and therefore that s/he is on a pathway to much greater medical interventions", it would, we think, have been necessary not only to look at the limited data provided by Dr de Vries and Dr Carmichael, but also to evaluate evidence as to how patients were chosen for puberty blockers, the progression of the treatment, and multiple issues affecting progression between treatment pathways, including the consent processes for subsequent treatment stages. Tavistock and the Trusts argue that the Divisional Court failed to appreciate the difference between a causal connection and an association, whatever the proportion of those who move from one treatment to another. The correlation may be the result of effective selection of those for puberty blockers and information sharing at the consent stage. The point, however, is that these judicial review proceedings did not provide a forum for the resolution of contested issues of fact, causation and clinical judgement.

65. As will appear from what we say in the next section of this judgment, we have concluded that the declaration implied factual findings that the Divisional Court was not equipped to make.

Was the Divisional Court right to have made the declaration?

66. At the heart of Tavistock's appeal is the submission that, in making the declaration, the Divisional Court departed from *Gillick*, which had established that children under 16 could make their own decisions if assessed individually as competent to do so by their treating clinician. Tavistock submits that the court "intruded into the realm of decisions agreed upon by doctors, patients and their parents, where the court had not previously gone." That submission is made in respect of both the declaration and the guidance. Tavistock submitted that the Divisional Court erred by deciding between the evidence of competing experts, without that evidence having been properly admitted or tested in cross-examination.

67. Mr Hyam submitted that the Divisional Court was justified in making the declaration and giving the guidance even where (a) the claimants failed to make their case on illegality, therefore no coercive order was appropriate, and (b) the court was concerned with the future.

68. He relied on para 18-038 of De Smith's Judicial Review, 8th edition: "[i]n many situations all that is required is for the legal position to be clearly set out in a declaration for a dispute of considerable public importance to be resolved", and that such declarations are "increasingly being used to pronounce upon the legality of a future situation and in that way the occurrence of illegal action is avoided."

69. A declaration may be sought in private law proceedings to resolve a legal dispute. It binds the parties and those privy to the proceedings. In public law proceedings for judicial review a declaration is a common alternative to coercive relief following a finding that the defendant public authority has, or proposes, to act unlawfully. That is the effect of the passage from De Smith just quoted. That is the "dispute" referred to

para 18-08. The dispute identified in these proceedings was whether an application to the court was always needed before the prescription of puberty blockers because no child under the age of 18 could give valid consent. Had the claimants' case succeeded on that issue, declaratory relief would inevitably have been granted. No example of a declaration being granted in judicial review proceedings in which a clear legal challenge has failed was drawn to our attention. We recognise that the broad discretionary power to grant declaratory relief found in section 31(2) of the Senior Courts Act 1981 enables the court to make an advisory declaration in appropriate cases. Yet this was not a claim for an advisory opinion or declaration from the court. It was a failed claim for a declaration that the law required the intervention of the court exercising its "best interests" jurisdiction before puberty blockers could be prescribed. The "illegality" relied upon was the absence of such a step in the relevant written guidance and practice of Tavistock.

70. The declaration is in terms which not only states the law but also identifies an exhaustive list of the factual circumstances that must be evaluated in seeking consent from a child and specifies some matters as conclusive facts. It comes close to providing a checklist or script that clinicians are required to adopt for the indefinite future in language which is not capable of clear and uniform interpretation and in respect of which there were evidential conflicts. Some of the factors identified in the declaration are simple statements of fact. Others beg questions to which different clinicians would give different answers.

71. In argument, Lady Justice King asked Mr Hyam which of the eight factors in the declaration were not covered in appendix B to the SOP, which dealt with *Guidance for Clinicians: assessing readiness for referral to endocrinology for consideration of hormone blockers.* He submitted that the third factor namely "the fact that the vast majority of patients taking [puberty blockers] go on to [cross-sex hormones] and therefore that s/he is on a pathway to much greater medical interventions" was not covered as Tavistock did not accept it to be the case. The fifth and sixth factors were only partially or insufficiently covered, namely "the impact of [cross-sex hormones] on sexual function" and "the impact that taking this step on this treatment pathway may have on future and life-long relationships". The seventh and eighth factors were not covered properly because they were disputed, namely "the unknown physical consequences of taking [puberty blockers]" and "the fact that the evidence base for this treatment is as yet highly uncertain".

72. These answers emphasise the extent to which the declaration covered areas of disputed fact, expert evidence and medical opinion.

73. The claimants argue that the Divisional Court was justified in setting out the legal position in a declaration in a dispute of considerable public importance, pronouncing upon the legality of a future situation to avoid future illegality. Mr Hyam pointed to the language of Lord Scarman at page 189C-E (see [57] above), where he summarised what "has to be understood by a girl under the age of 16 if she is to have legal capacity to consent to such treatment." In stating the factors, he said that doctors would have to satisfy themselves (an important qualification recognising the primacy of clinical judgement in this area emphasised also by Lord Fraser at page 174B-C) that the patient was able to appraise these factors before they could safely proceed upon the basis that she had at law capacity to consent to contraceptive treatment. These factors included an understanding of what was involved, moral and family questions, especially her

relationship with her parents, long-term problems associated with the emotional impact of pregnancy and its termination, the risks to health of sexual intercourse at her age, the risks which contraception might diminish but could not eliminate.

74. In our judgment, re-stating the factors mentioned by Lord Scarman, in the context of refusing in *Gillick* to grant the declaratory relief sought or any declaratory relief, demonstrates clearly how different they are from the factors stated by the Divisional Court in this case. Each of the factors stated by Lord Scarman was an area for evaluation, rather than a conclusory statement of fact or medical opinion. We accept that some of the court's factors in para [138] were of a similar nature, for example, the first factor, namely "the immediate consequences of the treatment in physical and psychological terms" and to a certain extent the factors dealing with the risks of loss of fertility, the impact on sexual function and on future relationships, albeit that both factors call for a clinical judgement tailored to the child in question. But the second factor namely "the fact that the vast majority of patients taking [puberty blockers] go on to [cross-sex hormones] and therefore that s/he is on a pathway to much greater medical interventions" was, as we have said, a matter of contested fact, and begs the important question "why" (see [64] above); and the seventh and eight factors were also disputed, namely the unknown physical consequences of taking puberty blockers and the fact that the evidence base was as yet highly uncertain.

75. The evidence of Tavistock and the Trusts was that the treatment was safe, internationally endorsed, reversible and subject to a rigorous assessment process at each stage. It was supported by the service specification, the WPATH guidelines, the Endrocrine Society Clinical Guidelines and explained in the witness statements of Dr Carmichael and Dr Alvi. As we have seen, and as these proceedings have illuminated, there are strongly held contrary views. The declaration would require the clinicians to suspend or at least to temper their clinical judgement and defer to what amounts to the clinical judgement of the court on which key features should inform an assessment of *Gillick* competence, influenced by the views of other clinicians who take a different view and in circumstances where Mr Hyam accepts that the service specification, which sets out criteria for referring a child for puberty blockers, is not unlawful.

76. The *ratio decidendi* of *Gillick* was that it was for doctors and not judges to decide on the capacity of a person under 16 to consent to medical treatment. Nothing about the nature or implications of the treatment with puberty blockers allows for a real distinction to be made between the consideration of contraception in *Gillick* and of puberty blockers in this case bearing in mind that, when *Gillick* was decided 35 years ago, the issues it raised in respect of contraception for the under 16s were highly controversial in a way that is now hard to imagine. A similar conclusion was reached by Silber J in connection with abortion in *R (Axon) v. Secretary of State for Health* [2006] QB 539 at para [86].

77. In *R (Burke) v. General Medical Council* [2005] EWCA Civ 1003, [2006] QB 273 this court dealt with an appeal in judicial review proceedings which had been brought by a man who suffered from a degenerative brain condition which at some stage in the future (assuming he did not die first) would require him to be given artificial nutrition and hydration ("ANH"). His concern was that others might decide to withdraw it against his wish for his life to be sustained until he died of natural causes. At first instance a wide range of declarations was sought relating to NHS guidance and to the claimant's personal position should the issue he identified arise. The judge at first instance not

only granted declarations but also in his judgment covered a wide range of circumstances of general application in the arena of end-of-life treatment. Lord Phillips of Worth Matravers MR, giving the judgment of the court, said:

> "21. There are great dangers in a court grappling with issues when these are divorced from a factual context that requires their determination. The court should not be used as a general advice centre. The danger is that the court will enunciate propositions of principle without full appreciation of the implications that these will have in practice, throwing into confusion those who feel obliged to attempt to apply those principles in practice. This danger is particularly acute where the issues raised involve ethical questions that any court should be reluctant to address, unless driven to do so by the need to resolve a practical problem that requires the court s intervention. We would commend, in relation to the Guidance, the wise advice given by Lord Bridge of Harwich in *Gillick v West Norfolk and Wisbech Area Health Authority* [1986] AC 112, 193-4:
>
> > " the occasions of a departmental non-statutory publication raising a clearly defined issue of law, unclouded by political, social or moral overtones, will be rare. In cases where any proposition of law implicit in a departmental advisory document is interwoven with questions of social and ethical controversy, the court should, in my opinion, exercise its jurisdiction with the utmost restraint, confine itself to deciding whether the proposition of law is erroneous and avoid either expressing *ex cathedra* opinions in areas of social and ethical controversy in which it has no claim to speak with authority or proffering answers to hypothetical questions of law which do not strictly arise for decision.""

78. At [22] Lord Phillips was critical of some of the declarations which "did not purport to resolve any issues between the parties, but appeared to be intended to lay down propositions of law binding on the world."

79. The legal issue before the Divisional Court was not a general inquiry into the content of information and understanding needed to secure the informed consent of a child, although we have great sympathy with the Divisional Court given the large volumes of materials which informed that clinical issue. The declaration which the Divisional Court made does not sit happily with the observations of Lord Phillips.

80. A formal declaration states the law. In so far as it specifies facts as part of the law (itself a difficult concept) they remain the law. There is a great deal of difference between the declaration originally sought in these proceedings ("no prescription of puberty blockers without court approval") or in *Gillick* ("no contraceptives without parental consent") and the declaration made here. It turns expressions of judicial opinion into a statement of law itself. In addition, it states facts as law which are both controversial and capable of change. Both Lords Fraser and Scarman in *Gillick* expressed views about the matters which a clinician would have to explore with a patient, without being prescriptive and recognising that it was for the clinicians to

satisfy themselves, in their own way. No declaration was contemplated to capture the essence of that thinking. It would have been inconsistent with the *ratio* of the case that clinicians must be trusted to make the decisions for the court effectively to give them a manual about how to do so. It is instructive to consider the language of Lord Scarman on the main issue in *Gillick* at pages 188H to 189A:

> "I would hold that as a matter of law the parental right to determine whether or not their minor child below the age of 16 will have medical treatment terminates if and when the child achieves a sufficient understanding and intelligence to enable him or her to understand fully what is proposed. It will be a question of fact whether a child seeking advice has sufficient understanding of what is involved to give consent valid in law."

81. His conclusion on the law is found in the first sentence but the second recognises that the question whether valid consent is given in any case is a question of fact. That depends upon the individual circumstances of any child and the surrounding circumstances of the clinical issues. Both he and Lord Fraser identified at a high level what they could expect a clinician to take into account in making a clinical decision. Turning their observations into formal declarations (all the more so if they included immutable facts) would have been inappropriate. It is a matter of clinical judgement, tailored to the patient in question, how to explain matters to ensure that the giving or refusal of consent is properly informed. As Lord Fraser observed at page 174F, medical professionals who do not discharge their responsibilities properly would be liable to disciplinary sanction. The law of informed consent culminating in *Montgomery* also exposes the vulnerability of clinicians to civil action from someone they have treated who shows that they did so without first obtaining informed consent.

82. In the circumstances, we would wish to make no comment on the comparisons that were drawn between this case and the quite different situation in which the court is asked to approve life-saving treatment for under-18s to which they or their parents are unable or unwilling to consent.

83. The policy and practice under consideration in this case requires the informed consent of both child and parents before Tavistock refers to the Trusts, again before either Trust prescribes puberty blockers and once more before prescription of cross-sex hormones. This case is not concerned with a child who lacks capacity to make the decision for the purposes of the Mental Capacity Act 2005. Such a child would not be treated through GIDS because informed consent is always required from the child before any treatment is given. We do not think that a comparison between the exercise of assessing *Gillick* competence and the process envisaged under the Mental Capacity Act 2005 (see *Re X (A child)(No 2)* [2021] 4 WLR 11 at para [72]) assists in this case. Moreover, since the declaration formally concerns those under 16 it is not concerned with children covered by section 8 of the 1969 Act.

84. In respectful disagreement with the Divisional Court we conclude that the declaration should not have been granted.

Was the Divisional Court right to have given the guidance?

85. We recognise that the guidance stemmed from the understandable concern of the Divisional Court for the welfare of children suffering from gender dysphoria who, it is common ground, are deeply distressed and highly vulnerable. In our judgment, however, the court was not in a position to generalise about the capability of persons of different ages to understand what is necessary for them to be competent to consent to the administration of puberty blockers. The court was not deciding any specific case and fell into the error identified by Lord Phillips in *Burke.*

86. Moreover, the effect of the guidance was to require applications to the court in circumstances where the Divisional Court itself had recognised that there was no legal obligation to do so. It placed patients, parents and clinicians in a very difficult position. In practice the guidance would have the effect of denying treatment in many circumstances for want of resources to make such an application coupled with inevitable delay through court involvement. Furthermore, the guidance that there should be an application to the court in circumstances where child, parents and clinicians all consider the treatment to be in the best interests of the child would be inconsistent with the conclusion of the Supreme Court in *An NHS Trust* (discussed at [49] above).

87. As we have already said, the principle enunciated in *Gillick* was that it was for clinicians rather than the court to decide on competence.

88. The guidance did not take account of Lord Scarman's *dictum* in *Gillick* itself at page 188B that it was settled law following *R v. D* that "save where statute otherwise provides, a minor's capacity to make his or her own decision depends upon the minor having sufficient understanding and intelligence to make the decision and is not to be determined by reference to any judicially fixed age limit" or his earlier observation at page 186C that "rigid demarcations necessary to achieve [certainty] should be laid down by legislation after a full consideration of all the relevant factors [rather] than by the courts confined as they are by the forensic process ." Finally, as appears from *AB*, the guidance was insufficiently sensitive to the role of parents in giving consent.

89. We conclude that it was inappropriate for the Divisional Court to give the guidance concerning when a court application will be appropriate and to reach general age-related conclusions about the likelihood or probability of different cohorts of children being capable of giving consent. That is not to say that such an application will never be appropriate. There may be circumstances where there are disputes between one or more of clinicians, patients and parents where an application will be necessary, even if they are difficult to envisage under the service specification and SOP with which this case is concerned.

90. In the light of the conclusion we have reached on both the declaration and guidance it is unnecessary to consider the arguments we heard by reference to the Human Rights Act 1998.

Conclusions

91. We allow Tavistock's appeal and set aside the declaration. In addition, we hold that it was inappropriate for the Divisional Court to provide the guidance. The Divisional Court concluded that Tavistock's policies and practices (as expressed in the service

specification and the SOP) were not unlawful and rejected the legal criticism of its materials. In those circumstances, the claim for judicial review is dismissed.

92. We should not finish this judgment without recognising the difficulties and complexities associated with the question of whether children are competent to consent to the prescription of puberty blockers and cross-sex hormones. They raise all the deep issues identified in *Gillick*, and more. Clinicians will inevitably take great care before recommending treatment to a child and be astute to ensure that the consent obtained from both child and parents is properly informed by the advantages and disadvantages of the proposed course of treatment and in the light of evolving research and understanding of the implications and long-term consequences of such treatment. Great care is needed to ensure that the necessary consents are properly obtained. As *Gillick* itself made clear, clinicians will be alive to the possibility of regulatory or civil action where, in individual cases, the issue can be tested.

93. The service specification and SOP provide much guidance to the multi-disciplinary teams of clinicians. Those clinicians must satisfy themselves that the child and parents appreciate the short and long-term implications of the treatment upon which the child is embarking. So much is uncontroversial. But it is for the clinicians to exercise their judgement knowing how important it is that consent is properly obtained according to the particular individual circumstances, as envisaged by *Gillick* itself, and by reference to developing understanding in this difficult and controversial area. The clinicians are subject to professional regulation and oversight. The parties showed us an example of a Care Quality Commission report in January 2021 critical of GIDS, including in relation to aspects of obtaining consent before referral by Tavistock, which illustrate that. The fact that the report concluded that Tavistock had, in certain respects, fallen short of the standard expected in its application of the service specification does not affect the lawfulness of that specification; and it would not entitle a court to take on the task of the clinician in determining whether a child is or is not *Gillick* competent to be referred on to the Trusts or prescribed puberty blockers by the Trusts.

94. Once it was conceded by the claimants that the Divisional Court had made no findings of illegality, the focus of this appeal was squarely on *Gillick* and whether, by making the declaration accompanied by guidance requiring (probably frequent) court intervention, the Divisional Court had placed an improper restriction on the *Gillick* test of competence. In our judgment, whilst driven by the very best of intentions, the Divisional Court imposed such a restriction through the terms of the declaration itself, by the utilisation of age criteria and by the requirement to make applications to the court. As we have said, applications to the court may well be appropriate in specific difficult cases, but it was not appropriate to give guidance as to when such circumstances might arise.

Covid-19 Protocol: This judgment was handed down by the judge remotely by circulation to the parties' representatives by email and release to Bailii. The date and time for hand-down is deemed to be 10.30am on 26 March 2021

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Case No: FD21P00063

IN THE HIGH COURT OF JUSTICE
FAMILY DIVISION

Royal Courts of Justice
Strand, London, WC2A 2LL

Date: 26/03/2021

Before :

MRS JUSTICE LIEVEN

- -

Between :

AB

Applicant

and

CD

First Respondent

and

THE TAVISTOCK AND PORTMAN NHS FOUNDATION TRUST

Second Respondent

and

UNIVERSITY COLLEGE LONDON NHS FOUNDATION TRUST

Third Respondent

and

XY

Fourth Respondent

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Mr David Lock QC and Ms Ceri White (instructed by **Rook Irwin Sweeney LLP**) for the **Applicant**
CD (the **First Respondent**) represented himself
Ms Fenella Morris QC and Ms Nicola Kohn (instructed by **DAC Beachcroft**) for the **Second Respondent**
Mr John McKendrick QC and Mr Andrew Powell (instructed by **Hempsons**) for the **Third Respondent**
Ms Alison Grief QC, Ms Rebecca Foulkes and Mr Harry Langford (instructed by **Freemans Solicitors**) for the **Fourth Respondent**
Ms Victoria Butler-Cole QC, Mr Alex Ruck Keene and Ms Katherine Apps represented **Cafcass** as **Advocate to the Court**

Hearing dates: **1 - 3 March 2021**

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Approved Judgment

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MRS JUSTICE LIEVEN

This judgment was delivered in private. The judge has given leave for this version of the judgment to be published on condition that (irrespective of what is contained in the judgment) in any published version of the judgment the anonymity of the children and members of their family must be strictly preserved. All persons, including representatives of the media, must ensure that this condition is strictly complied with. Failure to do so will be a contempt of court.

Mrs Justice Lieven DBE :

1. This is an application by AB, the mother of XY, for a declaration that she and CD (the father of XY) have the ability in law to consent on behalf of XY to the administration of hormone treatment to suppress puberty, known as puberty blockers ("PBs"). The application is made in the light of the Divisional Court decision in *Bell v The Tavistock and Portman NHS Foundation Trust & Ors* [2020] EWHC 3274 (Admin) ("*Bell*"). The issue in broad terms is whether XY's parents can consent to the treatment or whether the decision as to whether XY should be prescribed PBs should come before the Court, either as a matter of legal requirement or as a matter of good practice.

2. The Second Respondent is the Tavistock and Portman NHS Foundation Trust, which is home to the Gender Identity Development Service ("GIDS"), a multi-disciplinary service commissioned by NHS England in order to provide specialist assessment, consultation and care for children and young people to reduce the distress of a mismatch between their birth-assigned sex and their gender identity, referred to below as Gender Dysphoria.

3. The Third Respondent is University College London Hospital NHS Trust ("UCLH") which works with GIDS to provide paediatric and adolescent endocrinology services to treat patients with Gender Dysphoria.

4. AB was represented before me by Mr Lock QC and Ceri White; CD represented himself; the Tavistock and Portman NHS Trust was represented by Fenella Morris QC and Nicola Kohn; University College London Hospital NHS Trust was represented by John McKendrick QC and Andrew Powell; XY was represented by Alison Grief QC, Rebecca Foulkes and Harry Langford; and Cafcass, which appeared to assist the Court, was represented by Victoria Butler-Cole QC, Alex Ruck Keene and Katherine Apps.

5. The background to the services provided at GIDS, the process of taking consent and the nature and effect of puberty blockers is set out in the judgment in *Bell*. I do not intend to repeat the analysis set out therein. *Bell* is currently awaiting a hearing on appeal in the Court of Appeal. Ms Butler-Cole raised the possibility that I should adjourn this case pending the decision of the Court of Appeal in *Bell*. None of the parties asked me to adjourn, and indeed all urged me to proceed to hear the case.

6. The legal issues in this case are different from *Bell* because, as was said at [47] in *Bell*, the question of whether parents could consent to the treatment was not considered in the judgment. On the basis of the submissions in *Bell* from the current Second and Third Respondents, it appeared that the administration of PBs would not continue on the basis of parental consent alone. It was not suggested to the Divisional Court that GPs could, and in some cases would, proceed with the administration solely on the basis of parental consent.

7. However, the Second and Third Respondents say that for those patients currently receiving treatment with PBs, as opposed to new patients, given that a stay has been granted in respect of [138] of *Bell* and the extreme distress these children and young persons would suffer if the treatment was not continued, treatment should continue on the basis of parental consent alone as long as the patient continues to want the treatment. Therefore, the issue of the scope of parental consent and the role of the Court has become a live one.

8. *Bell* is of very great relevance to the present case because the Divisional Court's consideration of the nature of PBs, and in particular their experimental nature, the issues around reversibility, and the lifelong and life-changing nature of the treatment pathway that the child has entered upon, see in particular [134] to [137], are highly relevant to the issues that arise in the present case.

9. All parties agreed that if I proceeded to hear this case then I was in effect bound by *Bell*, and that they were not seeking to argue before me that any part of it was wrong, although the Second and Third Respondents would do so in the Court of Appeal. I should be entirely clear that even if I was not in effect bound by *Bell,* I self-evidently entirely agree with its analysis and conclusions having been one member of the Divisional Court. Nothing that is said below is intended to depart, to even the smallest extent, from anything that was said in *Bell*.

10. There was some suggestion that if I found that the parents could not consent, I should carry out a best interests analysis of whether or not it was in XY's best interests to receive the PBs. I took the view that this was not an appropriate course to follow. Although I could have heard oral evidence from Professor Butler, Consultant Endocrinologist at the Second Respondent, who had interviewed XY, I had no independent evidence from Cafcass as to XY's best interests, Cafcass not having been invited by the Court to act as Guardian for XY. I therefore did not consider that I was in a proper position to carry out a best interests assessment.

XY's facts

11. XY was born a boy and is now aged 15. I have witness statements from both parents and from XY, and XY wrote me a letter. The parents are separated but live close to each other and XY spends considerable time with both parents. I have not heard oral evidence, but I have no reason not to fully accept what is said in the written statements and I rely on those statements in the summary of the facts I set out below.

12. XY came out to her parents as transgender when she was 10 years old in Year 5. According to AB, XY had always only been interested in girls' toys and clothes. When at primary school she, for a period, tried to conform to a more "male" stereotype but she was utterly miserable, became very withdrawn, and was shy and unhappy, particularly at school.

13. She came out to her parents about being transgender after reading a book where one of the main characters was transgender. According to her mother, once she started going to school as a girl her confidence grew, and she became much happier. The parents first made contact with the GIDS Unit when XY was 10 years old. XY has now fully transitioned socially in all aspects of her life including legal paperwork. She changed her name by deed poll in 2016.

14. XY has never been diagnosed as having an unresolved mental health issue and there is no suggestion that she is on the Autistic Spectrum.

15. In August 2016 XY was referred to GIDS. She was assessed over the course of seven appointments with a clinical psychologist and a child psychotherapist. During those sessions XY and her parents met the clinicians both together and separately.

16. XY could have started on PBs in 2018 but her parents felt she should wait until puberty commenced because they were concerned that she should not be on medication unnecessarily. AB sets out in her witness statement that she did extensive research on PBs before XY started taking them. She says that she was fully aware of the potential side effects and she knew that the treatment was very new. It does appear from AB's witness statement that she and CD have been careful and cautious in their approach to the treatment, have tried to become as well informed as possible, and have sought at various stages to take matters slowly.

17. XY was referred by GIDS to UCLH and first attended in February 2018. Her treatment was delayed on two occasions because puberty had not commenced. She was seen by Professor Butler in April 2019 when she was 13. Professor Butler noted: *"[XY] has been declared competent to consent and has signed consent forms voluntarily."* Her parents had also signed the relevant form.

18. I note at this point that Professor Butler plainly proceeded on the basis that XY could give legal consent. He noted that XY *"understands all about the treatment and has been able to sign the informed consent form supported by her parents."* I make no comment on UCLH's processes in this regard, but I note that the form produced in this Court was the same, or very similar to, the forms shown to the Court in *Bell*. This form does not test whether the child, here XY, understands the issues set out at [138] of *Bell*. I make no further comment on the degree to which either the Second or Third Respondent's processes test out *Gillick* competence (*Gillick v West Norfolk and Wisbech Health Authority* [1986] AC 112).

19. XY had four appointments at UCLH and Professor Butler requested XY's GP to prescribe and administer PBs. XY started on PBs in July 2019. She was initially on a drug that is given every 4 weeks but has now moved to a 10 week cycle. Her next prescription is due in April 2021.

20. XY and her parents did consider whether to undergo fertility preservation treatment before she started on PBs and decided not to do so. She was advised that she would not be able to have treatment for fertility preservation until September 2019 and by July 2019 the pubertal changes to her body were progressing at considerable speed and causing her distress. AB sets out the parents' consideration in some detail in her statement. XY says in her statement:

> *"I agree with everything my mum says about our efforts for me to undergo fertility preservation treatment before I started on puberty blockers and the race against time. The visible and irreversible onset of male puberty was very and most distressing for me. It also meant that my life wouldn't be my life anymore and normal, where everyone knew and accepted me as female. I had to make a very difficult choice. I have already explained in my letter how I felt about developing any additional male characteristics and especially as they could not be reversed. I would have been devastated.*
>
> *My parents and I talked about everything, they have been hugely supportive and understanding…."*

21. XY could decide at any point before she starts on cross-sex hormones ("CSH"), assuming that she does so, to stop taking PBs for a period of at least 6 months and then preserve sperm. However, this course would entail developing male secondary sexual characteristics which she says she would find devastating. The impact of the loss of fertility and the ability of a child of XY's age to understand those impacts is a matter that is dealt with in *Bell*.

22. Since commencing PBs, XY and her family, whether individually or together, have attended a further 10 meetings with their GIDS clinicians for further support and advice.

23. The background to the Second and Third Respondent's practice and processes in respect of the prescription of PBs is set out in *Bell* and I will not repeat.

24. Shortly after the judgment in *Bell* was delivered, NHS England ("NHSE") issued an amendment to the Service Specification for GIDS requiring that each patient currently receiving treatment should be assessed and a "best interests" application should be made to the Court in the event that the clinical review determined that the patient should continue with PBs. The Second Respondent applied for permission to appeal the judgment and was granted a stay but only in respect of [138] of the judgment.

25. The Second Respondent has indicated that it will take a considerable time to carry out the clinical reviews and it will be at least 3 months before XY's review is completed. Dr Carmichael in her statement sets out that in her view it continues to be in XY's best interests to have the PBs and she would not recommend XY stopping the treatment pending her clinical review. Professor Butler has also indicated that he continues to support XY's treatment. Therefore, there is unanimity between the clinicians, the parents and XY that she should continue to be prescribed PBs.

26. In the light of the *Bell* judgment, the Third Respondent wrote to XY's GP setting out its understanding of the legal position. XY's GP was sent a copy of this letter on 17 December 2020. The letter stated inter alia: *"We have let patients know that they will continue to receive their medication until the outcome of this application to the Court is known* [an individual best interest application]. *This has been agreed with NHS England and we are seeking a further stay on the judgement to cover this specific cohort of patients for this specific purpose. It is expected that GPs will continue to prescribe to this cohort. If you have any questions about this, please contact us directly."*

27. GPs are not parties to the contracts between NHSE and the NHS Trusts which contain the Service Specification and are thus not contractually bound by its terms. Therefore, GPs are entitled to prescribe medications without following the procedures set out by NHSE. XY's GP has continued to prescribe PBs although it is not clear how long she will continue to do so. XY's GP was informed of these proceedings and asked whether she wished to participate but she has declined to do so.

28. The position as explained to me by Mr McKendrick, on behalf of the Third Respondent, is that some GPs, including XY's, have agreed to continue prescribing PBs, but others have not. I was shown a number of letters from GPs who had declined to prescribe. Mr McKendrick said that his client would, before *Bell*, do the prescriptions themselves if the GP declined. However, it was not clear whether that would continue to happen post *Bell*. In any event, it is not wholly clear whose consent is being relied upon to make the administration of PBs lawful post *Bell*.

29. It is by reason of the uncertainty on the lawfulness of parental consent, and the concern that XY's GP might decline to agree to further prescribe, that AB decided to make this application. The Third Respondent takes the view that clarity is needed on this issue for the medical practitioners concerned.

30. Dr Carmichael, the Director of GIDS, sets out the Second Respondent's position in the light of the judgment as follows:

> *"In relation to referral from GIDS to the endocrine team, the Tavistock would only proceed to refer for treatment where i) it is the clear wish of the young person to be referred for assessment by the endocrinologist and that they understand the nature of the referral (even if their level of understanding falls short of the requirements for 'Gillick Competence' as delineated in the Divisional Court's judgment in Bell); ii) with the agreement and support of the child or young person's parent(s)/carer(s); and iii) with the agreement and recommendation from the clinicians working with the child or young person."*

31. All parties agree that ceasing to take the PBs would have significant physical consequences for XY as her male puberty would recommence. She would quickly develop male secondary characteristics, such as facial hair and her voice breaking, which would to a degree at least, be irreversible. It is very clear from XY's witness statement and letter, and her parents' evidence, that she would find this deeply distressing.

32. The Applicant issued this application on 29 January 2021 seeking a declaration as set out above. The case was initially referred to Sir James Munby who gave an interlocutory judgment on 5 February 2021. He invited Cafcass to appear as Advocate to the Court, and very helpfully Ms Butler-Cole QC, Mr Ruck Keene and Ms Apps were appointed in that role and have appeared before me.

33. There has been correspondence between Ms Bell's solicitors and the Third Respondent concerning any application that might be made to this Court concerning parental consent. Ms Bell's solicitors requested that they be given 14 days notice of any application. The Third Respondent did not give any undertaking in this regard and plainly AB was neither asked nor gave any such undertaking. When the matter came before Sir James Munby he requested Cafcass act as Advocate to the Court but he did not order that Ms Bell's representatives be informed of the proceedings. I note that it would have been very difficult to allow Ms Bell's representatives or any other third party to participate in the hearing given the highly personal facts concerning XY and her family. There was an application, which I refused, for another case to be joined with XY's case at the hearing. I refused that application, in part because it would have made the hearing much more complicated in terms of ensuring there was no wider knowledge of XY's factual position.

The Issues

34. Sir James Munby in his interlocutory judgment set out the following questions:

    a. Do the parents retain the legal ability to consent to the treatment ?

b. Does the administration of PBs fall into a "special category" of medical treatment by which either:

i. An application must be made to the Court before they can be prescribed ?

ii. As a matter of good practice an application should be made to the Court ?"

35. I agree these are the issues for the Court, and I will deal with them in that order below.

The judgment in Bell and the role of Puberty Blockers

36. As I have referred to above, *Bell* is being appealed to the Court of Appeal and is listed for hearing in June 2021. The judgment sets out in some detail the use of PBs in respect of children and young people suffering from Gender Dysphoria and the issues that arise in respect of that treatment.

37. There are a number of aspects of the treatment, as referred to in *Bell*, which are relevant to the issues before me: the effect of PBs [48]-[59]; reversibility [60]–[68]; the evidence base and whether PBs are "experimental" treatment [69]-[74]; and the persistence of the symptomology [75]-[77].

38. The Court's conclusions relevant to this part of the case are at [134]-[137] and state:

> *"134. The starting point is to consider the nature of the treatment proposed. The administration of PBs to people going through puberty is a very unusual treatment for the following reasons. Firstly, there is real uncertainty over the short and long-term consequences of the treatment with very limited evidence as to its efficacy, or indeed quite what it is seeking to achieve. This means it is, in our view, properly described as experimental treatment. Secondly, there is a lack of clarity over the purpose of the treatment: in particular, whether it provides a "pause to think" in a "hormone neutral" state or is a treatment to limit the effects of puberty, and thus the need for greater surgical and chemical intervention later, as referred to in the Health Research Authority report. Thirdly, the consequences of the treatment are highly complex and potentially lifelong and life changing in the most fundamental way imaginable. The treatment goes to the heart of an individual's identity, and is thus, quite possibly, unique as a medical treatment.*
>
> *135. Furthermore, the nature and the purpose of the medical intervention must be considered. The condition being treated, GD, has no direct physical manifestation. In contrast, the treatment provided for that condition has direct physical consequences, as the medication is intended to and does prevent the physical changes that would otherwise occur within the body, in particular by stopping the biological and physical development that would otherwise take place at that age. There is also an issue as to whether GD is properly categorised as a psychological condition, as the DSM-5 appears to do, although we recognise there are those who would not wish to see the condition categorised in that way. Be that as it may, in our judgment for the reasons already identified, the clinical intervention we are concerned with here is different in kind to*

> *other treatments or clinical interventions. In other cases, medical treatment is used to remedy, or alleviate the symptoms of, a diagnosed physical or mental condition, and the effects of that treatment are direct and usually apparent. The position in relation to puberty blockers would not seem to reflect that description.*
>
> *136. Indeed the consequences which flow from taking PBs for GD and which must be considered in the context of informed consent, fall into two (interlinking) categories. Those that are a direct result of taking the PBs themselves, and those that follow on from progression to Stage 2, that is taking cross-sex hormones. The defendant and the Trusts argue that Stage 1 and 2 are entirely separate; a child can stop taking PBs at any time and that Stage 1 is fully reversible. It is said therefore the child needs only to understand the implications of taking PBs alone to be Gillick competent. In our view this does not reflect the reality. The evidence shows that the vast majority of children who take PBs move on to take cross-sex hormones, that Stages 1 and 2 are two stages of one clinical pathway and once on that pathway it is extremely rare for a child to get off it.*
>
> *137. The defendant argues that PBs give the child "time to think", that is, to decide whether or not to proceed to cross-sex hormones or to revert to development in the natal sex. But the use of puberty blockers is not itself a neutral process by which time stands still for the child on PBs, whether physically or psychologically. PBs prevent the child going through puberty in the normal biological process. As a minimum it seems to us that this means that the child is not undergoing the physical and consequential psychological changes which would contribute to the understanding of a person's identity. There is an argument that for some children at least, this may confirm the child's chosen gender identity at the time they begin the use of puberty blockers and to that extent, confirm their GD and increase the likelihood of some children moving on to cross-sex hormones. Indeed, the statistical correlation between the use of puberty blockers and cross-sex hormones supports the case that it is appropriate to view PBs as a stepping stone to cross-sex hormones."*

Issue One - Do XY's parents retain the legal ability to consent to treatment with Puberty Blockers ?

The role of parents

39. The central, fundamental and critical role of parents in their children's lives, and decision making about their lives, hardly needs to be stated. It is set out in the clearest terms in the Children Act 1989 ("CA 89").

40. Section 2(1) CA 89 provides:

> *"Where a child's father and mother were married to, or civil partners of, each other at the time of his birth, they shall each have parental responsibility for the child."*

41. Section 3(1) CA 89 provides:

> *"In this Act "parental responsibility" means all the rights, duties, powers, responsibilities and authority which by law a parent of a child has in relation to the child and his property."*

42. The scope of parental responsibility extends to granting consent for medical treatment, see Ward LJ in *In Re Z (A Minor) (Freedom of Publication)* [1997] Fam 1 at p.25:

> *"Giving consent to medical treatment of a child is a clear incident of parental responsibility arising from the duty to protect the child…"*

43. Parents can be asked by doctors to make the most serious of all decisions about the medical treatment on behalf of their children. The decision making structure where the Court is not involved was considered by Hedley J in *Portsmouth NHS Trust v Wyatt* [2005] 1 FLR 652 at [30]-[32] and does not need to be repeated.

44. The caselaw is replete with judicial statements about not merely the centrality of parents in decisions about their children, but also as to why the Courts should in the vast majority of situations respect and uphold the parents' views and decision making about their children.

45. Just one of these numerous statements was made by Baker J (as he then was) in *Re Ashya King* [2014] EWHC 2964 (Fam) which sets out the parental role in the context of serious medical treatment of a child:

> *"31. Thirdly, it is a fundamental principle of family law in this jurisdiction that responsibility for making decisions about a child rest with his parents. In most cases, the parents are the best people to make decisions about a child and the State – whether it be the court, or any other public authority – has no business interfering with the exercise of parental responsibility unless the child is suffering or is likely to suffer significant harm as a result of the care given to the child not being what it would be reasonable to expect a parent to give."*

46. The then President of the Family Division, Sir James Munby said in *In the matter of E (A Child) (Medical Treatment)* [2016] EWHC 2267 at §35:

> *"Judges do not necessarily know best. Usually a child's long-term carers, whether parents, adoptive parents or long-term foster carers are much better placed than a judge to decide what should happen to their child. In the realm of private law – and this issue, despite the public law context in which it happens to arise, is in truth one in the private law realm – the court, the State, usually becomes involved only because the child's parents or carers have been unable to resolve the difficulty themselves, either because they cannot agree or, as sometimes happens in medical treatment cases, because they prefer to leave a particularly agonising decision to a judge: see, on the latter point, In re Jake (A Child) [2015] EWHC 2442 (Fam) , para 46."*

47. The importance of protecting parents' rights and duties is set out in article 5 of the United Nations Convention on the Rights of the Child ("UNCRC"):

> *"States Parties shall respect the responsibilities, rights and duties of parents or, where applicable, the members of the extended family or community as provided for by local custom, legal guardians or other persons legally responsible for the child, to provide, in a manner consistent with the evolving capabilities of the child, appropriate direction and guidance in the exercise by the child of the rights recognized in the present Convention."*

48. Further, parents' rights are part of family life to which protection is given by article 8 European Convention on Human Rights ("ECHR") under the Human Rights Act 1998 ("HRA"). I do not need to set out further detail and caselaw on either the UNCRC or article 8 because in my view these protections are fully reflected in the caselaw which is referred to above, and article 8 does not alter the analysis in that caselaw.

Parental power to consent to medical treatment

49. The issue here is whether the parents have a continuing right to consent even if XY is *Gillick* competent. This was referred to by the parties as the parents having a "concurrent right to consent". Both the Second and Third Respondent proceeded before *Bell* on the basis that XY was *Gillick* competent in respect to the decision to take PBs and therefore it was not necessary to ask whether the parents could also consent. However, that view has been cast into doubt by the judgment in *Bell* and in particular [138]. No fresh assessment of XY's competence has been made since the judgment although XY herself unsurprisingly thinks she is competent to make the decision.

50. In *Bell* the Court said:

> *"138. It follows that to achieve Gillick competence the child or young person would have to understand not simply the implications of taking PBs but those of progressing to cross-sex hormones. The relevant information therefore that a child would have to understand, retain and weigh up in order to have the requisite competence in relation to PBs, would be as follows: (i) the immediate consequences of the treatment in physical and psychological terms; (ii) the fact that the vast majority of patients taking PBs go on to CSH and therefore that s/he is on a pathway to much greater medical interventions; (iii) the relationship between taking CSH and subsequent surgery, with the implications of such surgery; (iv) the fact that CSH may well lead to a loss of fertility; (v) the impact of CSH on sexual function; (vi) the impact that taking this step on this treatment pathway may have on future and life-long relationships; (vii) the unknown physical consequences of taking PBs; and (viii) the fact that the evidence base for this treatment is as yet highly uncertain."*

51. As is set out above, XY has not been subject to any fresh consideration since *Bell* of her competence to consent. It therefore cannot be established with certainty whether she is, or is not, *Gillick* competent. In those circumstances, I am going to consider the matter on two alternative bases; either that she is not *Gillick* competent, or that she is *Gillick* competent, but it remains relevant whether her parents can also give operative

consent to the treatment. As Mr McKendrick explained, the position of clinicians, both GPs and his client, is that they are very uncertain at the moment on what basis, if any, they can continue to prescribe.

52. The debate before this Court turned on two decisions of Lord Donaldson MR; *Re R (A Minor) (Wardship Consent to Treatment)* [1992] Fam 11 and *Re W (A Minor) Medical Treatment Courts Jurisdiction)* [1993] Fam 64. In those cases Lord Donaldson cast doubt upon precisely what Lord Scarman had meant in *Gillick v West Norfolk and Wisbech Health Authority* [1986] AC 112, and the degree to which parental right to consent to treatment continued even when the child was *Gillick* competent. These cases have recently been considered by Sir James Munby in *Re X (no 2)* [2021] EWHC 65.

53. In *Re R* the Court of Appeal was considering a 15 year old girl in the care of a local authority, who was detained under s.2 of the Mental Health Act 1983, and whether she should be treated with anti-psychotic medication. The local authority had consented on her behalf to the treatment, but when she indicated in a "lucid moment" that she would refuse the treatment, the local authority withdrew its consent. The judge at first instance held that he could not override the decision of a competent minor, and therefore the treatment could not be given. The Official Solicitor appealed. The Court of Appeal held that the Court, in the exercise of its wardship jurisdiction, could override a minor's decision. It can therefore be seen that Lord Donaldson's comments about whether the parents of a *Gillick* competent child could consent to treatment on her behalf were obiter. However, Lord Donaldson's comments have become highly important in subsequent caselaw.

54. The argument put forward by Mr Munby QC on behalf of the Official Solicitor in *Re R*, that the parents' right to consent to medical treatment terminated on the competence of the child to consent, was dismissed, Lord Donaldson holding:

> *"What Mr. Munby's argument overlooks is that Lord Scarman was discussing the parents' right "to determine whether or not their minor child below the age of 16 will have medical treatment" (my emphasis) and this is the "parental right" to which he was referring at p. 186D. A right of determination is wider than a right to consent. The parents can only have a right of determination if either the child has no right to consent, that is, is not a keyholder, or the parents hold a master key which could nullify the child's consent. I do not understand Lord Scarman to be saying that, if a child was "Gillick competent," to adopt the convenient phrase used in argument, the parents ceased to have an independent right of consent as contrasted with ceasing to have a right of determination, that is, a veto. In a case in which the "Gillick competent" child refuses treatment, but the parents consent, that consent enables treatment to be undertaken lawfully, but in no way determines that the child shall be so treated. In a case in which the positions are reversed, it is the child's consent which is the enabling factor and again the parents' refusal of consent is not determinative. If Lord Scarman intended to go further than this and to say that in the case of a "Gillick competent" child, a parent has no right either to consent or to refuse consent, his remarks were obiter, because the only question in issue was Mrs. Gillick's alleged right of veto. Furthermore I consider that they would have been wrong. [Re R 23E-H] (emphasis added)."*

55. Lord Donaldson went on:

> *"The failure or refusal of the 'Gillick competent' child is a very important factor in the doctor's decision whether or not to treat, but does not prevent the necessary consent being obtained from another competent source." [24H-25A].*

56. This position was summarised at [26F]:

> *"…There can be concurrent powers to consent. If more than one body or person has a power to consent, only a failure to, or refusal of, consent by all having that power will create a veto."*
>
> *"…A 'Gillick competent' child or one over the age of 16 will have a power to consent, but this will be concurrent with that of a parent or guardian."*

57. Lord Donaldson considered the matter further in the subsequent judgment in *Re W*. That case concerned a young woman of 16, who was therefore within the ambit of s.8 Family Law Reform Act 1969. Lord Donaldson said first that he doubted whether "*Lord Scarman* [in Gillick] *meant more than that the exclusive right of parents to consent to treatment terminated [on the achievement of competence by their children]"* [76D]. He further expanded:

> *"On reflection I regret my use in In Re R. (A Minor) (Wardship: Consent to Treatment) [1992] Fam. 11, 22, of the key holder analogy because keys can lock as well as unlock. I now prefer the analogy of the legal "flak jacket" which protects the doctor from claims by the litigious whether he acquires it from his patient who may be a minor over the age of 16, or a "Gillick competent" child under that age or from another person having parental responsibilities which include a right to consent to treatment of the minor. Anyone who gives him a flak jacket (that is, consent) may take it back, but the doctor only needs one and so long as he continues to have one he has the legal right to proceed." [78D-E]*

58. The scope of Lord Donaldson's comments was recently considered by Sir James Munby in *Re X (no 2).* That case again concerned whether the Court could override a refusal of consent by a 15 year old Jehovah's Witness who was refusing a blood transfusion. The ratio of the case was that the Court can override such a refusal, and that the principle in *Re R* and *Re W* in this regard had withstood the HRA and the UNCRC and those cases remained good law in this regard.

59. However, *Re X (no 2)* did not actually concern concurrent, let alone conflictual, parental ability to consent where the child was *Gillick* competent. Therefore, on the issue before this Court, *Re X (no 2)* takes the analysis no further forward.

60. To the degree that Lord Donaldson was seeking to find that a parent retains the right to consent to treatment which a *Gillick* competent child has refused, in my view that analysis does not fit with what the House of Lords, and in particular Lord Scarman, said in *Gillick.* It would now also be very difficult to accept in the light of article 8 of the ECHR.

61. The issue in *Gillick* was whether GPs could give contraceptive advice and treatment to girls under 16 without their parents being informed. The conclusion of the House of Lords was that Department of Health advice that said that the GPs could provide such advice and treatment was lawful. *Gillick* is relevant to the present case because it sets the framework for all the subsequent caselaw on the legal position of a child vis-à-vis her parent when the child is competent to make a decision.

62. Lord Scarman started at 176D by saying that parental rights and duties had not been undermined but it *"may not be as extensive or as long lasting as she* [Mrs Gillick] *believes it to be."*

63. At 184B-C he said:

> *"The principle of the law, as I shall endeavour to show, is that parental rights are derived from parental duty and exist only so long as they are needed for the protection of the person and property of the child. The principle has been subjected to certain age limits set by statute for certain purposes: and in some cases the courts have declared an age of discretion at which a child acquires before the age of majority the right to make his (or her) own decision. But these limitations in no way undermine the principle of the law, and should not be allowed to obscure it."*

64. At 186D Lord Scarman said:

> *"The underlying principle of the law was exposed by Blackstone and can be seen to have been acknowledged in the case law. It is that parental right yields to the child's right to make his own decisions when he reaches a sufficient understanding and intelligence to be capable of making up his own mind on the matter requiring decision."*

65. Lord Scarman then referred to Lord Denning M.R. capturing the spirit and principle of the law in *Hewer v Bryant* [1970] 1 QB 357, 369 by saying that the parental right *"is a dwindling right which the courts will hesitate to enforce against the wishes of the child."* Interestingly, *Hewer v Bryant* was a deprivation of liberty case (although the issue was not then phrased in that terminology) which shows that there is overlap between the caselaw on parental right to consent to a child's deprivation of liberty and that on consent to medical treatment.

66. At 188H- 189B Lord Scarman said:

> *"In the light of the foregoing I would hold that as a matter of law the parental right to determine whether or not their minor child below the age of 16 will have medical treatment terminates if and when the child achieves a sufficient understanding and intelligence to enable him or her to understand fully what is proposed. It will be a question of fact whether a child seeking advice has sufficient understanding of what is involved to give a consent valid in law. Until the child achieves the capacity to consent, the parental right to make the decision continues save only in exceptional circumstances."*

67. Although there is some difference in nuance between the speeches in *Gillick*, it is accepted that Lord Scarman reflects the view of the Committee. The very essence of *Gillick* is, in my view, that a parent's right to consent or "determine" treatment cannot trump or overbear the decision of the child. Therefore, the doctors could lawfully advise and treat the child without her mother's knowledge or consent. In *Gillick*, the parent did not have the right to know that the treatment was being given, so it makes little sense to assume that the parent could act to stop the child's decision being operative on whether the treatment takes place or not. I cannot accept that Lord Scarman was drawing the distinction between the child making the decision and the parent being able to give legally operative consent that Lord Donaldson seems to have drawn in *Re R*. Mrs Gillick was asserting a right to "decide" whether her daughter could be given advice and treatment without her knowledge, and thus without her consent. Therefore, the distinction that Lord Donaldson seeks to draw between the parent retaining a right to consent, but not being in a position to determine the treatment, does not accord with the issue in *Gillick*.

68. However, in the present case, the parent and the child are in agreement. Therefore, the issue here is whether the parents' ability to consent disappears once the child achieves *Gillick* competence in respect of the specific decision even where both the parents and child agree. In my view it does not. The parents retain parental responsibility in law and the rights and duties that go with that. One of those duties is to make a decision as to consent in medical treatment cases where the child cannot do so. The parent cannot use that right to "trump" the child's decision, so much follows from *Gillick*, but if the child fails to make a decision then the parent's ability to do so continues. At the heart of the issue is that the parents' "right" to consent is always for the purpose of ensuring the child's best interests. If the child does not, for whatever reason, make the relevant decision then the parents continue to have the responsibility (and thus the right) to give valid consent.

69. This might arise if the child is unable to make the decision, for example is unconscious. However, it could also arise if the child declines to make the decision, perhaps because although *Gillick* competent she finds the whole situation too overwhelming and would rather her parents make the decision on her behalf. In the present case, in the light of the decision in *Bell*, and the particular issues around *Gillick* competence explained in that judgment, it has not been possible to ascertain whether the child is competent. In this case, there are two options. If the child is *Gillick* competent, she has not objected to her parent giving consent on her behalf. As such, a doctor can rely on the consent given by her parents. Alternatively, the child is not *Gillick* competent. In that case, her parents can consent on her behalf. It is not necessary for me or a doctor to investigate which route applies to give the parents authority to give consent. Therefore, in my view, whether or not XY is *Gillick* competent to make the decision about PBs, her parents retain the parental right to consent to that treatment.

70. This approach protects the rights both of the child and the parents. As set out above, the parents' rights and responsibilities are given under s.3 of the Children Act ultimately to protect and further the child's welfare. Further, the parents' rights under article 8 ECHR and the UNCRC are appropriately balanced against the child's rights to assert their own decisions, when competent to do so.

Issue Two - Is there a special category of medical treatment requiring court authorisation, and do puberty blockers fall within it ?

71. The second issue in the case is whether there is a special category of medical treatment where either there is a common law rule that cases must be brought to Court for the Court to make the decision or, as a matter of good practice, such cases should be brought before the Court. If there is such a special category does treatment with PBs of children and young people suffering from Gender Dysphoria fall within it? The first sub-issue is therefore the existence and/or scope of any "special category", and the second sub-issue is whether PBs should fall within such a category. The basis for PBs being in a special category of treatment would be the matters considered in *Bell* at [134] to [137] set out above.

72. There are two preliminary points to raise in respect of this issue. Firstly, the judgments concerning medical treatment decisions that should be brought to court are sometimes less than clear as to whether they are referring to a legal requirement or merely to good practice. However, it is in most cases probably a distinction without much difference. If it is good practice to apply to the Court, then if a clinician does not do so s/he is at risk of considerable criticism and possibly disciplinary action by the professional body. Therefore, a principle of good practice may have a very similar effect to a legal requirement.

73. Secondly, this is an aspect of the case where I am acutely conscious that all the parties are arguing the same position, namely that even if there is some limited "special category", it is very limited and PBs do not fall within it. However, it is very apparent from *Bell* that there could be a strong counter argument. Ms Butler Cole took me to the relevant legal material, but it was not her role to put that counter argument. As I explained below, in reality the "special category" to the degree it exists at all, is extremely limited.

74. The argument that there is a special category of medical treatment, which only the court can authorise, rests on a series of decisions concerning sterilisation of girls and women, some of which involve under 16 year olds. *Re D (A Minor) (Wardship Sterilisation)* [1976] 1 All ER 326 concerned an 11 year old girl who was described as having some impairment of mental function, certain aggressive tendencies and some medical complications. Her mother was very concerned that she would become pregnant and wished her to be sterilised and a doctor agreed to carry out the operation. An educational psychologist, as well as some other professionals, were very concerned about this decision and applied to the Court for D to be made a Ward of Court.

75. Heilbron J held that the proposed operation involved the deprivation of a basic human right and was being carried out for "non-therapeutic" reasons. She found that it was appropriate to make D a Ward of Court and that this was the type of case where the court should *"throw some care around this child"* [333b-c].

76. *Re B (A Minor) (Wardship Sterilisation)* [1987] 2 All ER 206 concerned a mentally handicapped girl of 17 with the mental age of a 5/6 year old. The local authority applied for her to be made a Ward of Court and for the Court to authorise a sterilisation. On the facts, it appeared that other alternative treatment, such as long-term contraception, was not clinically appropriate in her case. The High Court (Bush J) granted the application

and the Official Solicitor, who opposed the application, appealed ultimately to the House of Lords.

77. The ratio in the House of Lords was that, as a Ward of Court, the paramount issue was the girl's welfare and best interests. Sterilisation was, on the facts of the case, found to be in her best interests. However, their Lordships made various comments on the circumstances in which such applications should come to Court. Lord Templeman said:

> *"In my opinion sterilisation of a girl under 18 should only be carried out with the leave of a High Court judge. A doctor performing a sterilisation operation with the consent of the parents might still be liable in criminal, civil or professional proceedings. A court exercising the wardship jurisdiction emanating from the Crown is the only authority which is empowered to authorise such a drastic step as sterilisation after a full and informed investigation. The girl will be represented by the Official Solicitor or some other appropriate guardian; the parents will be made parties if they wish to appear and where appropriate the local authority will also appear. Expert evidence will be adduced setting out the reasons for the application, the history, conditions, circumstances and foreseeable future of the girl, the risks and consequences of pregnancy, the risks and consequences of sterilisation, the practicability of alternative precautions against pregnancy and any other relevant information. The judge may order additional evidence to be obtained. In my opinion, a decision should only be made by a High Court judge. In the Family Division a judge is selected for his or her experience, ability and compassion. No one has suggested a more satisfactory tribunal or a more satisfactory method of reaching a decision which vitally concerns an individual but also involves principles of law, ethics and medical practice. Applications for sterilisation will be rare. Sometimes the judge will conclude that a sufficiently overwhelming case has not been established to justify interference with the fundamental right of a girl to bear a child; this was the case in In Re D. (A Minor) (Wardship: Sterilisation) [1976] Fam. 185 . But in the present case the judge was satisfied that it would be cruel to expose the girl to an unacceptable risk of pregnancy which could only be obviated by sterilisation in order to prevent child bearing and childbirth in circumstances of uncomprehending fear and pain and risk of physical injury. In such a case the judge was under a duty and had the courage to authorise sterilisation."*

78. This passage is the high point of the caselaw supporting an argument that there is a special category of case which must always come to Court. The other judges did not expressly agree with Lord Templeman, although they all agreed with the outcome. Lord Hailsham distinguished *Re D* on the basis that B would never be able to exercise an informed choice as to the treatment, given her mental incapacity, whereas D would in all probability have been able to do so once she reached the age of 18. Further, Lord Hailsham said that the distinction drawn between therapeutic and non-therapeutic sterilisations was not in his view a helpful one, see p.213 a-c.

79. *F v West Berkshire Health Authority* [1990] 2 AC 1 concerned a 36 year old woman with a serious mental disability. She had formed a sexual relationship and there was medical evidence that it would be disastrous for her if she became pregnant. Further,

ordinary methods of contraception were not appropriate for her and the clinicians thought she should have a sterilisation. The issue for the Court was whether such an operation would be lawful given that she could not give consent and the parens patriae jurisdiction in respect of adults lacking mental capacity no longer existed because of the coming into force of the Mental Health Act 1959 and the relevant revocation by warrant, see Lord Brandon at [552h]. The Official Solicitor, instructing Mr Munby QC, argued that sterilisation of an adult mental patient who was unable to give her consent could never be lawful.

80. The Court held that it did have jurisdiction to give the authorisation under the doctrine of necessity. Their Lordships struggled somewhat to establish where their jurisdiction came from, Lord Goff finding support in the law of shipping. To a considerable degree the case is now of historical interest because of the Mental Capacity Act 2005. However, it is important for the purposes of the present case because of what their Lordships said about the circumstances in which such applications had to be brought to Court.

81. Lord Brandon at p.551j-552b said:

> *"That is not the end of the matter, however, for there remains a further question to be considered. That question is whether, in the case of an operation for the sterilisation of an adult woman of child-bearing age, who is mentally disabled from giving or refusing her consent to it, although involvement of the court is not strictly necessary as a matter of law, it is nevertheless highly desirable as a matter of good practice. In considering that question, it is necessary to have regard to the special features of such an operation. These features are: first, the operation will in most cases be irreversible; secondly, by reason of the general irreversibility of the operation, the almost certain result of it will be to deprive the woman concerned of what is widely, and as I think rightly, regarded as one of the fundamental rights of a woman, namely, the right to bear children; thirdly, the deprivation of that right gives rise to moral and emotional considerations to which many people attach great importance; fourthly, if the question whether the operation is in the best interests of the woman is left to be decided without the involvement of the court, there may be a greater risk of it being decided wrongly, or at least of it being thought to have been decided wrongly; fifthly, if there is no involvement of the court, there is a risk of the operation being carried out for improper reasons or with improper motives; and, sixthly, involvement of the court in the decision to operate, if that is the decision reached, should serve to protect the doctor or doctors who perform the operation, and any others who may be concerned in it, from subsequent adverse criticisms or claims."*

82. The six factors set out by Lord Brandon could be used as touchstone tests by which to decide whether a particular medical treatment should be brought to Court. However, it is important to bear closely in mind that *Re F* concerned an adult without capacity and not a child with parents who were capable of, and prima facie entitled to, exercise parental responsibility.

83. In *Re E (A Minor) (Medical Treatment)* [1991] 2 FLR 585 Sir Stephen Brown P was dealing with a severely mentally handicapped 17 year old girl who suffered from a menstrual condition for which the only effective treatment was a hysterectomy. Her parents were prepared to consent to the proposed treatment, but she was made a Ward of Court and the Official Solicitor acted on her behalf. It appears that the case was brought to Court because, although all parties considered such an application was unnecessary, the clinicians were very concerned about the legality of their position.

84. The judge considered *Re F* and drew a distinction between therapeutic and non-therapeutic sterilisations. He held that the consent of the Court was not required because the operation was for therapeutic reasons, and the parents had the power to give consent. As I read *Re E*, given that *Re F* also concerned a "therapeutic" sterilisation, the critical difference between the two cases that Sir Stephen was referring to was the fact that *Re E* concerned a young person whose parents were in a position to consent to the treatment. He says at p.587: *"I think that J's parents are in a position to give a valid consent to the proposed operation. I am not dealing in this instance with the case of an adult: I am dealing with the case of a minor…"*

85. In *Re GF (Medical Treatment)* [1992] 1 FLR 293 Sir Stephen Brown considered an application for a declaration that a hysterectomy on a mentally handicapped 29 year old woman was lawful. The judge held that no declaration was needed because the operation was for therapeutic purposes and was in GF's best interests. At p.294 the judge said:

> *"In a case where the operation is necessary in order to treat the condition in question, it may be lawfully carried out even though it may have the incidental effect of sterilisation … I take the view that no application for leave to carry out such an operation need be made in cases where two medical practitioners are satisfied that the operation is: (1) necessary for therapeutic purposes, (2) in the best interests of the patient, and (3) that there is no practicable, less intrusive means of treating the condition."*

86. In *Re S (Sterilisation Patient's Best Interests)* [2000] 2 FLR 389 the Court of Appeal was considering a 29 year old woman with a severe learning difficulty whose mother wanted her to have a hysterectomy. The Official Solicitor opposed the application arguing that there was an alternative less intrusive medical procedure available, namely the insertion of an intra-uterine device. The judge approved the proposed treatment and the Official Solicitor appealed. The Court of Appeal held that if the clinicians put forward more than one acceptable medical opinion then the Court had to go on to consider which treatment was in the best interests of the patient.

87. Dame Elizabeth Butler-Sloss P said at p.401:

> *"I would just add that all three requirements set out by Sir Stephen Brown P in Re GF (Medical Treatment) [set out above] are necessary. The criteria ought to be cautiously interpreted and applied. Rightly, in my view, in the present case, it was considered appropriate to make the application for a declaration. I have considerable sympathy for the mother in this case. She has the responsibility for her daughter and she is doing her best to make the best provision for S's future having regard to the fact that she will not be able to look after her for much longer. The decision of*

> *this court will be disappointing for her but, since I have no doubt that the surgery is premature, I would allow the appeal and set aside the declarations and invite the medical advisers to insert the Mirena coil as has been recommended."*

88. Thorpe LJ agreed with the President but added:

> *"The purpose of the President's ruling* [in GF] *was to set a boundary to enable professionals to determine whether or not it was their responsibility to refer an issue concerning the treatment of an adult lacking capacity to the court for a ruling. In other words, it seeks to define what is and what is not the business of the courts. Although this appeal does not raise that question directly, we have heard argument on the point and I would wish to state this opinion. The President's test was necessarily expressed in broad terms. Anything so stated offers a margin to whoever interprets and applies it. In my opinion, any interpretation and application should incline towards the strict and avoid the liberal. The courts are not overburdened with applications in this field. Indeed they are rare. In view of the importance of the subject, if a particular case lies anywhere near the boundary line it should be referred to the court by way of application for a declaration of lawfulness."*

89. It is not absolutely clear whether the President and Thorpe LJ were saying that applications had to be made to Court as a matter of law. However, in my view, a fair reading of their judgments suggests that was their position, or at the very least they were not drawing a distinction between a legal requirement and best practice of bringing these difficult cases to Court.

90. Mr Lock points out that in this line of cases only *Re D* and *Re E* are about children under the age of 16. I agree that this is highly relevant because in the case of children, their parents will generally be able to give consent on their behalf. The critical difference between cases concerning children with consenting parents and those concerning incapacitated adults was highlighted by Sir Stephen Brown in *Re E*, as referred to above. There are, of course, many cases which have come to Court because parents and clinicians disagree, but that is not the situation that arises here. *Re D* (Heilbron J) is in my view a somewhat exceptional case. It is very hard to imagine a clinician approving the treatment in question now without at least seeking the authorisation of the Court. This may be an example of clinical regulation and oversight having improved since 1976.

91. There is a line of cases, culminating in the Supreme Court decision in *NHS Trust v Y (Intensive Care Society Intervening)* [2019] AC 978, about whether decisions to withdraw Clinically Assisted Nutrition and Hydration ("CANH") have to be brought to Court. It is the necessary consequence of such decisions that the patient will die. After the House of Lords judgment in *Airedale NHS Trust v Bland* [1993] AC 789 such decisions had routinely been brought to Court. The Supreme Court in *NHS Trust v Y* held that the common law did not require that an application be made to Court in every such case.

92. Lady Black at [12-17] considered *Re F*. She explained that their Lordships had expressed their view that as a matter of good practice the Court's view should be obtained, but not as a matter of legal requirement. She said at [17]:

> *"Lord Griffiths would have been minded to make it a legal requirement to obtain the sanction of the High Court in all cases, and considered that the common law could be adapted to introduce such a requirement. However, he recognised that he would be making new law, and that the other members of the House considered that it was not open to them to take that course. He therefore accepted what Lord Brandon had proposed, but as second best: p 71."*

93. She said at [21] that in *Bland* the view of the House of Lords had been that "the guidance" of the court should be sought. At [115] Lady Black sounded a note of caution to judges in these cases of intense social and ethical complexity, and I would add in the present context medical complexity:

> *"In so doing, it is necessary to exercise the restraint that is required of a court when it ventures into areas of social and ethical uncertainty, and especially when it does so in the abstract, setting out views which will be of general application (as is necessarily so in this case) rather than resolving a clearly defined issue of law or fact that has arisen between the litigants appearing before it."*

94. In conclusion at [125] her Ladyship said:

> *"If, at the end of the medical process, it is apparent that the way forward is finely balanced, or there is a difference of medical opinion, or a lack of agreement to a proposed course of action from those with an interest in the patients welfare, a court application can and should be made. As the decisions of the European court underline, this possibility of approaching a court in the event of doubts as to the best interests of the patient is an essential part of the protection of human rights. The assessments, evaluations and opinions assembled as part of the medical process will then form the core of the material available to the judge, together with such further expert and other evidence as may need to be placed before the court at that stage."*

95. In January 2020 Mr Justice Hayden, Vice President of the Court of Protection, produced guidance concerning when applications relating to medical treatment should be made to the Court. The most relevant paragraphs are 8, 10 and 11:

> *"8. If, at the conclusion of the medical decision-making process, there remain concerns that the way forward in any case is: (a) finely balanced, or (b) there is a difference of medical opinion, or (c) a lack of agreement as to a proposed course of action from those with an interest in the person's welfare, or (d) there is a potential conflict of interest on the part of those involved in the decision-making process (not an exhaustive list) Then it is highly probable that an application to the Court of Protection is appropriate. In such an event consideration must always be given as to whether an application to the Court of Protection is required.*

> ...
>
> *10. In any case which is not about the provision of life-sustaining treatment, but involves the serious interference with the person's rights under the ECHR, it is "highly probable that, in most, if not all, cases, professionals faced with a decision whether to take that step will conclude that it is appropriate to apply to the court to facilitate a comprehensive analysis of [capacity and] best interests, with [the person] having the benefit of legal representation and independent expert advice." 5 This will be so even where there is agreement between all those with an interest in the person's welfare.*
>
> *11. Examples of cases which may fall into paragraph 10 above will include, but are not limited to: a. where a medical procedure or treatment is for the primary purpose of sterilisation; b. where a medical procedure is proposed to be performed on a person who lacks capacity to consent to it, where the procedure is for the purpose of a donation of an organ, bone marrow, stem cells, tissue or bodily fluid to another person; c. a procedure for the covert insertion of a contraceptive device or other means of contraception; d. where it is proposed that an experimental or innovative treatment to be carried out; e. a case involving a significant ethical question in an untested or controversial area of medicine."*

96. It is easy to see that arguments might be raised that paragraphs 11(d) and (e) would apply to the administration of PBs for Gender Dysphoria and that therefore the principles applicable to adults lacking capacity should be extended to children.

97. Mr Lock and Ms Morris rely on caselaw relating to experimental treatment being given to children for the proposition that, even in that type of treatment, parental consent can be given, see *Simms v Simms* [2002] Fam 83 and *UCLH v KG* [2018] EWCOP 29. However, I do not find this line of caselaw particularly helpful. If the child, or incapacitated adult, has a condition for which there is only one possible treatment, particularly if the condition is fatal, then it is easy to see that experimental treatment would generally not require Court approval. The factual, clinical and ethical issues surrounding PBs are different, as is explained at length in *Bell*. In particular, the child is not facing a terminal illness, and the treatment has life-changing and life-long consequences, the implications of which are not fully understood.

98. Mr McKendrick referred to two cases where judges had urged against general rules that classes of case had to come to Court where the individual facts did not justify that approach. In *Briggs* [2017] EWCA Civ 1169 King LJ said in the context of the removal of artificial nutrition and hydration:

> *26. "In reality virtually all of these traumatic decisions are made by agreement between the families and the treating teams of the person involved. To suggest that every case should go before a judge (even where all concerned are in accord as to what was in the best interests of the patient) would not only be an unnecessary pressure on the overstretched resources of the NHS Trusts and add to the burden on the courts but, most importantly, would greatly add to the strain on the families having to face these unimaginably distressing decisions. In my judgment, the Practice*

> *Direction provides valuable procedural guidance but should not be interpreted as introducing a requirement that all cases where a decision is to be made about the withdrawal of CANH must come before a court."*

99. Peter Jackson J made similar comments in *M v A Hospital* [2018] EWCOP 19. There are particular issues in relation to PBs and there may well be justification for clinicians taking a very cautious approach in individual cases and erring on the side of having Court consideration and authorisation. However, the need for caution in imposing blanket rules, even for the most difficult categories of case, is important to have closely in mind.

The Australian cases

100. The Court's attention was directed to two Australian cases where the issue of the prescription of PBs to children has arisen. In *Re Jamie* [2013] Fam CAFC 110 the Family Court of Australia considered whether the parents could consent to an 11 year old child being given PBs. The court considered the nature of PBs, and it is correct to note that its approach was somewhat different to that taken by the Divisional Court in *Bell*. The court concluded that here was no reason to place PBs in a special category where the Court's approval was required. However, for Stage 2 treatment, i.e. cross-sex hormones, Court approval was required because of the irreversibility of that treatment.

101. However, in *Re Kelvin* [2017] CAFC 258 the Court revisited the issue of Stage 2 treatment. It cited with approval a decision called *Sam and Terry (Gender Dysphoria)* [2013] 49 Fam LR 417 where the Court said:

> *"…a decision that court authorisation is necessary can be seen to intrude upon the lives of loving, caring and committed parents who live daily their children's difficulties, who are intimately aware of the day-to-day difficulties confronted by their children and who deal with the numerous (serious) concerns on a daily basis. Those exceptionally difficult day to day tasks are accompanied by a miscellany of difficult day to day decisions and those decisions fall upon them, not others. I also accept that parents who fit that description can legitimately say that they know their children better than anyone, much less than a court, ever will. There is real legitimacy to a position adopted by parents who fit that description that it is them, and not the court, who, together with appropriately qualified expert clinicians, are best placed to decide what is right for their children. I am also not unaware that cost and stress will attend court authorisation. …It would be sad if the courtroom was to replace a caring, holistic environment within which an approach by parents and doctors alike could deal with difficult decisions."*

102. I place some weight on these Australian authorities because they were dealing with precisely the same treatment and the same legal issue, namely the ability of parents to consent to their children receiving that treatment. However, I am also conscious of the somewhat different approach taken to PBs from the analysis set out in *Bell.*

The Regulatory Framework

103. Mr Lock and the Respondents rely on the existence of an extensive regulatory and oversight framework within which the clinical decision to prescribe PBs is made. In particular, that framework has safeguards to ensure that PBs are only prescribed in appropriate cases; that parental consent is fully informed and properly given; and that all ethical issues about the treatment are fully considered. The Respondents argue that this broad framework is the more appropriate mechanism for ensuring best practice, and full safeguards for the child, rather than placing PBs into a special category which requires Court authorisation and thus removes the power of parents to consent.

104. There are a number of layers to this regulatory framework covering institutional oversight of the Second and Third Respondents, individual regulation of clinicians, and ethical oversight of clinical decision making.

105. The services provided by the Second Respondent are commissioned by NHS England and are subject to a Service Specification, the document which has been amended in the light of the *Bell* judgment. As is clear from this, NHSE can change the Service Specification and put particular requirements upon the Second and Third Respondents if it considers that to be appropriate. NHSE has set up an independent review, chaired by Dr Hilary Cass ("the Cass Review") into various aspects of the service provided by GIDS and the reference to the specialist endocrine service provided by the Third Respondent and Leeds Teaching Hospital. The terms of the Cass Review are as follows:

> *"The independent review, led by Dr Cass, will be wide ranging in scope and will conduct extensive engagement with all interested stakeholders. The review is expected to set out findings and make recommendations in relation to:*
>
> *i. Pathways of care into local services, including clinical management approaches for individuals with less complex expressions of gender incongruence who do not need specialist gender identity services;*
>
> *ii. Pathways of care into specialist gender identity services, including referral criteria into a specialist gender identity service; and referral criteria into other appropriate specialist services;*
>
> *iii. Clinical models and clinical management approaches at each point of the specialised pathway of care from assessment to discharge, including a description of objectives, expected benefits and expected outcomes for each clinical intervention in the pathway;*
>
> *iv. Best clinical approach for individuals with other complex presentations;*
>
> *v. The use of gonadotropin-releasing hormone analogues and gender affirming drugs, supported by a review of the available evidence by the National Institute for Health and Care Excellence; any treatment recommendations will include a description of treatment objectives, expected benefits and expected outcomes, and potential risks, harms and effects to the individual;*

vi. Ongoing clinical audit, long term follow-up, data reporting and future research priorities;

vii. Current and future workforce requirements;

viii. Exploration of the reasons for the increase in referrals and why the increase has disproportionately been of natal females, and the implications of these matters; and

ix. Any other relevant matters that arise during the course of the review."

106. I have set these terms of reference out in full because in my view they give the opportunity for significant safeguards to be put in place in order to ensure that parents and children are given full and objective advice as to the benefits and disbenefits of PBs, to which I will refer below. The Cass Review is intended to report in 2021.

107. The Second and Third Respondents are subject to regulatory oversight by the Care Quality Commission ("CQC") which has produced reports in respect of services to children suffering from Gender Dysphoria. The report in respect of GIDS sets out various improvements which need to be made by that Service.

108. Further, all the clinical professionals are subject to regulation and oversight by their own professional bodies. These bodies are in a position to produce guidance as to clinical best practice in respect of the use of PBs and best practice in respect of the treatment of Gender Dysphoria in children and young people as they think appropriate.

109. Ms Morris emphasises that the practice at GIDS is in accordance with World Professional Association for Transgender Health ("WPATH") guidance and I assume that if it departed from that guidance then that is a matter that could be raised with regulatory bodies.

110. Mr Lock also points to the ability of a doctor to refer matters of concern to an appropriate clinical ethics committee, or to apply to the Court if they are concerned about the treatment being proposed. I place limited weight on these safeguards given the risk of a unanimity of view within the clinical group in this very particular and unusual field, leading to no reference being made. I note that despite the intensely difficult issues raised neither the Second nor Third Respondents have ever felt it necessary or appropriate to apply to the Court for approval of the prescription of PBs to children, even when those children are well below the age of 16. However, these safeguards do exist, and might in some circumstances be useful.

Discrimination and the Equality Act 2010

111. Mr Lock advances an argument that to place PBs into a special category of treatment that would require Court authorisation would amount to direct discrimination under the Equality Act 2010 and would therefore be incapable in law of justification. He submits that for this reason any requirement (or presumably practice) of needing Court authorisation for PBs would not be "in accordance with law" for the purposes of article 14 and thus would be discrimination under the Human Rights Act 1998. The

Respondents adopt this argument. Ms Morris also argues that it would amount to discrimination contrary to article 8 and 14 and thus the Human Rights Act.

112. I asked Ms Butler-Cole to produce a note on this issue and I am very grateful to her for the two detailed notes that she (together with Mr Ruck Keene and Ms Apps) produced and have filed with the Court. It is apparent from the written submissions that I have received that this argument raises complex issues of discrimination law both under the Equality Act 2010 and the Human Rights Act 1998. It also appears to me that a very similar argument might be raised in the *Bell* appeal.

113. Given that, for the reasons set out below, I have decided that there is no requirement or best practice obligation to seek Court authorisation where parental consent is given to PBs, anything that I say on the discrimination arguments would necessarily be obiter. Further, the issue has not been fully argued out before me in oral submissions. In those circumstances, I have decided it is best if I do not address the issue in this judgment.

Conclusions

114. For the reasons set out above, I conclude that the parents' right to consent to treatment on behalf of the child continues even when the child is *Gillick* competent to make the decision, save where the parents are seeking to override the decision of the child.

115. On the issue of whether PBs fall within a special category of treatment which requires the decision to come to Court, I will deal firstly with any legal requirement and then what good practice may require.

116. The analysis of the caselaw shows that the cases supporting a special category of treatment of children which require Court approval are very limited. In fact, the only case where the Court has found a legal requirement to come to Court in respect of treatment of a child, where both parents consent, is Heilbron J in *Re D*, the case of a "non-therapeutic" sterilisation of an 11 year old. In all other contexts, including where the parental decision will lead to the child's life ending, the Court has imposed no such requirement. There are a range of cases where there does have to be Court approval, but this is where there is a clinical disagreement; possible alternative treatment of the medical condition in issue; or the decision is, in the opinion of clinicians, finely balanced. These are fact specific instances rather than examples of any special category of treatment where the Court's role is required simply because of the nature of the treatment.

117. There is a much wider category of case concerning incapacitated adults, which is now encapsulated in the 2020 Court of Protection Guidance, but that merely exposes the critical difference between incapacitated adults and children. For children, their parents would normally be in a legal position to consent to treatment on their behalf. For incapacitated adults there is no such person and therefore the State has a protective function and the Court has a different legal role. The Court is not displacing some other person, namely the parents, with statutory and moral rights and duties.

118. I rely heavily on the dicta set out above from many senior and highly eminent judges about the central role that parents must and should play in their children's lives and the fact that parents will, in the vast majority of cases, be the people who know their children best and who are best placed to make decisions about them. I agree with the

view expressed that judges do not necessarily know best, and that judges should be slow to displace the decision making role of committed and loving parents. That is not to say that there are not cases where the Court, acting in an independent way, may not be in a better position to make a decision than the parents. However, such cases will, as I set out below, arise in individual cases, not simply on the category of prescribing PBs to children.

119. It might be argued that in the light of the Divisional Court's analysis in *Bell,* PBs are sufficiently different from other forms of treatment to be treated differently. I accept that I am somewhat hampered by the fact that no party was putting this argument. The factors from *Bell* which would be relied upon in this regard would, I assume, be the poor evidence base for PBs; the lack of full and long term testing; the fact their use is highly controversial, including within the medical community; and the lifelong and life-changing consequences of the treatment, which in some ways are irreversible. The ratio of *Bell* is that a child is very unlikely to be in a position to understand and weigh up these factors.

120. However, the key difference from *Bell* is that parents are, in general, in a position to understand and weigh up these matters and consider what is in the long and short term best interests of their child. They are adults with full capacity and as the people who know their child best, and care for them the most, will be in a position to reach a fully informed decision. The evidence strongly suggests that XY's parents have fully considered these matters and come to a careful and informed decision.

121. In my view, the factors identified in *Bell*, which I fully agree with, do not justify removing the parental right to consent. The gravity of the decision to consent to PBs is very great, but it is no more enormous than consenting to a child being allowed to die. Equally, the essentially experimental nature of PBs should give any parent pause for thought, but parents can and do routinely consent on their child's behalf to experimental treatment, sometimes with considerable, including life-changing, potential side-effects. It is apparent from *Bell* that PBs raise unique ethical issues. However, adopting Lady Black in *NHS v Y*, I am wary of the Court becoming too involved in highly complex moral and ethical issues on a generalised, rather than case specific, basis.

122. I do have two points of particular concern about parents giving consent for PBs for children with Gender Dysphoria. The use of PBs for children with Gender Dysphoria raises unique and highly controversial ethical issues. The division of clinical and ethical views has become highly polarised. I have read the evidence of Professor Graham who refers to the studies supporting their use, but those studies themselves come from a very small group of institutions and it is not possible for me to assess the degree to which they have been peer reviewed or attract a consensus of support amongst the clinical and academic community. These are precisely the type of matters which are best assessed in a regulatory and academic setting and not through litigation.

123. This context for PBs gives rise to the two concerns. The first is that within the structure of the Second and Third Respondents, it may be that clinical difference and disagreement will not necessarily be fully exposed. The taking of strong, and perhaps fixed, positions as to the appropriateness of the use of PBs may make it difficult for a parent to be given a truly independent second opinion. However, in my view this is a matter for the various regulatory bodies, NHS England and the Care Quality

Commission, to address when imposing standards and good practice on the Second and Third Respondents.

124. It may well be that, given the particular issues involved, additional safeguards should be built into the clinical decision making, for example by a requirement for an independent second opinion. Any such requirement is a matter for the regulatory and oversight bodies and may be a matter considered by the Cass Review. My view is that this is likely to be a better safeguard for the very vulnerable children concerned rather than removing the ability in law of the parents giving consent. The clinical expert who gave the second opinion could then have a role in advising whether or not the particular case should be brought to Court.

125. My second particular concern is that of the pressure that may be placed by the children in issue upon their parents. Where a child has Gender Dysphoria and is convinced that s/he should be prescribed PBs, it is likely to be very hard for parents to refuse to consent. One does not have to be a child psychologist to appreciate the tensions that may arise within a family in this situation. I would describe this as "reverse pressure" and, although I have no evidence about it, it seems obvious that the problem could arise and the Second and Third Respondents are plainly alive to the issue.

126. However, the evidence in this case does not support any such finding in respect of XY's family. The Applicant and First Respondent have plainly thought long and hard about what is best for XY. There is no evidence that they feel forced to give consent, somewhat reluctantly, because XY has placed undue pressure upon them.

127. The pressure on parents to give consent is something that all the clinicians concerned are likely to be fully alive to. Ms Morris submitted that GIDS was very much aware of the issue, and that considerable efforts were made to ensure that there was a family-based range of consultations and that parents saw clinicians in private as well as with their children. If the clinicians, or indeed any one of them, is concerned that the parents are being pressured to give consent, then I have no doubt such a case should be brought to Court.

128. Equally, if the clinicians consider the case to be finely balanced, or there is disagreement between the clinicians, then the case should be brought to Court. However, I do not consider that these issues justify a general rule that PBs should be placed in a special category by which parents are unable in law to give consent.

Patient Information for Informed Consent
FEMINIZING MEDICATIONS FOR TRANSGENDER CLIENTS
Minors and Parents/Guardians
University of Alabama at Birmingham Pediatric Endocrinology
Multidisciplinary Gender Health Team

Before using medications to transition and feminize, you and your parents or guardians need to know the possible advantages, disadvantages and risks of these medications. We have listed them here for you. It's important that you understand all of this information before you begin taking these medications.

Please read the following with your parent or guardian. Once your questions or concerns are addressed, and you have decided to proceed with the medication(s), both you and your parent or guardian will need to sign this information and consent form.

We are happy to answer any questions you have.

What are the different medications that can feminize my appearance?

Part of transition for many transgender people involves taking hormones. For hormone treatment to be most effective, transgender girls and women take not only estrogens (female hormones), but also medicines to block their body from producing or utilizing testosterone (male hormones).

Different forms of the hormone estrogen are used to feminize appearance in transgender females. Estrogen can be given as an injection, weekly or every other week, as a pill, daily or twice a day, or as a patch, which is changed every three or four days.

Medications that block the production or effects of testosterone are called androgen blockers. Androgen is another term for male sex hormones. Spironolactone is the androgen blocker that is most commonly used in the United States. Other medicines are sometimes used, but because spironolactone is relatively safe, inexpensive, and effective to block testosterone, it is the primary androgen blocker used for transgender women.

Every medication has risks, benefits, and side effects that are important to understand before starting. The effects and side effects of medicines used for transition need to be monitored with laboratory studies and regular visits to your provider to make sure that there are no negative effects on your body.

Both the medicines that you take, as well as the process of transitioning can affect your mood. While trans women are relieved and happy with the changes that occur, it is important that you are under the care of a gender-qualified therapist while undergoing transition. The therapist can work with you, your family and friends and your school staff.

Estrogen can cause blood clots. We must be careful that you are not at risk to develop a blood clot. Who should not take estrogen?

Estrogen should not be used by anyone who has a history of

- an estrogen-dependent cancer
- a disorder that makes them more likely to get blood clots that could travel to the lungs (unless they are also taking blood thinners and are followed by a specialist)

Estrogen should be used with caution and only after a full discussion of risks by anyone who

- has a strong family history of breast cancer or other cancers that grow quicker when estrogens are present
- has uncontrolled diabetes
- has heart disease
- has chronic hepatitis or other liver disease
- has uncontrolled high cholesterol
- has migraines or seizure
- is obese
- smokes cigarettes

Both you and your parent or guardian should initial and date each statement on this form to show that you and your parent or guardian understand the benefits, risks, and changes that may occur from taking these medications.

Effects of Feminizing Medications

_____ _____I know that estrogen or anti-androgens – or both – may be prescribed to feminize my appearance.

_____ _____I know it can take several months or longer for the effects to become noticeable. I know that no one can predict how fast – or how much – change will happen.

_____ _____I know that if I am taking estrogen I will develop breasts.

- I know it takes several years for breasts to get to their full size.
- I know the breasts will remain, even if I stop taking estrogen.
- I know I might have a milky discharge from my nipples (called galactorrhea). If I do, I know I should check it out with my healthcare provider because it could be caused by the estrogen or by something else.
- I know that while we do not know the exact risk the risk, my risk of breast cancer may be increased to as high as if I had been born female
- I know that I should take care of my breasts like every other woman. This includes annual breast exams from my health provider, and when I am older, regular mammograms.

_____ _____I know that the following changes are usually not permanent — they are likely to go away if I stop taking the medicines.

- I know my body hair will become less noticeable and will grow more slowly. But it won't stop completely, even if I take the medicines for years.
- I know I will probably have less fat on my abdomen and more on my buttocks, hips, and thighs. It will be redistributed to a more female shape — changing from "apple" shape to "pear" shape.
- I know that if I have the predisposition to have male pattern baldness it may start later than it would have, but may not stop completely.
- If I stop taking hormones I may lose my hair faster than if I hadn't taken hormones.
- I know I may lose muscle and strength in my upper body.
- I know that my skin may become softer.

_____ _____I know that my body will make less testosterone (an androgen, or male hormone). This may affect my sex life in different ways and future ability to cause a pregnancy:

- I know my sperm may no longer get to full maturity. This could make me less able to cause a pregnancy. I also know that there is a small risk that I might never produce mature sperm again. But I know that it's also possible that my sperm could still mature even while I am taking hormones. So, I know that I might get someone pregnant if we have vaginal intercourse and we don't use birth control.
- The options for sperm banking have been explained to me.
- I know that my testicles may shrink down to half their size. Even so, I know that they are part of my body and that I need to take care of them unless I have surgery to remove them. This means that I will need regular checkups for them.
- I know that I won't have as much semen when I ejaculate.
- I know it is likely that I won't have erections upon waking as often as before, and it is likely that I will have fewer spontaneous erections.
- I know I may not be able to achieve or maintain an erection for penetrative sex.
- I know that I may want to masturbate less or have sex less, and may find it harder to ejaculate when I do.
- I know this treatment may (but is not assured to) make me permanently unable to make a woman pregnant.

_____ _____I know that some parts of my body will not change much by using these medicines.

- I know the hair of my beard and mustache may grow more slowly than before. It may become less noticeable, but it will not go away unless I have treatments like electrolysis.
- I know the pitch of my voice will not rise, and my speech patterns will not become more like a woman's.
- I know my Adam's apple (called the laryngeal prominence) will not shrink.
- Although these medicines can't make these changes happen, there are other treatments that may be helpful.

_____ _____ I know that there may be mood changes with these medicines. I agree to continue therapy with a qualified therapist.

_____ _____I know if I have any concerns about these issues, you can make referrals for me to help me explore other treatment options.

Risks of Feminizing Medications

_____ _____I know that the side effects and safety of these medicines are not completely known. There may be long-term risks that are not yet known.

_____ _____I know not to take more medicine than I am prescribed. I know it increases health risks. I know that taking more than I am prescribed won't make changes happen more quickly or more significantly.

_____ _____ I know these medicines may damage the liver and may lead to lead to liver disease. I know I should be checked for possible liver damage as long as I take them.

_____ _____I know these medicines cause changes that other people will notice. Some transgender people have experienced discrimination because of this. I know my clinician can help me find advocacy and support resources.

Risks of Estrogen

_____ _____I know that taking estrogen increases the risk of blood clots or problems with blood vessels that can result in

- chronic problems with veins in the legs
- heart attack
- pulmonary embolism – blood clot to the lungs – which may cause permanent lung damage or death
- stroke, which may cause permanent brain damage or death

_____ _____I know that the risk of blood clots is much worse if I smoke cigarettes. I know the danger is so high that I should stop smoking completely if I start taking estrogen. I know that I can ask my clinician for advice about how to stop smoking.

_____ _____ I know taking estrogen can increase the deposits of fat around my internal organs. This can increase my risk for diabetes and heart disease.

_____ _____I know taking estrogen can raise my blood pressure. I know that if it goes up, my clinician can work with me to try to control it with diet, lifestyle changes, and/or medication.

_____ _____I know that taking estrogen increases my risk of getting gallstones. I know I should talk with my clinician if I get severe or long-lasting pain in my abdomen.

_____ _____I know that estrogen can cause nausea and vomiting. I know I should talk with my clinician if I have long-lasting nausea or vomiting.

_____ _____I know that estrogen can cause migraines or make them worse if I already have them. I know I should talk with my clinician if I have headaches or migraines often or if the pain is unusually severe.

_____ _____I know that it is not yet known if taking estrogen increases the risk of prolactinomas. These are non-cancerous tumors of the pituitary gland. I know they are not

usually life threatening, but they can damage vision and cause headaches if they are not treated properly. I know that changes in vision, headaches that are worse when I wake up in the morning, and milky discharge from my nipples can be signs of a prolactinoma, and I should talk to my health care provider if I develop these symptoms. There is a blood test that can check for this.

_____ _____I know that I am more likely to have dangerous side effects if

- I smoke.
- I am overweight.
- I have a personal or family history of blood clots.
- I have a personal or family history of heart disease and stroke.
- My family has a history of breast cancer.

Risks of Androgen Antagonists (Spironolactone)

_____ _____I know that spironolactone affects the balance of water and salts in the kidneys. This may

- Increase the amount of urine I produce, making it necessary to urinate more frequently.
- Increase thirst.
- Rarely, cause high levels of potassium in the blood, which can cause changes in heart rhythms that may be life-threatening.
- Reduce blood pressure.

_____ _____I know some androgen antagonists make it more difficult to evaluate test results for cancer of the prostate. This can make it more difficult to check up on prostate problems. I know that if I am over 50, I should discuss appropriate prostate cancer screening with my care provider. I know that even if I have genital sex reassignment surgery the prostate is not usually removed.

Prevention of Medical Complications

_____ _____I agree to take feminizing medications as prescribed. And I agree to tell my care provider if I have any problems or am unhappy with the treatment.

_____ _____I know that the dose and type of medication that's prescribed for me may not be the same as someone else's.

_____ _____I know I need periodic physical exams and blood tests to check for any side effects.

_____ _____I know that in addition to periodic checks from my provider, I must also treat my body with respect. This means that paying attention and talking to my provider if I develop any symptoms that might be side effects from medicines. This also means keeping my partners and myself safe, when and if I choose to have sex with others, by using condoms or methods to keep me safe from sexually transmitted infections (STIs).

_____ _____I know that feminization medications can interact with other drugs and prescribed and over the counter medicines. These include alcohol, diet supplements, herbs, other hormones, and street drugs. This kind of interaction can cause dangerous complications. I know that I need to prevent complications because they can be life threatening. That's why I need to be honest with my provider about whatever else I take. I also know that I will continue to get medical care here no matter what I share about what I take.

_____ _____I know that it can be risky for anyone with certain conditions to take these medicines. I agree to be evaluated if my clinician thinks I may have one of them. Then we will decide if it's a good idea for me to start or continue using them.

_____ _____I know that I should stop taking estrogen two weeks before any surgery or when I may be immobile for a long time (for example, if I break my leg and am in a cast).
This will lower the risk of getting blood clots. I know I can start taking it again a week after I'm back to normal or when my clinician says it's okay.

_____ _____ I know that even if I have to stop my estrogens, I may still be able to take the testosterone blockers that I am on, to help prevent the effects of my testicles producing testosterone again.

_____ _____I know that using these medicines to feminize is an off-label use. I know this means it is not approved by the Food and Drug Administration (FDA). I know that the medicine and dose that is recommended for me is based on the judgment and experience of my health care provider and the best information that is currently available in the medical literature.

_____ _____I know that I can choose to stop taking these medicines at any time. I know that if I decide to do that, I should do it with the help of my clinician. This will help me make sure there are no negative reactions. I also know my clinician may suggest that I cut the dose or stop taking it at all if certain conditions develop. This may happen if the side effects are severe or there are health risks that can't be controlled.

Alternatives

There are alternatives to using feminizing medicines to help people appear more feminine. Some transgender people choose to not take hormones or have surgery and may only socially transition. If you are interested in alternatives, talk with your health care provider about your options.

Our signatures below confirm that

- My clinician has talked with me and my parents or guardian about
  - the benefits and risks of taking feminizing medication
  - the possible or likely consequences of hormone therapy
  - potential alternative treatments
- I understand the risks that may be involved.
- I know that the information in this form includes the known effects and risks. I also know that there may be unknown long-term effects of risks.
- I have had enough opportunity to discuss treatment options with my clinician.
- All of my questions have been answered to my satisfaction.
- I believe I know enough to give informed consent to take, refuse, or postpone therapy with feminizing medications.

Based on all this information

_____ I want to begin taking estrogen.

_____ I want to begin taking androgen antagonists (e.g., spironolactone).

_____ I do not wish to begin taking feminizing medication at this time.

_____ _____
Patient Signature Date

_____ _____
Signature of Parent or Guardian Date

_____ _____
Prescribing clinician signature Date

Your health is important to us. If you have any questions or concerns please call us at (205) 638 9107. We are happy to help you.

Client Information for Informed Consent

TESTOSTERONE FOR TRANSGENDER CLIENTS
Minors and Parents/Guardians
University of Alabama at Birmingham Pediatric Endocrinology
Multidisciplinary Gender Health Team

Before using testosterone to transition and masculinize your body, you and your parents or guardians need to know the possible advantages, disadvantages and risks of these medications. We have listed them here for you. It's important that you understand all of this information before you begin taking these medications.

Please read the following with your parent or guardian. Once your questions or concerns are addressed, and you have decided to proceed with the medication(s), both you and your parent or guardian will need to sign this information and consent form.

We are happy to answer any questions you have.

What is testosterone?

It is the sex hormone that makes certain features appear typically male. It builds muscle and causes the development of facial hair and a deeper voice.

How is testosterone taken?

It is usually injected every one to four weeks. It is not used as a pill because the body may not absorb it properly and may cause potentially fatal liver problems. Some people use skin creams and patches, but they tend to be more expensive and aren't recommended for initiating puberty or for use in teenagers and young adults.

The doses used for injection differ from product to product and from patient to patient. They may range from 50 to 400mg. The injections are given in a large muscle to slow the release of the hormone. You may experience unwanted swings in hormone levels. You may control the swings by changing how often the dose is given and how much of a dose is given.

Every medication has risks, benefits, and side effects that are important to understand before starting. The effects and side effects of medicines used for transition need to be monitored with laboratory studies and regular visits to your provider to make sure that there are no negative effects on your body.

The medicines that you take, as well as the process of transitioning can affect your mood. While trans men are usually relieved and happy with the changes that occur, it is important that you are under the care of a gender-qualified therapist while undergoing transition. The therapist can work with you, your family and friends and your school staff.

Warning — Who should not take testosterone?

It should *not* be used by anyone who is pregnant or has uncontrolled coronary artery disease as it could increase your risk for a fatal heart attack:

It should be used with caution and only after a full discussion of risks by anyone who

- Has acne
- Has a family history of heart disease or breast cancer
- Has had a blood clot
- Has high levels of cholesterol
- Has liver disease
- Has a high red-blood-cell count
- Is obese
- Smokes cigarettes

Periodic blood tests to check on the effects of the hormone will be needed. Routine breast exams and pelvic exams with Pap tests should be continued, when applicable.

Summary of Testosterone Benefits and Risks

BENEFITS	RISKS

• Appearing more like a man
  ○ Bigger clitoris
  ○ Coarser skin
  ○ Lower voice
  ○ More body hair
  ○ More facial hair
  ○ More muscle mass
  ○ More strength
  ○ No more menstrual periods
• More physical energy
• More sex drive
• Protection against bone thinning (osteoporosis)
	• Acne (may permanently scar)
	• Blood clots (thrombophlebitis), risk significantly increased by smoking
	• Emotional changes, for example, more aggression
	• Headache
	• High blood pressure (hypertension)
	• Increased red-blood-cell count
	• Infertility
	• Inflamed liver
	• Interaction with drugs for diabetes and blood thinning — for example Coumadin and Warfarin
	• Male pattern baldness
	• More abdominal fat — redistributed to a male shape
	• More risk of heart disease
	• Swelling of hands, feet, and legs
	• Weight gain

Both you and your parent or guardian should initial and date each statement on this form to show that you and your parent or guardian understand the benefits, risks, and changes that may occur from taking this medications.

Masculinizing

_____I know that testosterone may be prescribed to make me appear less like a woman and more like a man.

_____ I know it can take several months or longer for the effects to become noticeable. I know that no one can predict how fast – or how much – change will happen. I know that the changes may not be complete for two to five years after I start.

_____I know that the following changes are likely and permanent even if I stop taking testosterone:

- Bigger clitoris — typically about half an inch to a little more than an inch
- Deeper voice
- Gradual growth of mustache and beard
- Hair loss at the temples and crown of the head — possibility of being completely bald
- More, thicker, and coarser hairs on abdomen, arms, back, chest, and legs

_____ I know that the following changes are usually not permanent — they are likely to go away if I stop taking testosterone:

- Acne (although there may be permanent scars)
- Menstrual periods typically stop one to six months after starting
- More abdominal fat – redistributed to a male shape: decreased on buttocks, hips, and thighs; increased in abdomen – changing from “pear shape” to “apple shape”
- More muscle mass and strength
- More sex drive
- Vaginal dryness

_____I know that the effects of testosterone on fertility are unknown. I have been told that I may or may not be able to get pregnant even if I stop taking testosterone. I know that I might still get pregnant even after testosterone stops my menstrual periods. I know about my birth control options (if applicable). And I know that I can’t take testosterone if I am pregnant and that I must take a pregnancy test prior to starting testosterone therapy.

_____ I know that some aspects of my body will not be changed:

- Losing some fat may make my breasts appear slightly smaller, but they will not shrink very much.
- My voice will deepen, but other aspects of the way I speak may not sound more masculine.
- Although testosterone can’t make these changes happen, there are other treatments that may be helpful.

_____I know that there may be mood changes with these medicines. I agree to continue therapy with a qualified therapist.

_____I know if I have any concerns about these issues, you can make referrals for me to help me explore other treatment options.

Risks of Testosterone

_____I know the medical effects and the safety of testosterone are not completely known. There may be long-term risks that are not yet known.

_____I know not to take more testosterone than prescribed. Taking too much:

- Will increase health risks
- Won't make changes happen more quickly or more significantly
- Can cause my body to convert extra testosterone into estrogen, and that can slow down or stop my appearing more masculine

_____I know that testosterone can cause changes that increase my risk of heart disease. These changes include having:

- Less good cholesterol (HDL) that may protect against heart disease and more bad cholesterol (LDL) that may increase the risk of heart disease
- Higher blood pressure
- More deposits of fat around my internal organs

_____I know that my risk of heart disease is higher if people in my family have had heart disease, if I am overweight, or if I smoke.

_____I know that I should have periodic heart-health checkups for as long as I take testosterone. This means I must watch my weight and cholesterol levels and have them checked by my clinician.

_____I know testosterone can damage the liver and possibly lead to liver disease and I should be checked for possible liver damage for as long as I take testosterone.

_____I know testosterone can increase my red blood cells and hemoglobin. This increase is usually only to what is normal for a man and shouldn't cause any health risks. However, there is a small possibility that higher levels of red blood cells and hemoglobin may increase my risk of life-threatening problems such as stroke or heart attack. That's why I know I need to have periodic blood checks for as long as I take testosterone.

_____I know that taking testosterone can increase my risk for diabetes. It may decrease my body's response to insulin, cause weight gain, and increase deposits of fat around my internal organs. Therefore, I should have periodic checks of my blood glucose for as long as I take testosterone.

_____I know my body can turn testosterone into estrogen and that no one knows if that could increase the risk of cancers of the breast, the ovaries, or the uterus.

_____I know taking testosterone can thin the tissue of my cervix and the walls of my vagina. This can lead to tears or abrasions during vaginal sex or play with a male or female partner. These tears increase my risk of getting a sexually transmitted infection, including HIV. I know I should speak frankly with my primary care provider about my sex life to learn the best ways to prevent and check for infections.

_____I know that testosterone can give me headaches or migraines. I know that it's best to talk with my clinician if I get them a lot or if the pain is unusually severe.

_____I know that testosterone can cause emotional changes. For example, I could become more irritable, frustrated, or angry. I know that my clinician can help me find resources to explore and cope with these changes.

_____I know that testosterone causes changes that other people will notice. Some transgender people have experienced harassment, discrimination, and violence because of this. Others have lost the support of loved ones. I know my clinician can help me find advocacy and support resources.

Prevention of Medical Complications

_____I agree to take testosterone as prescribed. I agree to not purchase testosterone or other hormones without my physician's knowledge, and I agree to tell my clinician if I have any problems or am unhappy with the treatment.

_____I know that the dose and type of medication that's prescribed for me may not be the same as someone else's.

_____I understand that the medications prescribed are for my use only and I will not supply these medications to others.

_____I know I need periodic physical exams and blood tests to check for any side effects.

_____I know testosterone can interact with other drugs and medicines. These include alcohol, diet supplements, herbs, other hormones, and street drugs. This kind of interaction can cause complications. I know that I need to prevent complications because they can be life-threatening. That's why I need to be honest with my clinician about whatever else I take. I also know that I will continue to get medical care here no matter what I share about what I take.

_____ _____ I know that it can be risky for anyone with certain conditions to take testosterone. I agree to be evaluated if my clinician thinks I may have one of them. Then we will decide if it's a good idea to start or continue using testosterone.

_____ _____ I know that using testosterone to masculinize is an off-label use. This means it is not approved by the Food and Drug Administration (FDA). I know that the medicine and dose that is recommended for me is based on the judgment and experience of my health care provider and the best information that is currently available in the medical literature.

_____ _____ I understand that my insurance company may not cover the costs of this treatment. If so, I accept responsibility for any charges associated with this treatment. Costs of treatment can be obtained by contacting The Pediatric Endocrinology office at 205 638 9107.

_____I know that I can choose to stop taking testosterone at any time. I know that if I decide to do that, I should do it with the help of my clinician. This will help me make sure there are no negative reactions. I also know my clinician may suggest that I cut the dose or stop taking it at all if certain conditions develop. This may happen if the side effects are severe or there are health risks that can't be controlled.

Alternatives

There are alternatives to using testosterone to help people appear more masculine. Some transgender people choose to not take hormones or have surgery and may only socially transition. If you are interested in alternatives, talk with your health care provider about your options.

Our signatures below confirm that:

- My clinician has talked with me and my parents or guardians about
  - The benefits and risks of taking testosterone
  - The possible or likely consequences of hormone therapy
  - Potential alternative treatments
- I understand the risks that may be involved.
- I know that the information in this form includes the known effects and risks. I also know that there may be unknown long-term effects of risks.
- I have had enough opportunity to discuss treatment options with my clinician.
- All of my questions have been answered to my satisfaction.
- I believe I know enough to give informed consent to take, refuse, or postpone testosterone therapy.

Based on all this information:

_____I want to begin taking testosterone.

_____I do not wish to begin taking testosterone at this time.

_____ _____
Patient Signature Date

_____ _____
Signature of Parent or Guardian Date

_____ _____
Prescribing Clinician Signature Date

Your health is important to us. If you have any questions or concerns please call us at (205) 638 9107. We are always happy to help you.

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RESEARCH Open Access

Longitudinal impact of gender-affirming endocrine intervention on the mental health and well-being of transgender youths: preliminary results

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Abstract

Background/aims: Transgender youths experience high rates of depression and suicidal ideation compared to cisgender peers. Previous studies indicate that endocrine and/or surgical interventions are associated with improvements to mental health in adult transgender individuals. We examined the associations of endocrine intervention (puberty suppression and/or cross sex hormone therapy) with depression and quality of life scores over time in transgender youths.

Methods: At approximately 6-month intervals, participants completed depression and quality of life questionnaires while participating in endocrine intervention. Multiple linear regression and residualized change scores were used to compare outcomes.

Results: Between 2013 and 2018, 50 participants (mean age 16.2 ± 2.2 yr) who were naïve to endocrine intervention completed 3 waves of questionnaires. Mean depression scores and suicidal ideation decreased over time while mean quality of life scores improved over time. When controlling for psychiatric medications and engagement in counseling, regression analysis suggested improvement with endocrine intervention. This reached significance in male-to-female participants.

Conclusion: Endocrine intervention may improve mental health in transgender youths in the US. This effect was observed in both male-to-female and female-to-male youths, but appears stronger in the former.

Keywords: Transgender, Transgender management, Transgender youth, Depression, Suicide, Suicidal ideation, Quality of life, GnRH analogue, Puberty suppression, Puberty, Testosterone, Estrogen, Cross sex hormone

Introduction

Transgender individuals have a gender identity that differs from the sex assigned at birth [1]. These individuals have a high prevalence of body image dysphoria, depression and suicidal ideation [2]. Studies in adults have shown improvement in psychological function in adulthood from endocrine and/or surgical interventions. Specifically, studies have indicated a positive impact of cross sex steroid therapy on depression scores and quality of life in the adult transgender population [3]. Guidelines for endocrine intervention in transgender youth have existed for the past decade in the United States and longer internationally. These guidelines include suppression of puberty to provide more time before cross sex steroid

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therapy is introduced [4, 5]. Two studies have examined the impact of this strategy on depression and quality of life in youths. De Vries et al. demonstrated no improvement of gender dysphoria after puberty suppression alone but did report improvement only after both cross sex steroid therapy and gender confirmation surgery was complete in transgender individuals from the Netherlands [6]. These authors did not report findings after cross sex steroid therapy alone but before surgery. In the UK, Costa found that GnRH agonist suppression of puberty improved psychological functioning in transgender youth [7]. In the United States, there are few data concerning the impact of endocrine intervention on psychological function in transgender youth. Therefore, we conducted a longitudinal assessment of psychological wellbeing and quality of life in children and adolescents who have sought endocrine intervention to help with gender dysphoria. Herein, we report preliminary results of this ongoing study.

Objective

The aim of this study is to examine the impact that endocrine intervention [suppression of endogenous pubertal hormones utilizing GnRH agonists/anti-androgens/suppressors of menstruation (AKA "pubertal suppression"), or addition of cross-sex hormones] has on depression and quality of life scales of transgender youths as reported by the youths themselves over time.

Methods

Participants and procedure

This is a single center study approved by Stony Brook University IRB for children, adolescents and young adults aged 9–25 years. Subjects referred to the Pediatric Endocrine Department for gender dysphoria were approached to participate. Although we do not have exact numbers, the vast majority of eligible subjects agreed to take part in the study. Minor participants signed assent and participants over 18 years of age and parents of those less than 18 yr. of age signed consent to participate. Individuals with sex chromosome abnormalities and disorders of sexual differentiation were excluded from the study. At approximately 6-month intervals, participants completed the following validated assessments of mental health: The Center for Epidemiologic Studies Depression Scale (CESD-R) [8], The Patient Health Questionnaire Modified for Teens (PHQ-9_Modified for Teens) [9], Quality of Life Enjoyment and Satisfaction Questionnaire (QLES-Q-SF) [10]. Most subjects were followed by mental health professionals. Those that were not were encouraged to see a mental health professional.

Psychological measures

The CESD-R score is calculated as a sum of 20 questions, ranging from 0 (for those who say "not at all or less than one day" to all 20 questions) to a maximum score of 60 (for those who say "5–7 days" and/or "nearly every day for 2 weeks" for all 20 questions). A total CESD-R score less than 16 implies no clinical depression [8, 11]. The PHQ-9 consists of 9 questions describing symptoms of depression each rated 0 to 3 with the sum indicating level of depression: minimal 0–4, mild 5–9, moderate 10–14, moderately severe 15–19, severe 20–27. This questionnaire also asks the participants four additional questions relating to suicidal ideology and difficulty dealing with problems of life [9]. The QLES-Q-SF consists of 15 questions rating quality of life on a scale of 1–5 with 1 being poor and 5 being very good [10]. It was used rather than the Pediatric Quality of Life and Enjoyment Scale (PQLES-SF), which is based on QLES-Q-SF, because of the overlap in age inclusion of older adolescents and young adults and the intention of continuing the study into adulthood. Transyouths in the study were also asked if they were participating in psychological counseling and/or on psychiatric medication. ADHD medications were not included as psychiatric medication for this analysis.

Endocrine interventions

Endocrine interventions were introduced in accordance with the Endocrine Society and the WPATH guidelines [4, 5]. In our study, GnRH agonist and/or antiandrogens were used for male to female (MTF) participants, and suppression of menstruation (either GnRH agonist or Medroxyprogesterone) for female to male (FTM) participants. Collectively, these interventions were labeled "Puberty Suppression". Once eligible as determined by mental health consultants, youths, parents and according to guidelines, cross sex hormones were prescribed, either testosterone for FTM or estrogen for MTF participants.

Statistical analysis

Regression analysis was used to examine the association of various treatments with outcomes experienced by transgender youths over time. Linear multiple regression was used for continuous outcomes, and multiple logistic regression was used for dichotomous outcomes. For continuous outcomes, residualized change scores were used to compare change at outcome relative to levels at baseline. This approach thus allowed us to control for the dependent variable's level at baseline for each participant and to examine how endocrine intervention predicted change in the dependent variable over and above predicted outcome level relative to the level at baseline. Regression analyses also controlled for psychiatric medication and engagement in psychotherapy.

Results

Between December 2013 to December 2018, 116 participants entered the study. Ninety-five were naive to any endocrine intervention. Of those 95 participants, 50 completed 3 waves of questionnaires and these individuals compose the analytic sample in this report. Baseline data for this population are shown in Table 1. At wave one, none of the 50 participants were on endocrine intervention. By wave 3, 47 participants had some type of endocrine intervention (Table 2).

Mean changes over time

Mean baseline CESD-R score was 21.4 and decreased to 13.9 by wave 3 ($t(48) = 3.996$, $p < 0.001$, Fig. 1a). A score less than 16 implies no clinical depression. Mean depression scores by the PHQ-9 decreased over time as well ($t(49) = 3.753$, $p < 0.001$, Fig. 1b), while quality of life scores improved (Fig. 1c) but did not reach statistical significance ($t(48) = -1.758$, $p = .085$, Fig. 1c). Suicidal ideation decreased over time across all groups at wave 3 relative to baseline (Table 3). Thus, by all measures, depression and quality of life improved to some degree over time. Both gender subgroups demonstrated similar trends.

Regression analysis

We conducted a series of regression analyses to investigate preliminary trends in the data when controlled for reported psychiatric medications and engagement in counselling. Results are given in Table 4. Given our modest sample size, particularly when stratified by gender, most predictors did not reach statistical significance. This being said, effect sizes (R^2) values were notably large in many models. In MTF participants, only puberty suppression reached a significance level of $p < .05$ in the CESD-R. However, associations with PHQ9 and QLES-Q-SF scores approached significance. For FTM participants, only cross sex hormone therapy approached statistical significance for quality of life improvement ($p = 0.08$).

Model R^2 values ranged between small to large, even in models where the hormonal intervention's prediction of the outcome did not reach statistical significance. It is potentially noteworthy that effect sizes for endocrine interventions were notably larger for MTF than FTM participants in almost every analysis. Regression models for suicidal thoughts were not estimable due to the low frequency of endorsement and small cell sizes across gender.

Table 2 Endocrine interventions at wave 3

Type of Intervention	% of Total (n)	% of FTM (n)	% of MTF (n)
None	6% (3)	3% (1)	12% (2)
Puberty Blocker	46% (23)	24% (8)	88% (15)
Cross Sex Hormone	70% (35)	85% (28)	41% (7)
Both	22% (11)	12% (4)	41% (7)

Discussion

Cross-sex hormones and their effect on depression and quality of life has been extensively studied in adults. A meta-analysis by Costa and Colinza reported a reduction in anxiety and depression and improvement in quality of life with positive effect on personality and mood among transgender adults receiving cross-sex hormones therapy [3]. A 2006 cross-sectional study in California looked at adult FTM transgender participants on cross-sex hormone therapy and their quality of life. Participants who received testosterone therapy reported statistically significant higher quality of life than those who had not received hormonal therapy [12].

Adolescence is a particularly difficult time for transgender persons who experience the development of secondary sexual characteristics that are incongruous with their gender identity, and is associated with a high prevalence of depression and suicidal thoughts and gestures. Previous research has shown benefit to transgender youth in the Netherlands after cross sex steroid therapy AND gender confirmation surgery and in the UK after pubertal suppression alone [6, 7]. Our results extend these findings to transgender youths in the USA and apply prior to surgery.

Our results suggest that endocrine intervention is associated with improved mental health among transgender youth. This effect was observed in both MTF and FTM participants but appeared to be stronger in MTF. We speculate that this could be due to the following possibilities: 1. Testosterone has profound effects on

Table 1 Baseline characteristics at Wave 1

	Total	Female to Male	Male to Female
Number of participants	50	33	17
Age in Years (SD)	16.2 (2.2)	16.6 (2.5)	15.5 (1.6)
%Depressed in past year (n)	64% (32)	60.6% (20)	70.6% (12)
% Suicidal (n)	10% (5)	9.1% (3)	11.8% (2)
% In Counseling (n)	90% (45)	87.9% (29)	94.1% (16)
% On Psych Medication (n)	34% (17)	36.4% (12)	29.4% (5)

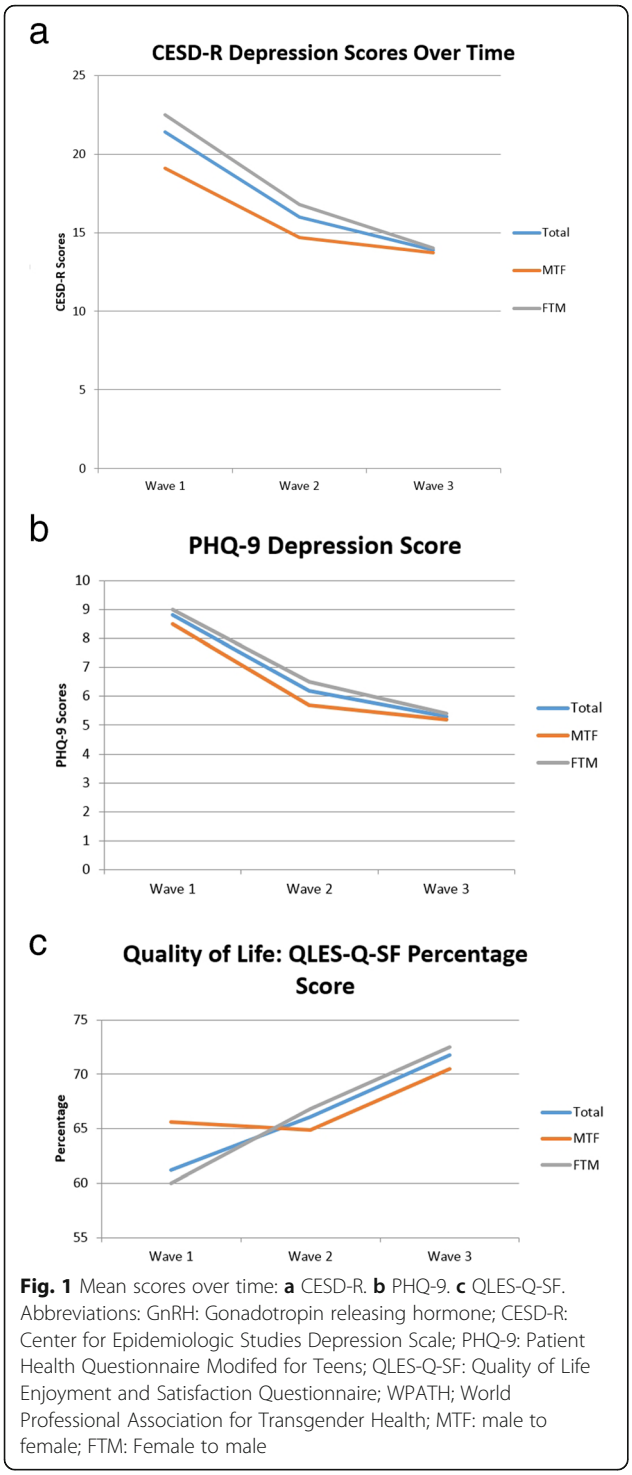

Fig. 1 Mean scores over time: **a** CESD-R. **b** PHQ-9. **c** QLES-Q-SF. Abbreviations: GnRH: Gonadotropin releasing hormone; CESD-R: Center for Epidemiologic Studies Depression Scale; PHQ-9: Patient Health Questionnaire Modifed for Teens; QLES-Q-SF: Quality of Life Enjoyment and Satisfaction Questionnaire; WPATH; World Professional Association for Transgender Health; MTF: male to female; FTM: Female to male

appearance. MTF participants may have experienced relief when serum testosterone concentrations are suppressed or antagonized; 2. The effects of testosterone in FTM transgender persons takes 6 to 12 months to become apparent and is not fully apparent until several years of exposure. Our study only extended for the first 12 months of endocrine intervention.

Table 3 Suicidal ideation

Suicidal Ideation Percentage: Wave 1 vs Wave 3		
	% at Wave 1 (n)	% at Wave 3 (n)
Total	10% (5)	6% (3)
MTF	11.8% (2)	5.9% (1)
FTM	9.1% (3)	6.1% (2)

Limitations and future directions

This is an ongoing study with preliminary results only presented herein. The numbers are too small to parse out the effects of pubertal suppression versus cross sex hormone therapy in the different genders. As our numbers continue to grow, we hope that we will be able to do so. As of now, we are only able to report trends.

Parental support has been shown to protect against mental health problems in transgender adolescents. Children who are socially transitioned at home, at school, and who use gender affirming pronouns represent those youths who are supported by their parents and caregivers. Being supported by family is associated with positive mental health outcomes [13] . Our data are somewhat limited by the fact that the majority of our participants had at least one supportive parent who was willing to facilitate medical and mental health intervention for the child and therefore may not apply to all transgender youths. In addition, regular visits with the medical team itself could influence depression and quality of life. Past studies have shown that having support from a multidisciplinary medical team – mental health provider, physician, surgeons – helped with quality of life and mental health [6].

Conclusions

Transgender children and adolescent are a high-risk population for suicide and depression. Our preliminary results show negative associations between depression scores/suicidal ideation and endocrine intervention, while quality of life scores showed positive associations with intervention, in transgender youths over time in the US. These results align with previous work in the Netherlands and the UK.

Table 4 Regression results when controlled for engagement in counselling and psychiatric medications

		MTF			FTM		
Survey	Intervention	b	*p*	R^2	b	*p*	R^2
CESD-R	Puberty Suppression	−2.41	0.008	0.52	−0.02	0.95	0.09
	Cross Sex Hormone	−0.56	0.27	0.21	− 0.43	0.43	0.11
PHQ-9	Puberty Suppression	−1.89	0.07	0.28	−0.16	0.68	0.04
	Cross Sex Hormone	−0.92	0.07	0.29	−0.23	0.67	0.04
QOL	Puberty Suppression	1.26	0.21	0.13	0.71	0.86	0.01
	Cross Sex Hormone	0.87	0.06	0.08	0.93	0.08	0.11

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Authors' contributions
All authors contributed to the work as outlined below: Christal Achille: Primary author, helped recruit and collect data. Tenille Taggart: Worked on data entry and data analysis. Jennifer Osipoff: Recruited subjects, collected data. Kimberly Tafuri: Recruited subjects, collected data. Andrew Lane: Recruited subjects, collected data. Nicholas Eaton: Statistical analysis and interpretation. Thomas Wilson: Senior author, initial research conceptualization, IRB approval, subject recruitment, data entry and analysis and final submission. The author(s) read and approved the final manuscript.

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Availability of data and materials
Data is not available as it would compromise confidentialty of the subjects participating.

Ethics approval and consent to participate
This research effort was approved by the Stony Brook University Committee on Research Involving Human Subjects. Consent and assent to participate was obtained from subjects < 18 years of age and their respective parents and consent was obtained from those over age 18 years of age.

Consent for publication
Consent for publication was included in the consent/assent.

Competing interests
The authors declare that they have no competing interests.

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Mental Health Outcomes in Transgender and Nonbinary Youths Receiving Gender-Affirming Care

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Abstract

IMPORTANCE Transgender and nonbinary (TNB) youths are disproportionately burdened by poor mental health outcomes owing to decreased social support and increased stigma and discrimination. Although gender-affirming care is associated with decreased long-term adverse mental health outcomes among these youths, less is known about its association with mental health immediately after initiation of care.

OBJECTIVE To investigate changes in mental health over the first year of receiving gender-affirming care and whether initiation of puberty blockers (PBs) and gender-affirming hormones (GAHs) was associated with changes in depression, anxiety, and suicidality.

DESIGN, SETTING, AND PARTICIPANTS This prospective observational cohort study was conducted at an urban multidisciplinary gender clinic among TNB adolescents and young adults seeking gender-affirming care from August 2017 to June 2018. Data were analyzed from August 2020 through November 2021.

EXPOSURES Time since enrollment and receipt of PBs or GAHs.

MAIN OUTCOMES AND MEASURES Mental health outcomes of interest were assessed via the Patient Health Questionnaire 9-item (PHQ-9) and Generalized Anxiety Disorder 7-item (GAD-7) scales, which were dichotomized into measures of moderate or severe depression and anxiety (ie, scores ≥10), respectively. Any self-report of self-harm or suicidal thoughts over the previous 2 weeks was assessed using PHQ-9 question 9. Generalized estimating equations were used to assess change from baseline in each outcome at 3, 6, and 12 months of follow-up. Bivariate and multivariable logistic models were estimated to examine temporal trends and investigate associations between receipt of PBs or GAHs and each outcome.

RESULTS Among 104 youths aged 13 to 20 years (mean [SD] age, 15.8 [1.6] years) who participated in the study, there were 63 transmasculine individuals (60.6%), 27 transfeminine individuals (26.0%), 10 nonbinary or gender fluid individuals (9.6%), and 4 youths who responded "I don't know" or did not respond to the gender identity question (3.8%). At baseline, 59 individuals (56.7%) had moderate to severe depression, 52 individuals (50.0%) had moderate to severe anxiety, and 45 individuals (43.3%) reported self-harm or suicidal thoughts. By the end of the study, 69 youths (66.3%) had received PBs, GAHs, or both interventions, while 35 youths had not received either intervention (33.7%). After adjustment for temporal trends and potential confounders, we observed 60% lower odds of depression (adjusted odds ratio [aOR], 0.40; 95% CI, 0.17-0.95) and 73% lower odds of suicidality (aOR, 0.27; 95% CI, 0.11-0.65) among youths who had initiated PBs or GAHs compared with youths who had not. There was no association between PBs or GAHs and anxiety (aOR, 1.01; 95% CI, 0.41, 2.51).

(continued)

Key Points

Question Is gender-affirming care for transgender and nonbinary (TNB) youths associated with changes in depression, anxiety, and suicidality?

Findings In this prospective cohort of 104 TNB youths aged 13 to 20 years, receipt of gender-affirming care, including puberty blockers and gender-affirming hormones, was associated with 60% lower odds of moderate or severe depression and 73% lower odds of suicidality over a 12-month follow-up.

Meaning This study found that access to gender-affirming care was associated with mitigation of mental health disparities among TNB youths over 1 year; given this population's high rates of adverse mental health outcomes, these data suggest that access to pharmacological interventions may be associated with improved mental health among TNB youths over a short period.

+ Invited Commentary

+ Supplemental content

Author affiliations and article information are listed at the end of this article.

Abstract (continued)

CONCLUSIONS AND RELEVANCE This study found that gender-affirming medical interventions were associated with lower odds of depression and suicidality over 12 months. These data add to existing evidence suggesting that gender-affirming care may be associated with improved well-being among TNB youths over a short period, which is important given mental health disparities experienced by this population, particularly the high levels of self-harm and suicide.

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Introduction

Transgender and nonbinary (TNB) youths are disproportionately burdened by poor mental health outcomes, including depression, anxiety, and suicidal ideation and attempts.[1-5] These disparities are likely owing to high levels of social rejection, such as a lack of support from parents[6,7] and bullying,[6,8,9] and increased stigma and discrimination experienced by TNB youths. Multidisciplinary care centers have emerged across the country to address the health care needs of TNB youths, which include access to medical gender-affirming interventions, such as puberty blockers (PBs) and gender-affirming hormones (GAHs).[10] These centers coordinate care and help youths and their families address barriers to care, such as lack of insurance coverage[11] and travel times.[12] Gender-affirming care is associated with decreased rates of long-term adverse outcomes among TNB youths. Specifically, PBs, GAHs, and gender-affirming surgeries have all been found to be independently associated with decreased rates of depression, anxiety, and other adverse mental health outcomes.[13-16] Access to these interventions is also associated with a decreased lifetime incidence of suicidal ideation among adults who had access to PBs during adolescence.[17] Conversely, TNB youths who present to care later in adolescence or young adulthood experience more adverse mental health outcomes.[18] Despite this robust evidence base, legislation criminalizing and thus limiting access to gender-affirming medical care for minors is increasing.[19,20]

Less is known about the association of gender-affirming care with mental health outcomes immediately after initiation of care. Several studies published from 2015 to 2020 found that receipt of PBs or GAHs was associated with improved psychological functioning[21] and body satisfaction,[22] as well as decreased depression[23] and suicidality[24] within a 1-year period. Initiation of gender-affirming care may be associated with improved short-term mental health owing to validation of gender identity and clinical staff support. Conversely, prerequisite mental health evaluations, often perceived as pathologizing by TNB youths, and initiation of GAHs may present new stressors that may be associated with exacerbation of mental health symptoms early in care, such as experiences of discrimination associated with more frequent points of engagement in a largely cisnormative health care system (eg, interactions with nonaffirming pharmacists to obtain laboratory tests, syringes, and medications).[25] Given the high risk of suicidality among TNB adolescents, there is a pressing need to better characterize mental health trends for TNB youths early in gender-affirming care. This study aimed to investigate changes in mental health among TNB youths enrolled in an urban multidisciplinary gender clinic over the first 12 months of receiving care. We also sought to investigate whether initiation of PBs or GAHs was associated with depression, anxiety, and suicidality.

Methods

This cohort study received approval from the Seattle Children's Hospital Institutional Review Board. For youths younger than age 18 years, caregiver consent and youth assent was obtained. For youths ages 18 years and older, youth consent alone was obtained. The 12-month assessment was funded via a different mechanism than other survey time points; thus, participants were reconsented for the

12-month survey. The study follows the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guideline.

Study Procedures

We conducted a prospective observational cohort study of TNB youths seeking care at Seattle Children's Gender Clinic, an urban multidisciplinary gender clinic. After a referral is placed or a patient self-refers, new patients, their caregivers, or patients with their caregivers are scheduled for a 1-hour phone intake with a care navigator who is a licensed clinical social worker. Patients are then scheduled for an appointment at the clinic with a medical provider.

All patients who completed the phone intake and in-person appointment between August 2017 and June 2018 were recruited for this study. Participants completed baseline surveys within 24 hours of their first appointment and were invited to complete follow-up surveys at 3, 6, and 12 months. Youth surveys were used to assess most variables in this study; caregiver surveys were used to assess caregiver income. Participation and completion of study surveys had no bearing on prescribing of PBs or GAHs.

Measures

Mental Health Variables

We assessed 3 internalizing mental health outcomes: depression, generalized anxiety, and suicidality. Depression was assessed using the Patient Health Questionnaire 9-item scale (PHQ-9), and anxiety was assessed using the Generalized Anxiety Disorder 7-item scale (GAD-7). We dichotomized PHQ-9 and GAD-7 scores into measures of moderate or severe depression and anxiety (ie, scores $\geq$10).[26,27] Self-harm and suicidal thoughts were assessed using PHQ-9 question 9 (eTable 1 in the Supplement).

Pharmacological Interventions

Participants self-reported if they had ever received GAHs, including estrogen or testosterone, or PBs (eg, gonadotropin-releasing hormone analogues) on each survey. We conducted a medical record review to capture prescription of androgen blockers (eg, spironolactone) and medications for menstrual suppression or contraception (ie, medroxyprogesterone acetate or levonorgestrel-releasing intrauterine device) during the study period.

Covariates

We a priori considered potential confounders hypothesized to be associated with our exposures and outcomes of interest based on theory and prior research. Self-reported gender was ascertained on each survey using a 2-step question that asked participants about their current gender and their sex assigned at birth. If a participant's self-reported gender changed across surveys, we used the gender reported most frequently by a participant (3 individuals identified as transmasculine at baseline and as nonbinary on all follow-up surveys). We collected data on self-reported race and ethnicity (available response options were Arab or Middle Eastern; Asian; Black or African American; Latinx; Native American, American Indian, or Alaskan Native or Native Hawaiian; Pacific Islander; and White), age, caregiver income, and insurance type. Race and ethnicity were assessed as potential covariates owing to known barriers to accessing gender-affirming care among transgender youth who are members of minority racial and ethnic groups. For descriptive statistics, Asian and Pacific Islander groups were combined owing to small population numbers. We included a baseline variable reflecting receipt of ongoing mental health therapy other than for the purpose of a mental health assessment to receive a gender dysphoria diagnosis. We included a self-report variable reflecting whether youths felt their gender identity or expression was a source of tension with their parents or guardians. Substance use included any alcohol, marijuana, or other drug use in the past year. Resilience was measured by the Connor-Davidson Resilience Scale (CD-RISC) 10-item score developed to measure change in an individual's state resilience over time.[28] Resilience scores were

dichotomized into high (ie, ≥median) and low (ie, <median). Prior studies of young adults in the US reported mean CD-RISC scores ranging from 27.2 to 30.1.[29,30]

Statistical Analysis

We used generalized estimating equations to assess change in outcomes from baseline at each follow-up point (eFigure 1 in the Supplement). We used a logit link function to estimate adjusted odds ratio (aOR) for the association between variables and each mental health outcome. We initially estimated bivariate associations between potential confounders and mental health outcomes. Multivariable models included variables that were statistically significant in bivariate models. For all outcomes and models, statistical significance was defined as 95% CIs that did not contain 1.00. Reported *P* values are based on 2-sided Wald test statistics.

Model 1 examined temporal trends in mental health outcomes, with time (ie, baseline, 3, 6, and 12 months) modeled as a categorical variable. Model 2 estimated the association between receipt of PBs or GAHs and mental health outcomes adjusted for temporal trends and potential confounders. Receipt of PBs or GAHs was modeled as a composite binary time-varying exposure that compared mean outcomes between participants who had initiated PBs or GAHs and those who had not across all time points (eTable 2 in the Supplement). All models used an independent working correlation structure and robust standard errors to account for the time-varying exposure variable.

We performed several sensitivity analyses. Because our data were from an observational cohort, we first considered the degree to which they were sensitive to unmeasured confounding. To do this, we calculated the E-value for the association between PBs or GAHs and mental health outcomes in model 2. The E-value is defined as the minimum strength of association that a confounder would need to have with both exposure and outcome to completely explain away their association (eTable 4 in the Supplement).[31] Second, we performed sensitivity analyses on several subsets of youths. We separately examined the association of PBs and GAHs with outcomes of interest, although we a priori did not anticipate being powered to detect statistically significant outcomes owing to our small sample size and the relatively low proportion of youths who accessed PBs. We also conducted sensitivity analyses using the Patient Health Questionnaire 8-item scale (PHQ-8), in which the PHQ-9 question 9 regarding self-harm or suicidal thoughts was removed, given that we analyzed this item as a separate outcome. Lastly, we restricted our analysis to minor youths ages 13 to 17 years because they were subject to different laws and policies related to consent and prerequisite mental health assessments. We used R statistical software version 3.6.2 (R Project for Statistical Computing) to conduct all analyses. Data were analyzed from August 2020 through November 2021.

Results

A total of 169 youths were screened for eligibility during the study period, among whom 161 eligible youths were approached. Nine youths or caregivers declined participation, and 39 youths did not complete consent or assent or did not complete the baseline survey, leaving a sample of 113 youths (70.2% of approached youths). We excluded 9 youths aged younger than 13 years from the analysis because they received different depression and anxiety screeners. Our final sample included 104 youths ages 13 to 20 years (mean [SD] age, 15.8 [1.6] years). Of these individuals, 84 youths (80.8%), 84 youths, and 65 youths (62.5%) completed surveys at 3, 6, and 12 months, respectively.

Our cohort included 63 transmasculine youths (60.6%), 27 transfeminine youths (26.0%), 10 nonbinary or gender fluid youths (9.6%), and 4 youths who responded "I don't know" or did not respond to the gender identity question on all completed questionnaires (3.8%) (**Table 1**). There were 4 Asian or Pacific Islander youths (3.8%), 3 Black or African American youths (2.9%); 9 Latinx youths (8.7%); 6 Native American, American Indian, or Alaskan Native or Native Hawaiian youths (5.8%); 67 White youths (64.4%); and 9 youths who reported more than 1 race or ethnicity (8.7%). Race and ethnicity data were missing for 6 youth (5.8%).

Table 1. Participant Characteristics

Characteristic	Participants, No. (%) (N = 104)
Gender	
Male or transgender male	63 (60.6)
Female or transgender female	27 (26.0)
Nonbinary or gender fluid	10 (9.6)
Don't know or missing	4 (3.8)
Race and ethnicity[a]	
Asian or Pacific Islander	4 (3.8)
Black or African American	3 (2.9)
Latinx	9 (8.7)
Native American, American Indian, or Alaskan Native or Native Hawaiian	6 (5.8)
White	67 (64.4)
More than 1 race or ethnicity chosen	9 (8.7)
Missing	6 (5.8)
Age at baseline, y	
13	8 (7.7)
14	20 (19.2)
15	18 (17.3)
16	22 (21.2)
17	22 (21.2)
18	8 (7.7)
19	5 (4.8)
20	1 (1.0)
Pharmacological intervention	
PBs[b]	19 (18.2)
GAHs[b]	64 (61.5)
Androgen blockers[c]	17 (51.5)
Menstrual suppression or contraception[d]	25 (35.2)
Depression at baseline (using PHQ-9)	
0-4 (minimal)	14 (13.5)
5-9 (mild)	27 (26.0)
10-14 (moderate)	22 (21.2)
15-19 (moderately severe)	11 (10.6)
≥20 (severe)	26 (25.0)
Missing	4 (3.8)
Anxiety at baseline (using GAD-7)	
0-4 (minimal)	20 (19.2)
5-9 (mild)	28 (26.9)
10-14 (moderate)	20 (19.2)
≥15 (severe)	32 (30.8)
Missing	4 (3.8)
Self-harm or suicidal thoughts at baseline	45 (43.2)
Receiving mental health therapy	65 (62.5)
Tension with caregiver about gender identity or expression	36 (34.6)
Any substance use	34 (32.7)
Resilience at baseline (using CD-RISC 10)	
0-10	8 (7.7)
10-20	35 (33.7)
21-30	15 (14.4)
30-40	34 (32.7)
Missing	12 (11.5)

Abbreviations: CD-RISC 10, Connor-Davidson 10-item Resilience Scale; GAD-7, Generalized Anxiety Disorder 7-item scale; GAH, gender-affirming hormone; PB, puberty blocker; PHQ-9 Patient Health Questionnaire 9-item scale.

[a] Available response options for race and ethnicity were Arab or Middle Eastern; Asian or Pacific Islander; Black or African American; Latinx; Native American, American Indian, or Alaskan Native or Native Hawaiian; Pacific Islander; and White. Asian and Pacific Islander groups were combined owing to small population sizes.

[b] Self-reported receipt ever of PBs or GAHs at baseline or through the end of the study period.

[c] Includes androgen blockers received during the study period; percentage is among 33 youths assigned male sex at birth.

[d] Includes pharmacological interventions for menstrual suppression or contraception received during the study period; percentage is among 71 youths assigned female sex at birth.

At baseline, 7 youths had ever received PBs or GAHs (including 1 youth who received PBs, 4 youths who received GAHs, and 2 youths who received both PBs and GAHs). By the end of the study, 69 youths (66.3%) had received PBs or GAHs (including 50 youths who received GAHs only [48.1%], 5 youths who received PBs only [4.8%], and 14 youths who received PBs and GAHs [13.5%]), while 35 youths had not received either PBs or GAHs (33.7%) (eTable 3 in the Supplement). Among 33 participants assigned male sex at birth, 17 individuals (51.5%) had received androgen blockers, and among 71 participants assigned female sex at birth, 25 individuals (35.2%) had received menstrual suppression or contraceptives by the end of the study.

A large proportion of youths reported depressive and anxious symptoms at baseline. Specifically, 59 individuals (56.7%) had baseline PHQ-9 scores of 10 or more, suggesting moderate to severe depression; there were 22 participants (21.2%) scoring in the moderate range, 11 participants (10.6%) in the moderately severe range, and 26 participants (25.0%) in the severe range. Similarly, half of participants had a GAD-7 score suggestive of moderate to severe anxiety at baseline (52 individuals [50.0%]), including 20 participants (19.2%) scored in the moderate range, and 32 participants (30.8%) scored in the severe range. There were 45 youths (43.3%) who reported self-harm or suicidal thoughts in the prior 2 weeks. At baseline, 65 youths (62.5%) were receiving ongoing mental health therapy, 36 youths (34.6%) reported tension with their caregivers about their gender identity or expression, and 34 youths (32.7%) reported any substance use in the prior year. Lastly, we observed a wide range of resilience scores (median [range], 22.5 [1-38], with higher scores equaling more resiliency). There were no statistically significant differences in baseline characteristics by gender.

In bivariate models, substance use was associated with all mental health outcomes (**Table 2**). Youths who reported any substance use were 4-fold as likely to have PHQ-9 scores of moderate to severe depression (aOR, 4.38; 95% CI, 2.10-9.16) and 2-fold as likely to have GAD-7 scores of moderate to severe anxiety (aOR, 2.07; 95% CI, 1.04-4.11) or report thoughts of self-harm or suicide in the prior 2 weeks (aOR, 2.06; 95% CI, 1.08-3.93). High resilience scores (ie, ≥median), compared with low resilience scores (ie, <median), were associated with lower odds of moderate or severe anxiety (aOR, 0.51; 95% CI, 0.26-0.999).

There were no statistically significant temporal trends in the bivariate model or model 1 (Table 2 and **Table 3**). However, among all participants, odds of moderate to severe depression increased at 3 months of follow-up relative to baseline (aOR, 2.12; 95% CI, 0.98-4.60), which was not a significant increase, and returned to baseline levels at months 6 and 12 (**Figure**) prior to adjusting for receipt of PBs or GAHs.

We also examined the association between receipt of PBs or GAHs and mental health outcomes in bivariate and multivariable models (eFigure 2 in the Supplement). After adjusting for temporal trends and potential confounders (**Table 4**), we observed that youths who had initiated PBs or GAHs had 60% lower odds of moderate to severe depression (aOR, 0.40; 95% CI, 0.17-0.95) and 73% lower odds of self-harm or suicidal thoughts (aOR, 0.27; 95% CI, 0.11-0.65) compared with youths who had not yet initiated PBs or GAHs. There was no association between receipt of PBs or GAHs and moderate to severe anxiety (aOR, 1.01; 95% CI, 0.41-2.51). After adjusting for time-varying exposure of PBs or GAHs in model 2 (Table 4), we observed statistically significant increases in moderate to severe depression among youths who had not received PBs or GAHs by 3 months of follow-up (aOR, 3.22; 95% CI, 1.37-7.56). A similar trend was observed for self-harm or suicidal thoughts among youths who had not received PBs or GAHs by 6 months of follow-up (aOR, 2.76; 95% CI, 1.22-6.26). Lastly, we estimated E-values of 2.56 and 3.25 for the association between receiving PGs or GAHs and moderate to severe depression and suicidality, respectively (eTable 4 in the Supplement). Sensitivity analyses obtained comparable results and are presented in eTables 5 through 8 in the Supplement.

Table 2. Baseline Factors Associated With Mental Health Outcomes in Bivariate Models

Factor	Moderate or severe depression (PHQ-9 ≥10)[a]		Moderate or severe anxiety (GAD-7 ≥10)[b]		Any self-harm or suicidal thoughts[c]	
	aOR (95% CI)	*P* value	aOR (95% CI)	*P* value	aOR (95% CI)	*P* value
PBs or GAHs	0.67 (0.33-1.34)	.25	0.90 (0.49-1.66)	.74	0.47 (0.26-0.86)	.01
Time, mo						
0 (baseline)	1 [Reference]	NA	1 [Reference]	NA	1 [Reference]	NA
3	1.96 (0.99-3.90)	.05	1.46 (0.71-2.97)	.30	1.00 (0.49-2.06)	.99
6	1.01 (0.46-2.19)	.99	0.77 (0.39-1.52)	.45	1.22 (0.64-2.34)	.54
12	1.42 (0.55-3.66)	.47	0.95 (0.43-2.06)	.89	1.02 (0.41-2.52)	.97
Gender						
Male or transgender male	1 [Reference]	NA	1 [Reference]	NA	1 [Reference]	NA
Female or transgender female	1.07 (0.51-2.24)	.87	3.15 (0.92-10.8)	.07	1.20 (0.55-2.64)	.64
Nonbinary or gender fluid	2.40 (0.84-6.87)	.10	1.35 (0.67-2.72)	.40	2.17 (0.73-6.41)	.16
Race or ethnicity						
White	1 [Reference]	NA	1 [Reference]	NA	1 [Reference]	NA
Member of minority race or ethnic group[d]	1.08 (0.51-2.28)	.84	0.86 (0.45-1.66)	.66	0.92 (0.53-1.61)	.77
Age, y						
13-15	1 [Reference]	NA	1 [Reference]	NA	1 [Reference]	NA
16-17	1.79 (0.82-3.88)	.14	0.63 (0.29-1.39)	.25	0.86 (0.44-1.68)	.66
18-20	0.78 (0.24-2.51)	.68	1.17 (0.43-3.17)	.76	0.79 (0.36-1.74)	.55
Mental health and substance use at baseline						
Moderate or severe depression (PHQ-9 ≥10)	27.2 (13.4-55.4)	<.001	1.91 (0.85-4.29)	.12	1.06 (0.50-2.24)	.88
Moderate or severe anxiety (GAD-7 ≥10)	4.90 (2.27-10.6)	<.001	14.3 (7.31-27.9)	<.001	1.44 (0.76-2.72)	.27
Self-harm or suicidal thoughts	1.32 (0.61-2.85)	.48	1.49 (0.73-3.06)	.28	18.9 (10.4-34.1)	<.001
Receiving mental health therapy	1.46 (0.69-3.08)	.32	0.65 (0.31-1.38)	.26	0.75 (0.36-1.56)	.45
Tension with caregivers about gender identity or expression	1.93 (0.90-4.14)	.09	1.06 (0.52-2.15)	.87	1.55 (0.88-2.74)	.13
Any substance use	4.38 (2.10-9.16)	<.001	2.07 (1.04-4.11)	.04	2.06 (1.08-3.93)	.03
Resilience at baseline (CD-RISC 10 ≥22.5)[e]	0.85 (0.42-1.74)	.67	0.51 (0.26-1.00)	.05	0.74 (0.39-1.44)	.38

Abbreviations: aOR, adjusted odds ratio; CD-RISC 10, Connor-Davidson 10-item Resilience Scale; GAD-7, Generalized Anxiety Disorder 7-item scale; GAH, gender-affirming hormone; NA, not applicable; PB, puberty blocker; PHQ-9, Patient Health Questionnaire 9-item scale.

[a] Bivariate models are adjusted for baseline PHQ-9.

[b] Bivariate models are adjusted for baseline GAD-7.

[c] Bivariate models are adjusted for self-harm or suicidal thoughts reported at baseline.

[d] Owing to small sample sizes, this group includes Asian or Pacific Islander; Black or African American; Latinx; and Native American, American Indian, Alaskan Native, or Native Hawaiian youths and youths who reported more than 1 race or ethnicity.

[e] The median (range) CD-RISC score for the cohort was 22.5 (1-38).

Table 3. Temporal Trends in Mental Health Outcomes in Multivariable Model 1[a]

Factor	Moderate or severe depression (PHQ-9 ≥10)		Moderate or severe anxiety (GAD-7 ≥10)		Any self-harm or suicidal thoughts	
	aOR (95% CI)	*P* value	aOR (95% CI)	*P* value	aOR (95% CI)	*P* value
Time, mo						
0 (baseline)	1 [Reference]	NA	1 [Reference]	NA	1 [Reference]	NA
3	2.12 (0.98-4.60)	.06	1.50 (0.71-3.15)	.29	0.99 (0.48-2.06)	.98
6	0.99 (0.42-2.35)	.98	0.78 (0.38-1.59)	.49	1.22 (0.63-2.36)	.56
12	1.27 (0.44-3.67)	.66	0.96 (0.43-2.11)	.91	0.98 (0.39-2.48)	.97
Mental health and substance use at baseline						
Moderate or severe depression (PHQ-9 ≥10)	18.5 (8.44-40.5)	<.001	NA	NA	NA	NA
Moderate or severe anxiety (GAD-7 ≥10)	3.63 (1.83-7.19)	<.001	12.4 (6.25-24.7)	<.001	NA	NA
Self-harm or suicidal thoughts	NA	NA	NA	NA	19.9 (10.9-36.1)	<.001
Any substance use	3.35 (1.56-7.18)	.002	2.21 (1.09-4.49)	.03	2.07 (1.09-3.93)	.03
Resilience at Baseline (CD-RISC 10 ≥22.5)[b]	NA	NA	0.48 (0.24-0.95)	.04	NA	NA

Abbreviations: aOR, adjusted odds ratio; CD-RISC 10, Connor-Davidson 10-item Resilience Scale; GAD-7, Generalized Anxiety Disorder 7-item scale; NA, not applicable; PHQ-9, Patient Health Questionnaire 9-item scale.

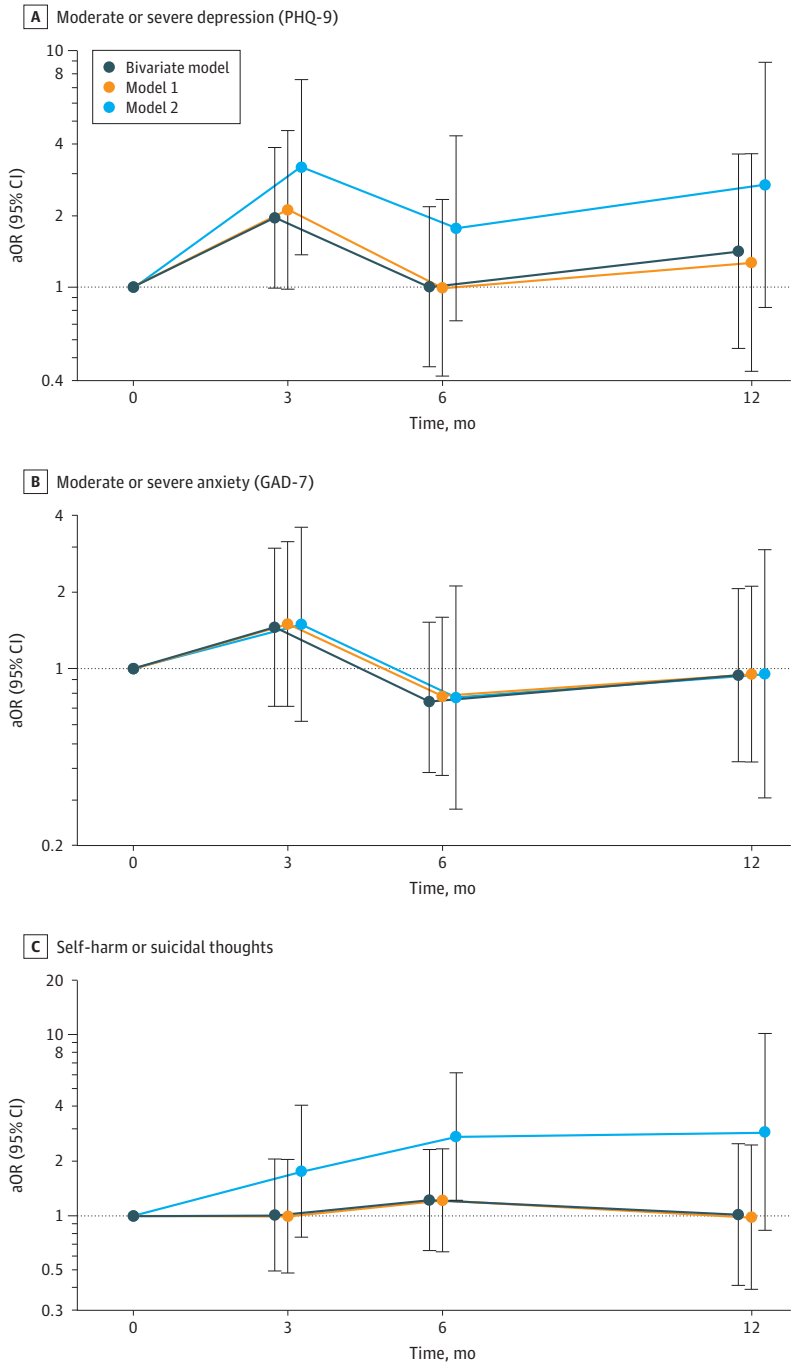
[a] Model 1 includes categorical temporal variables (ie, months 3, 6, and 12 relative to baseline) and covariates that were statistically significant in bivariate models (such that 95% CIs did not contain 1.00) (see Table 2). Covariates that were not significant in bivariate models are marked NA.

[b] The median (range) CD-RISC score for the cohort is 22.5 (1-38).

Discussion

In this prospective clinical cohort study of TNB youths, we observed high rates of moderate to severe depression and anxiety, as well as suicidal thoughts. Receipt of gender-affirming interventions, specifically PBs or GAHs, was associated with 60% lower odds of moderate to severe depressive symptoms and 73% lower odds of self-harm or suicidal thoughts during the first year of multidisciplinary gender care. Among youths who did not initiate PBs or GAHs, we observed that depressive symptoms and suicidality were 2-fold to 3-fold higher than baseline levels at 3 and 6 months of follow-up, respectively. Our study results suggest that risks of depression and suicidality

Figure. Temporal Trends in Mental Health Outcomes



Outcomes are estimated from bivariate and multivariable generalized estimating equation models. aOR, indicates adjusted odds ratio; GAD-7, Generalized Anxiety Disorder 7-item scale; PHQ-9, Patient Health Questionnaire 9-item scale; whiskers, 95% CIs.

may be mitigated with receipt of gender-affirming medications in the context of a multidisciplinary care clinic over the relatively short time frame of 1 year.

Our findings are consistent with those of prior studies finding that TNB adolescents are at increased risk of depression, anxiety, and suicidality[1,11,32] and studies finding long-term and short-term improvements in mental health outcomes among TNB individuals who receive gender-affirming medical interventions.[14,21-24,33,34] Surprisingly, we observed no association with anxiety scores. A recent cohort study of TNB youths in Dallas, Texas, found that total anxiety symptoms improved over a longer follow-up of 11 to 18 months; however, similar to our study, the authors did not observe statistically significant improvements in generalized anxiety.[22] This suggests that anxiety symptoms may take longer to improve after the initiation of gender-affirming care. In addition, Olson et al[35] found that prepubertal TNB children who socially transitioned did not have increased rates of depression symptoms but did have increased rates of anxiety symptoms compared with children who were cisgender. Although social transition and access to gender-affirming medical care do not always go hand in hand, it is noteworthy that access to gender-affirming medical care and supported social transition appear to be associated with decreased depression and suicidality more than anxiety symptoms.

Time trends were not significant in our study; however, it is important to note that we observed a transient and nonsignificant worsening in mental health outcomes in the first several months of care among all participants and that these outcomes subsequently returned to baseline by 12 months. This is consistent with findings from a 2020 study[36] in an academic medical center in the northwestern US that observed no change in TNB adolescents' GAD-7 or PHQ-9 scores from intake to first follow-up appointment, which occurred a mean of 4.7 months apart. Given that receipt of PBs or GAHs was associated with protection against depression and suicidality in our study, it could be that delays in receipt of medications is associated with initially exacerbated mental health symptoms that subsequently improve. It is also possible that mental health improvements associated with receiving these interventions may have a delayed onset, given the delay in physical changes after starting GAHs.

Few of our hypothesized confounders were associated with mental health outcomes in this sample, most notably receipt of ongoing mental health therapy and caregiver support; however, this

Table 4. Association Between GAHs or PBs and Mental Health Outcomes in Multivariable Model 2[a]

	Moderate or severe depression (PHQ-9 ≥10)		Moderate or severe anxiety (GAD-7≥10)		Any self-harm or suicidal thoughts	
Factor	aOR (95% CI)	*P* value	aOR (95% CI)	*P* value	aOR (95% CI)	*P* value
PBs or GAHs	0.40 (0.17-0.95)	.04	1.01 (0.41-2.51)	.98	0.27 (0.11-0.65)	.003
Time, mo						
0 (baseline)	1 [Reference]	NA	1 [Reference]	NA	1 [Reference]	NA
3 mo	3.22 (1.37-7.56)	.007	1.49 (0.62-3.59)	.37	1.77 (0.76-4.13)	.19
6 mo	1.77 (0.72-4.37)	.21	0.77 (0.28-2.11)	.61	2.76 (1.22-6.26)	.02
12 mo	2.71 (0.82-8.95)	.10	0.95 (0.31-2.93)	.93	2.93 (0.83-10.4)	.10
Mental health & substance use at baseline						
Moderate or severe depression (PHQ-9 ≥10)	19.4 (8.64-43.4)	<.001	NA	NA	NA	NA
Moderate or severe anxiety (GAD-7 ≥10)	3.82 (1.87-7.82)	<.001	12.4 (6.25-24.7)	<.001	NA	NA
Self-harm or suicidal thoughts	NA	NA	NA	NA	23.9 (12.9-44.5)	<.001
Any substance use	3.20 (1.49-6.84)	.003	2.21 (1.09-4.50)	.03	2.00 (1.08-3.73)	.03
Resilience at baseline (CD-RISC 10 ≥22.5)[b]	NA	NA	0.48 (0.24-0.95)	.04	NA	NA

Abbreviations: aOR, adjusted odds ratio; CD-RISC 10, Connor-Davidson 10-item Resilience Scale; GAD-7, Generalized Anxiety Disorder 7-item scale; GAH, gender-affirming hormone; NA, not applicable; PB, puberty blocker; PHQ-9, Patient Health Questionnaire 9-item scale.

[a] Model 2 includes a time-varying exposure variable measuring the receipt of PBs or GAHs adjusted for temporal trend (ie, categorical variable for months 3, 6, and 12 relative to baseline) and covariates that were statistically significant in the bivariate models (such that 95% CIs did not contain 1.00) (see Table 2). The unadjusted bivariate associations between PBs or GAHs and mental health outcomes are reported in Table 2. Covariates that were not significant in bivariate models are marked NA.

[b] The median (range) CD-RISC score for the cohort is 22.5 (1-38).

is not surprising given that these variables were colinear with baseline mental health, which we adjusted for in all models. Substance use was the only variable associated with all mental health outcomes. In addition, youths with high baseline resilience scores were half as likely to experience moderate to severe anxiety as those with low scores. This finding suggests that substance use and resilience may be additional modifiable factors that could be addressed through multidisciplinary gender-affirming care. We recommend more granular assessment of substance use and resilience to better understand support needs (for substance use) and effective support strategies (for resilience) for TNB youths in future research.

This study has a number of strengths. This is one of the first studies to quantify a short-term transient increase in depressive symptoms experienced by TNB youths after initiating gender-affirming care, a phenomenon observed clinically by some of the authors and described in qualitative research.[37] Although we are unable to make causal statements owing to the observational design of the study, the strength of associations between gender-affirming medications and depression and suicidality, with large aOR values, and sensitivity analyses that suggest that these findings are robust to moderate levels of unmeasured confounding. Specifically, E-values calculated for this study suggest that the observed associations could be explained away only by an unmeasured confounder that was associated with both PBs and GAHs and the outcomes of interest by a risk ratio of 2-fold to 3-fold each, above and beyond the measured confounders, but that weaker confounding could not do so.[31]

Limitations

Our findings should be interpreted in light of the following limitations. This was a clinical sample of TNB youths, and there was likely selection bias toward youths with supportive caregivers who had resources to access a gender-affirming care clinic. Family support and access to care are associated with protection against poor mental health outcomes, and thus actual rates of depression, anxiety, and suicidality in nonclinical samples of TNB youths may differ. Youths who are unable to access gender-affirming care owing to a lack of family support or resources require particular emphasis in future research and advocacy. Our sample also primarily included White and transmasculine youths, limiting the generalizability of our findings. In addition, the need to reapproach participants for consent and assent for the 12-month survey likely contributed to attrition at this time point. There may also be residual confounding because we were unable to include a variable reflecting receipt of psychotropic medications that could be associated with depression, anxiety, and self-harm and suicidal thought outcomes. Additionally, we used symptom-based measures of depression, anxiety, and suicidality; further studies should include diagnostic evaluations by mental health practitioners to track depression, anxiety, gender dysphoria, suicidal ideation, and suicide attempts during gender care.[2]

Conclusions

Our study provides quantitative evidence that access to PBs or GAHs in a multidisciplinary gender-affirming setting was associated with mental health improvements among TNB youths over a relatively short time frame of 1 year. The associations with the highest aORs were with decreased suicidality, which is important given the mental health disparities experienced by this population, particularly the high levels of self-harm and suicide. Our findings have important policy implications, suggesting that the recent wave of legislation restricting access to gender-affirming care[19] may have significant negative outcomes in the well-being of TNB youths.[20] Beyond the need to address antitransgender legislation, there is an additional need for medical systems and insurance providers to decrease barriers and expand access to gender-affirming care.

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SUPPLEMENT.

Supplemental Online Content

Tordoff DM, Wanta JW, Collin A, Stepney C, Inwards-Breland DJ, Ahrens K. Mental health outcomes in transgender and nonbinary youths receiving gender-affirming care. *JAMA Netw Open*. 2022;5(2):e220978. doi:10.1001/jamanetworkopen.2022.0978

This supplemental material has been provided by the authors to give readers additional information about their work.

I. Measures and Survey Instruments

Below we include the exact survey instruments used to ascertain gender, exposure variables, mental health outcome variables, and covariates from youth on the baseline, 3, 6, and 12 month follow-up surveys.

eTable 1. Survey Instruments	
Demographics	
Two-step Gender Identity Question	1. What is your gender identity? o Transgender male (female to male) o Transgender female (male to female) o Male o Female o Non-binary or gender fluid o Other: [open text box] o I don't know 2. What sex were you assigned at birth? o Male o Female
Exposure Measures	
Puberty Blockers	Puberty blockers are a medication that put a young person's puberty development on pause. Have you taken puberty blockers? • Yes • No • I don't know
Gender-affirming Hormones	Have you taken cross-sex hormones (testosterone or estrogen)? • Yes • No • I don't know
Mental Health Outcome Measures	
Generalized Anxiety Disorder 7-item scale (GAD-7)	Over the last 2 weeks, how often have you been bothered by the following problems? 1. Feeling nervous, anxious, or on edge 2. Not being able to stop or control worrying 3. Worrying to much about different things 4. Trouble relaxing 5. Being so restless that it's hard to sit still 6. Becoming easily annoyed or irritable 7. Feeling afraid as if something awful might happen With response options: not at all, several days, over half of days, nearly everyone day, and I don't know. 8. If you checked off any problems, how difficult have these made it for you to do your work, take care of things at home, or get along with people? o Not difficult at all o Somewhat difficult o Very difficult o Extremely difficult
Patient Health Questionnaire 9-item scale (PHQ-9) for Depression	Over the past 2 weeks, how often have you been bothered by any of the following problems? 1. Little interest or pleasure in doing things 2. Feeling down, depressed or hopeless 3. Trouble falling asleep, staying asleep, or sleeping too much 4. Feeling tired or having little energy 5. Poor appetite or overeating 6. Feeling bad about yourself – or that you're a failure or have let yourself or your family down

	7. Trouble concentrating on things, such as reading the newspaper or watching television 8. Moving or speaking so slowly that other people could have noticed. Or, the opposite – being so fidgety or restless that you have been moving around a lot more than usual. 9. Thoughts that you would be better off dead or of hurting yourself in some way With response options: not at all, several days, over half of days, nearly everyone day, and I don't know. 10. If you checked off any problems, how difficult have those problems made it for you to do your work, take care of things at home, or get along with other people? o Not difficult at all o Somewhat difficult o Very difficult o Extremely difficult
Self-harm or Suicidal Thoughts	"Over the past 2 weeks, how often have you been bothered by thoughts that you would be better off dead or of hurting yourself in some way?" (Item-9 from the PHQ-9)
Covariates	
Mental Health Therapy	A **readiness assessment** is when the patient and their family meet with a mental health professional before starting any medical treatment. Other than having an assessment, are you receiving ongoing mental health therapy? • Yes • No
Tension with Caregivers	There is tension around my gender identity or gender expression… (check all that apply) • …between my parents or guardians • …between me and one or more of my parents or guardians • …between me and my extended family • Other: [open text box] • None of the above
Substance Use (CRAFFT Screening Tool[1] Part A)	During the past 12 months, did you: 1. Drink any alcohol (more than a few sips)? (Do not count sips of alcohol taken during family or religious events) 2. Smoke any marijuana or hashish? 3. Use anything else to get high? ("Anything else" includes illegal drugs, over the counter and prescription drugs, and things that you sniff or "huff") With response options: yes, no, and I don't know
Connor-Davidson 10-item Resilience Scale (CD-RISC 10)	1. I am able to adapt when changes occur. 2. I can deal with whatever comes my way. 3. I can see the humorous side of things when I am faced with problems. 4. Having to cope with stress can make me stronger. 5. I tend to bounce back after illness, injury, or other hardships. 6. I believe I can achieve my goals, even if there are obstacles 7. Under pressure, I can focused and think clearly 8. I am not easily discouraged by failure 9. I think of myself as a strong person when dealing with life's challenges and difficulties. 10. I am able to handle unpleasant or painful feelings like sadness, fear and anger. With response options: not true at all, rarely true, sometimes true, often true, true nearly all the time, and I don't know.

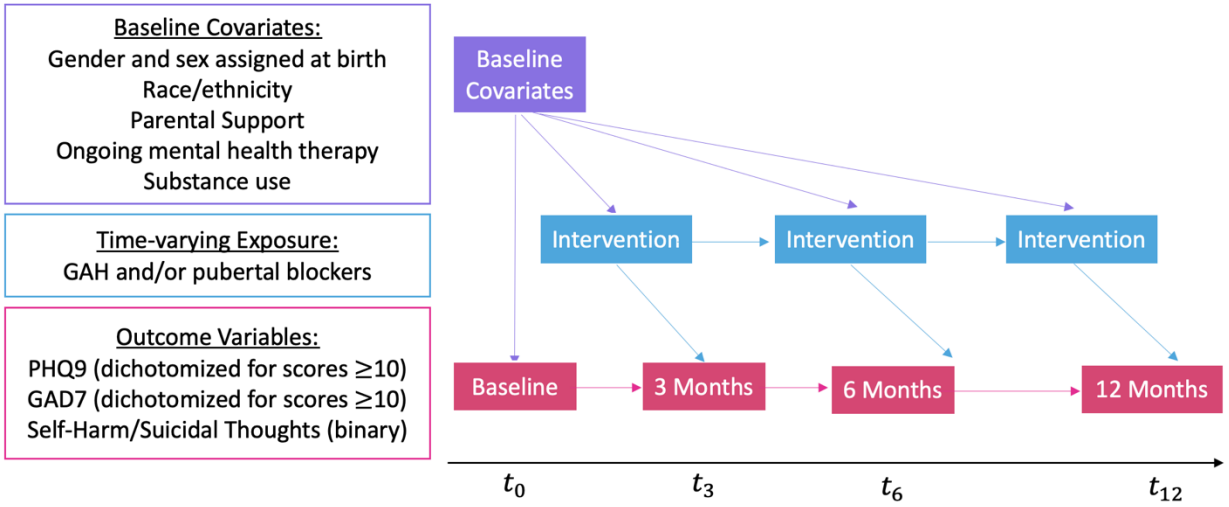
II. Generalized Estimating Equation (GEE) Model Specification

GEE is a marginal model and models population averages (compared to mixed-effect models which are conditional and can model subject-specific effects). We specified the following GEE models to estimate the average change in the outcome variable (Y_i) at each time point (T) relative to baseline (Y_0) (Model 1) and the association between the exposure (E_i) and outcome (Model 2) adjusted for k-many baseline covariates (X_{k0}).

Model 1: $logit(Y_i) = \beta_0 + \beta_2 T_i + \beta_3 Y_0 + \sum \alpha_k X_{k0}$
Model 2: $logit(Y_i) = \beta_0 + \beta_1 E_i + \beta_2 T_i + \beta_3 Y_0 + \sum \alpha_k X_{k0}$

We allow the exposure (receipt of PB/GAH) to vary over time, where i indicates the month, and thus use an independent working correlation structure. This model assumes there are no time-varying covariates associated with the exposures and that the exposure is exogenous. A visual schematic of this model is included below in eFigure 1, the counts and percentages of participants in the exposure group at each timepoint is included in eTable 2, and the prevalence of the outcome variables over time stratified by exposure group is included in eTable 3.

eFigure 1. Schematic of Generalized Estimating Equation Model



eTable 2. Prevalence of Exposure Over Time

	Baseline	3 months	6 months	12 months
N	104	84	84	65
Exposure (no.,%)				
PB/GAH	7 (7%)	44 (52%)	59 (71%)	57 (89%)
None	97(93%)	41 (48%)	24 (29%)	7 (11%)

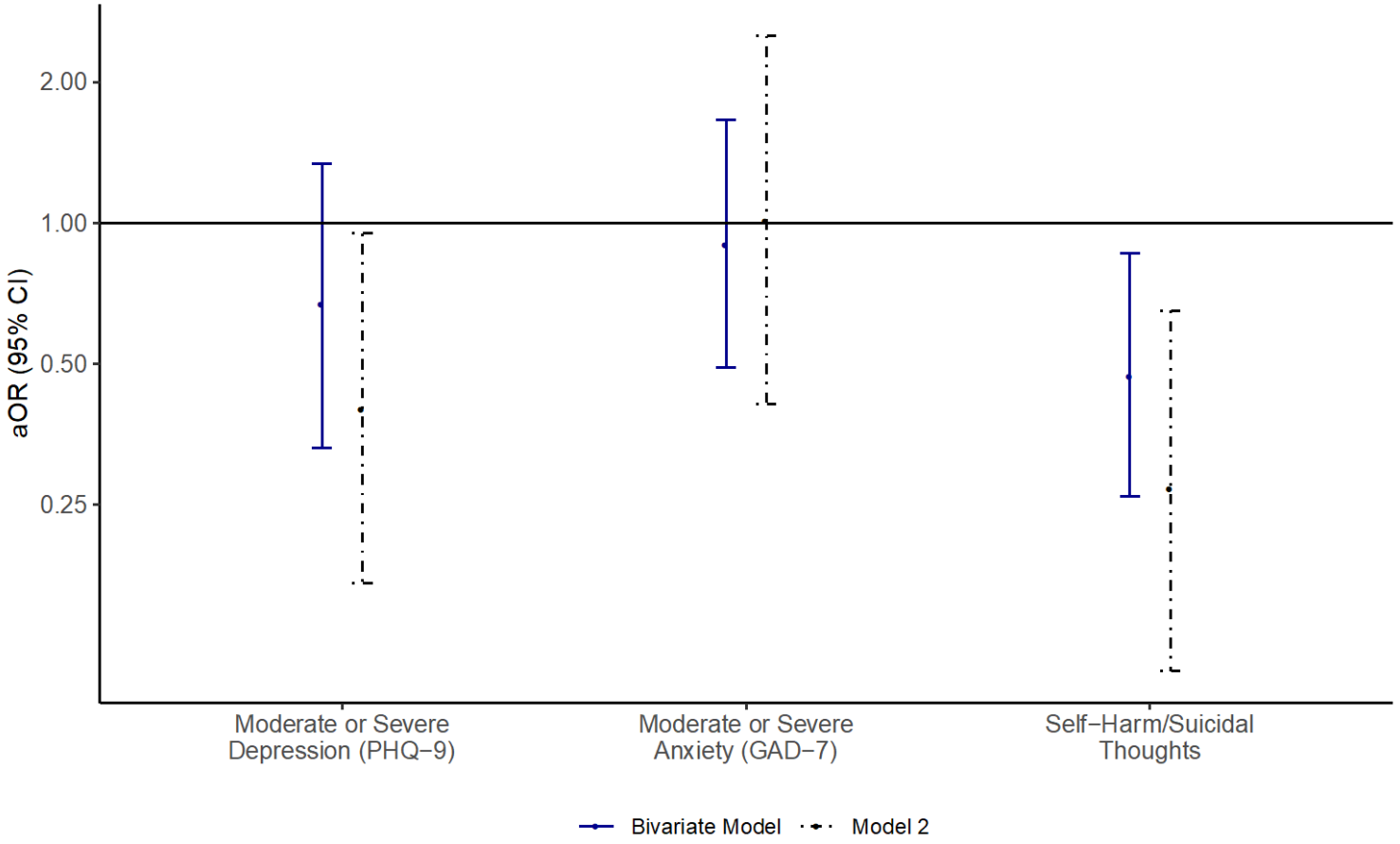
eTable 3. Prevalence of Outcomes Over Time by Exposure Group

Time Point:	**Baseline**		**3 Months**		**6 Months**		**12 Month**	
Exposure:	*PB/GAH*	*None*	*PB/GAH*	*None*	*PB/GAH*	*None*	*PB/GAH*	*None*
N	7	92	44	38	59	24	57	6
Outcomes (no.,%)								
Moderate to Severe Depression	4 (57%)	54 (59%)	24 (55%)	29 (76%)	33 (56%)	13 (54%)	32 (56%)	5 (83%)
Moderate to Severe Anxiety	4 (57%)	47 (51%)	23 (52%)	23 (61%)	28 (48%)	10 (42%)	29 (51%)	4 (67%)
Self-harm or Suicidal Thoughts	3 (43%)	41 (45%)	13 (30%)	21 (55%)	25 (42%)	11 (46%)	21 (37%)	5 (83%)

There were a small number of youth who did not complete the PHQ-9 or GAD-7 on each survey: 4 youth at baseline, 3 youth at 3 months, and 1 youth at 12 months.

eFigure 2. Association Between Receipt of Gender-Affirming Hormones or Puberty Blockers and Mental Health Outcomes

Associations with moderate or severe depression, anxiety, and self-harm/suicidal thoughts are estimated from bivariate and multivariable GEE models



III. E-Values

A. Calculation

The E-value is a relatively new measure related to the evidence for causality that can be used to assess the robustness of observational study results to unmeasured confounding.[2] It is defined as the "minimum strength of association, on the risk ratio scale, that an unmeasured confounder would need to have with both the treatment and outcome to explain away a treatment– outcome association."[3] Based on the work of VanderWeele et al.[3] the following equations can be used the estimate the E-value for an odds ratio (OR) when the outcome is common (i.e., 15% at the end of follow-up) and when the estimated OR is less than one:

$$\text{Letting } RR^* = 1/\sqrt{OR}$$
$$\text{E-value} = RR^* + \sqrt{RR^* \times (RR^* - 1)}$$

Applying these equations, we obtain the following E-values:

eTable 4. E-Value Calculation for Association Between Puberty Blockers or Gender-Affirming Hormones and Mental Health Outcomes

Model	Outcome	Effect Estimate (OR [95%CI])	E-value
Model 2	Moderate to Severe Depression	0.40 (0.17, 0.95)	2.56 (1.19, 4.28)
Model 2	Suicidality	0.27 (0.11, 0.65)	3.25 (1.79, 5.48)

B. Interpretation

We can interpret these findings to suggest that (1) the observed OR of 0.40 could be explained away by an unmeasured confounder that was associated with both the PB/GAH and the moderate to severe depression by a risk ratio of 2.56-fold each, above and beyond the measured confounders, but weaker confounding could not do so, and (2) the observed OR of 0.27 could be explained away by an unmeasured confounder that was associated with both the PB/GAH and the moderate to severe depression by a risk ratio of 3.25-fold each, above and beyond the measured confounders, but weaker confounding could not do so. This is evidence that our findings are robust to a moderate to high degree of unmeasured confounding, since "In the context of biomedical and social sciences research, effect sizes ≥2 or 3-fold occasionally occur but are not particularly common; a variable that affects both treatment *and* outcome each by 2- or 3-fold would likely be even less common."[3]

In observational studies, unmeasured confounding and lack of exchangeability pose the greatest barrier to drawing causal inferences from observational cohort studies. In addition, there are notable pitfalls in overly relying on p-values for the interpreting the significance of results. For instance, studies with a large sample size often have the statistical power to precisely estimate associations and obtain very small p-values; the p-value may be made arbitrarily small by increasing the sample size, even for small effect sizes. In contrast, the E-value depends on the magnitude of the association; it cannot be made arbitrarily large simply by increasing the sample size. Thus, bias adjustments, such as calculating the E-value, assess robustness of study findings to unmeasured confounding, thereby offering an important supplement to p-values.

IV. Sensitivity Analyses

A. Disaggregated Exposure Variable

We separately examined the association of PB and GAH with the outcomes of interest, although we *a priori* did not anticipate being powered to detect statistically significant associations due to our small sample size and the relatively low proportion of youth who accessed PB (n=19).

eTable 5. Examining Association Between Puberty Blockers or Gender-Affirming Hormones and Mental Health Outcomes Separately

A. Bivariate Models

	Moderate or Severe Depression (PHQ-9 ≥ 10)			**Moderate or Severe Anxiety (GAD-7 ≥ 10)**			**Any Self-harm/Suicidal Thoughts**	
	aOR (95% CI)	P		aOR (95% CI)	P		aOR (95% CI)	P
Gender-affirming hormones	0.75 (0.36, 1.59)	0.459		0.93 (0.49, 1.78)	0.823		0.64 (0.35, 1.14)	0.131
Puberty blockers	0.52 (0.17, 1.59)	0.250		0.76 (0.29, 1.98)	0.568		0.47 (0.13, 1.69)	0.249

B. Multivariable Models (i.e. Model 2)

	Moderate or Severe Depression (PHQ-9 ≥ 10)			**Moderate or Severe Anxiety (GAD-7 ≥ 10)**			**Any Self-harm/Suicidal Thoughts**	
	aOR (95% CI)	P		aOR (95% CI)	P		aOR (95% CI)	P
GAH	0.40 (0.16, 1.01)	0.053		1.02 (0.44, 2.37)	0.963		0.43 (0.18, 1.01)	0.052
Puberty blockers	0.52 (0.17, 1.58)	0.248		0.72 (0.26, 2.05)	0.543		0.44 (0.11, 1.74)	0.242
Time (month)								
Baseline	ref			ref			ref	
3 months	**3.34 (1.47, 7.62)**	**0.004**		1.55 (0.65, 3.67)	0.324		1.52 (0.65, 3.57)	0.333
6 months	1.89 (0.77, 4.64)	0.166		0.81 (0.31, 2.12)	0.665		2.30 (1.00, 5.27)	0.049
12 months	2.93 (0.93, 9.23)	0.067		0.99 (0.35, 2.78)	0.983		2.25 (0.64, 7.99)	0.208
Mental Health & Substance Use at Baseline								
Moderate or Severe Depression (PHQ-9 ≥ 10)	**18.2 (8.26, 39.9)**	**<0.001**		NA			NA	
Moderate or Severe Anxiety (GAD-7 ≥ 10)	**4.17 (1.97, 8.84)**	**<0.001**		**12.3 (6.16, 24.5)**	**<0.001**		NA	
Self-Harm/Suicidal Thoughts	NA			NA			**22.6 (11.6, 44.3)**	**<0.001**
Any substance use	**3.21 (1.47, 7.01)**	**0.003**		**2.19 (1.08, 4.45)**	**0.031**		1.95 (0.99, 3.83)	0.053
Resilience at Baseline (CD-RISC ≥ 22.5)[1]	NA			**0.47 (0.23, 0.94)**	**0.033**		NA	

B. Restricting Analysis to Youth Age 13-17 Years Old

We restricted our analysis to minor youth age 13-17 (n=90), since they were subject to different laws related to consent and pre-requisite mental health assessments.

eTable 6. Bivariate Model Restricted to Youths Ages 13 to 17 Years

	Moderate or Severe Depression (PHQ-9 ≥ 10)[1]		**Moderate or Severe Anxiety (GAD-7 ≥ 10)[2]**		**Any Self-harm/Suicidal Thoughts[3]**	
	aOR (95% CI)	P	aOR (95% CI)	P	aOR (95% CI)	P
GAH/Puberty blockers	0.75 (0.35, 1.63)	0.473	0.79 (0.41, 1.53)	0.486	**0.47 (0.24, 0.94)**	**0.033**
Time						
Baseline	ref		ref		ref	
3 months	**2.55 (1.26, 5.17)**	**0.010**	1.19 (0.54, 2.62)	0.659	1.22 (0.56, 2.68)	0.615
6 months	1.15 (0.48, 2.75)	0.758	0.82 (0.39, 1.71)	0.596	1.29 (0.61, 2.73)	0.499
12 months	1.37 (0.48, 3.94)	0.557	0.84 (0.37, 1.90)	0.680	0.81 (0.33, 2.00)	0.649
Gender						
Transgender male or male	ref		ref		ref	
Transgender female or female	1.11 (0.48, 2.55)	0.803	1.30 (0.60, 2.82)	0.499	1.37 (0.54, 3.46)	0.511
Non-binary or genderfluid	**3.12 (1.01, 9.58)**	**0.047**	2.29 (0.55, 9.56)	0.256	**3.86 (1.11, 13.4)**	**0.033**
Race and ethnicity						
White	ref		ref		ref	
Black, Indigenous, and Persons of Color	1.19 (0.51, 2.75)	0.691	0.77 (0.38, 1.56)	0.468	0.82 (0.44, 1.54)	0.541
Age						
13-15	ref		ref		ref	
16-17	1.19 (0.51, 2.75)	0.691	0.63 (0.29, 1.39)	0.252	0.86 (0.44, 1.68)	0.657
Mental Health & Substance Use at Baseline						
Moderate or Severe Depression (PHQ-9 ≥ 10)	**31.0 (14.1, 68.3)**	**<0.001**	2.18 (0.96, 4.94)	0.063	1.23 (0.57, 2.67)	0.593
Moderate or Severe Anxiety (GAD-7 ≥ 10)	**4.97 (2.17, 11.36)**	**<0.001**	**14.0 (6.76, 29.1)**	**<0.001**	1.57 (0.80, 3.1)	0.193
Self-Harm/Suicidal Thoughts	1.26 (0.57, 2.78)	0.572	1.61 (0.76, 3.40)	0.215	**18.7 (9.72, 35.9)**	**<0.001**
Receiving mental health therapy	1.70 (0.72, 4.05)	0.228	0.72 (0.32, 1.59)	0.411	0.70 (0.30, 1.63)	0.412
Any substance use	**4.51 (1.94, 10.49)**	**<0.001**	1.83 (0.86, 3.88)	0.114	**2.47 (1.21, 5.03)**	**0.013**
Tension with Caregivers	**2.59 (1.08, 6.22)**	**0.032**	1.33 (0.62, 2.86)	0.469	1.53 (0.81, 2.89)	0.193
Resilience at Baseline (CD-RISC ≥ 22.5)[4]	0.88 (0.40, 1.89)	0.734	**0.42 (0.21, 0.87)**	**0.019**	0.70 (0.34, 1.43)	0.329

eTable 7. Multivariable Model Restricted to 90 Youths Ages 13 to 17 Years

A. Model 1 measuring temporal trends in mental health outcomes

	Moderate or Severe Depression (PHQ-9 ≥ 10)		Moderate or Severe Anxiety (GAD-7 ≥ 10)		Any Self-harm/Suicidal Thoughts	
	aOR (95% CI)	P	aOR (95% CI)	P	aOR (95% CI)	P
Time (month)						
Baseline	ref		ref		ref	
3 months	**2.83 (1.25, 6.44)**	**0.013**	1.22 (0.54, 2.78)	0.634	1.19 (0.53, 2.66)	0.672
6 months	1.12 (0.42, 3.00)	0.822	0.83 (0.38, 1.80)	0.638	1.27 (0.59, 2.75)	0.538
12 months	1.19 (0.37, 3.87)	0.767	0.85 (0.37, 1.93)	0.692	0.76 (0.30, 1.93)	0.558
Mental Health & Substance Use at Baseline						
Moderate or Severe Depression (PHQ-9 ≥ 10)	**24.1 (9.96, 58.2)**	**<0.001**	NA		NA	
Moderate or Severe Anxiety (GAD-7 ≥ 10)	**3.80 (1.82, 7.96)**	**<0.001**	**12.7 (6.11, 26.3)**	**<0.001**	NA	
Self-Harm/Suicidal Thoughts	NA		NA		**20.9 (10.7, 40.9)**	**<0.001**
Any substance use	**3.41 (1.41, 8.25)**	**0.006**	2.01 (0.93, 4.37)	0.077	**2.50 (1.23, 5.10)**	**0.012**
Resilience at Baseline (CD-RISC ≥ 22.5)[1]	NA		**0.40 (0.19, 0.83)**	**0.015**	NA	

B. Model 2 measuring the association between GAH/puberty blockers and mental health outcomes

	Moderate or Severe Depression (PHQ-9 ≥ 10)		Moderate or Severe Anxiety (GAD-7 ≥ 10)		Any Self-harm/Suicidal Thoughts	
	aOR (95% CI)	P	aOR (95% CI)	P	aOR (95% CI)	P
GAH/Puberty blockers	0.51 (0.19, 1.37)	0.182	0.84 (0.29, 2.40)	0.745	**0.32 (0.12, 0.88)**	**0.027**
Time (month)						
Baseline	ref		ref		ref	
3 months	**3.79 (1.47, 9.78)**	**0.006**	1.32 (0.49, 3.53)	0.581	1.93 (0.76, 4.88)	0.165
6 months	1.73 (0.59, 5.06)	0.315	0.93 (0.30, 2.91)	0.905	**2.58 (1.02, 6.57)**	**0.046**
12 months	2.14 (0.53, 8.73)	0.287	0.98 (0.27, 3.58)	0.979	1.99 (0.52, 7.66)	0.317
Mental Health & Substance Use at Baseline						
Moderate or Severe Depression (PHQ-9 ≥ 10)	**24.3 (9.92, 59.3)**	**<0.001**	NA		NA	
Moderate or Severe Anxiety (GAD-7 ≥ 10)	**4.01 (1.85, 8.69)**	**<0.001**	**12.7 (6.11, 26.5)**	**<0.001**	NA	
Self-Harm/Suicidal Thoughts	NA		NA		**24.3 (12.2, 48.2)**	**<0.001**
Any substance use	**3.18 (1.34, 7.55)**	**0.009**	1.98 (0.91, 4.32)	0.085	**2.33 (1.15, 4.73)**	**0.019**
Resilience at Baseline (CD-RISC ≥ 22.5)[1]	NA		**0.40 (0.19, 0.83)**	**0.015**	NA	

C. Dichotomous Outcome for Depression Based on the PHQ-8

We conducted sensitivity analyses using the PHQ-8 score,[4] which is equivalent to the PHQ-9 with item-9 regarding self-harm/suicidal thoughts removed. We conducted these analyses in order to determine whether item-9 was driving any associations between moderate to severe depression since we analyzed self-harm/suicidal thoughts as a separate outcome. For these analyses we define moderate or severe depression as a PHQ-8 score ≥10.

eTable 8. Sensitivity Analyses Using Patient Health Questionnaire 8-item Scale Score of 10 or Greater for Moderate to Severe Depression

	Model 1			**Model 2**	
	aOR (95% CI)	P		aOR (95% CI)	P
Puberty blockers or Gender-affirming hormones	**0**	**0.039**		**0.38 (0.15, 0.98)**	**0.044**
Time (month)					
Baseline	ref			ref	
3 months	**2.56 (1.07, 6.09)**	**0.034**		**3.95 (1.52, 10.3)**	**0.005**
6 months	0.63 (0.27, 1.44)	0.269		1.16 (0.45, 2.99)	0.753
12 months	0.99 (0.31, 3.16)	0.990		2.23 (0.65, 7.68)	0.205
Mental Health & Substance Use at Baseline					
Moderate or Severe Depression (PHQ-9 ≥ 10)	**22.5 (8.93, 56.6)**	**<0.001**		**23.3 (9.07, 59.7)**	**<0.001**
Moderate or Severe Anxiety (GAD-7 ≥ 10)	**4.31 (2.15, 8.67)**	**<0.001**		**4.57 (2.22, 9.4)**	**<0.001**
Self-Harm/Suicidal Thoughts	NA			NA	
Any substance use	**4.3 (1.79, 10.29)**	**0.001**		**4.08 (1.7, 9.81)**	**0.002**
Resilience at Baseline (CD-RISC ≥ 22.5)[1]	NA			NA	

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Well-Being and Suicidality Among Transgender Youth After Gender-Affirming Hormones

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Objective: This study is a longitudinal evaluation of the effectiveness of gender-affirming hormones for improving psychological well-being and decreasing suicidality among transgender youth referred to a transgender health specialty clinic at a large Midwest children's hospital. ***Method:*** Forty-seven youth (13.73–19.04 years; M = 16.59, SD = 1.19) who received gender-affirming hormones were assessed at least 2 times: before the start of treatment and at least 3 months after treatment. ***Results:*** After gender-affirming hormones, a significant increase in levels of general well-being and a significant decrease in levels of suicidality were observed. ***Conclusion:*** These findings suggest that gender-affirming hormones are a valuable medical intervention with promising psychosocial outcomes for transgender youth.

Implications for Impact Statement
This study suggests that gender-affirming hormones are a helpful medical intervention for transgender youth. Gender-affirming hormones were found to be associated with decreases in suicidality and improvements in general well-being.

Keywords: transgender, gender-affirming hormones, suicidality, well-being, youth

Over the past few decades, the number of young people presenting to specialty clinics for gender dysphoria (GD) treatment has increased worldwide (Chen, Fuqua, & Eugster, 2016; Olson-Kennedy et al., 2016). GD refers to the distress a person may experience when an incongruence exists between one's sex assigned at birth and one's experienced gender identity. Transgender people have varying degrees of GD; some have none at all. For peripubertal children and adolescents with GD, clinical practice guidelines recommend the administration of puberty suppression medication (gonadotropin-releasing hormone agonists [GnRHa]). Later, gender-affirming hormones (GAH; estrogen or testosterone) are administered to help alleviate the distress associated with GD (Coleman et al., 2012; Hembree et al., 2017).

Overall, the evidence suggests that youth who received GAH and gender confirmation surgery (GCS) for gender dysphoria experience a corresponding alleviation of the dysphoria and overall improved well-being and mental health outcomes (Hembree et al., 2017; Olson-Kennedy, Warus, Okonta, Belzer, & Clark, 2018). However, further research is needed to develop and refine best practices for serving transgender youth and alleviate GD and associated co-occurring conditions (e.g., anxiety, depression,

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Results of this study were presented at the 2018 World Professional Association for Transgender Health Biennial Symposium in Buenos Aires, Argentina.

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suicidality). De Vries et al. (2014) examined psychological outcomes in youth while on GnRHa and then again at least 1 year after GCS. The authors found that psychological functioning had improved over time, gender dysphoria resolved, body image difficulties remitted, and quality of life, life satisfaction, and subjective happiness were comparable with those of same-age peers. Among adults, receiving gender-affirming medical interventions is associated with lower body-related uneasiness (Davis & Meier, 2014; Fisher et al., 2014), improved psychological functioning (Keo-Meier et al., 2015), reduction in anxiety, depression, and anger (Davis et al., 2014), and better quality of life (Ainsworth & Spiegel, 2010).

Emerging evidence suggests that transgender youth might exhibit differential responses to GAH, directly and indirectly, across several domains depending upon sex assigned at birth. Some research suggests there may be differences in emotionality in response to testosterone versus estrogen. One study of transgender adults demonstrated that testosterone treatment was associated with increased mood stability, whereas estrogen treatment was associated with increased mood lability (Slabbekoorn, Van Goozen, Gooren, & Cohen-Kettenis, 2001). Mood instability, in turn, is associated with suicidal ideation (Bowen, Balbuena, Peters, Leuschen-Mewis, & Baetz, 2015) as well as decreased perceptions of well-being (Houben, Van Den Noortgate, & Kuppens, 2015). There may also be sex differences related to the social aspect of medical transition. For instance, compared with transgender girls/women, it may be easier for transgender boys/men to integrate socially because of clear vocal changes (i.e., voice deepening) and facial hair growth, which are traditionally seen as indicators of one's gender. Conversely, the physical changes of a testosterone-mediated puberty may make it harder for transgender girls and women who start estrogen after their endogenous puberty to pass in their affirmed gender, putting them at risk for increased minority stress, which may result in increased suicidal ideation (Testa et al., 2017). In one study, de Vries et al. (2014) compared functioning prior to starting GAH and after GCS and found that transgender men reported greater reduction in anger, anxiety, and externalizing symptoms (e.g., rule-breaking or aggressive behavior) than transgender women, who had demonstrated either stability or a slight increase in these symptoms.

Research examining mental health outcomes among transgender youth is a priority (Chew, Anderson, Williams, May, & Pang, 2018; Olson-Kennedy et al., 2016). At this time, there is limited research supporting the use of GAH in transgender adolescents (Hembree et al., 2017). Of the studies that do exist, the majority of outcome research has been from European clinical samples, and these studies did not utilize measures of suicidality and well-being. This is a gap because there has been a call to focus on positive aspects of functioning (such as well-being), and low levels of perceived well-being has been linked to suicidality (Lopez et al., 2006; Smith et al., 2018).

The primary aim of this study was to examine suicidality and general well-being following administration of GAH. Specifically, we hypothesized that (a) suicidality will decrease between pretest and final assessment with the administration of GAH and (b) general well-being will improve between pretest and final assessment with the administration of GAH. A secondary aim of the study was to examine whether the effects of GAH on suicidality and well-being differed based on birth-assigned sex. Specifically, we hypothesized that (c) individuals assigned female at birth will experience greater increases in general well-being and larger decreases in suicidality at final assessment compared with those assigned male at birth.

Method

Participants

Participants included adolescents and young adults (age range 13–20 years) who received services for GD at Children's Mercy Hospital Gender Pathway Services (GPS) clinic. Participants were included if they had pretest and final assessment data points and were treated with GAH for at least 3 months. A power analysis was conducted to determine the sample size needed to answer the research questions. The α for the mixed repeated-measures analysis of covariance (ANCOVA) was set at .05. To achieve power of .80 and a medium effect size ($f^2 = .25$), a total sample size of 34 was required for each ANCOVA to detect a significant model, $F(1, 33) = 4.15$. A total of 47 eligible

participants had pretest and final assessment data. The pretest for 23 participants occurred at their first contact with the clinic (the other participants' pretest assessment was completed at a subsequent visits to clinic but prior to starting GAH). At pretest (Time 0 [T_0]; i.e., before administration of GAH), the age of participants ranged from 13.73 to 19.04 years ($M = 16.59$, $SD = 1.19$). The range of treatment length was 113–1016 days ($M = 349$, $SD = 193$). For most of the sample (90%), duration of treatment was at, or under, 600 days. Thirteen of the participants first presented to our clinic in 2015; 19 in 2016; 14 in 2017; and one in 2018. Of the 47 participants, eight were administered GnRHa in our clinic prior to beginning GAH (we refer to these eight participants elsewhere in the article as the GnRHa + GAH subgroup). See Table 1 for additional participant characteristics.

Procedure

The institutional review board (IRB) of the University of Missouri–Kansas City ceded IRB review and continuing oversight duties to the Children's Mercy Hospital IRB, which approved the study. Data collection occurred as part of ongoing standard clinical care at GPS clinic. GPS clinic follows the World Professional Association for Transgender Health Standards of Care, Version 7 (Coleman et al., 2012) and the Endocrine Society's Clinical Practice Guidelines for the treatment of gender-dysphoric/gender-incongruent people (Hembree et al., 2017). The services provided in GPS clinic are similar to those provided in other specialty gender clinics (e.g., Chen et al., 2016; Edwards-Leeper & Spack, 2012). A multidisciplinary team, including nursing, endocrinology, psychology, and social work professionals, work collaboratively to develop a treatment plan that may include GnRHa and/or GAH. A diagnosis of GD and referral for medical treatment by a mental health professional is required. To avoid unnecessary delays in medical care, our clinic does not require patients to be seen by one of our clinic's mental health professionals if they have an established GD diagnosis and referral from a community mental health professional. Patients with a referral from a community mental health professional and an established GD diagnosis may be referred directly to endocrinology or multidisciplinary team meetings to begin GnRHa or GAH. Because our team's mental health professionals administer the clin-

Table 1
Demographic Characteristics for Participants for the Entire Cohort (N = 47) and Each Subgroup: GAH With Previous GnRHa (n = 8) and GAH Only (n = 39)

Demographic characteristics	Entire cohort *N* (%)	GAH-only subgroup *n* (%)	GAH + GnRHa subgroup *n* (%)
Mean age at administration	16.50 years	16.72 years	15.43 years
Mean duration of treatment	349 days	366 days	328 days
Birth assignment			
Assigned female at birth	33 (70.2)	27 (69.2)	6 (75)
Assigned male at birth	14 (29.8)	12 (30.8)	2 (25)
Race/ethnicity			
White	39 (83)	33 (84.6)	6 (75)
Biracial or multiracial	2 (4.3)	2 (5.1)	0 (0)
Latinx/Hispanic	3 (6.4)	3 (7.7)	0 (0)
Black/African American	1 (2.1)	0 (0)	1 (12.5)
American Indian/Alaska Native	1 (2.1)	1 (2.6)	0 (0)
Asian	1 (2.1)	1 (2.1)	1 (12.5)
ZIP code median income	$57,355	$61,168	$53,520
Insurance type			
Self-pay	1 (2.1)	1 (2.6)	0 (0)
Private	36 (76.6)	32 (82.1)	4 (50)
Medicaid	10 (21.3)	6 (15.4)	4 (50)

Note. GAH-only refers to participant who did not received gonadotropin-releasing hormone agonists (GnRHa) prior to being administered gender-affirming hormones (GAH). GnRHa + GAH refers to participants who had received GnRHa prior to being administered GAH.

ic's questionnaires and screeners themselves (rather than our nurses or endocrinologists), roughly half of the youth who would have been eligible to be included this study did not have a pretest data point and therefore could not be included in the final sample. Patients are administered questionnaires and screeners at the beginning of their clinic visit, either at the time of the diagnostic evaluation or during a follow-up appointment with the multidisciplinary team. Responses are reviewed by the mental health professional prior to meeting with the patient. For participants already on GnRHa, new baseline assessments were taken before progressing to GAH. For 10 participants in the study, the pretest data point occurred days before actual administration of GAH (range: 7–74 days; M = 38 days). Some causes of the delays included, but were not limited to, waiting for laboratory results, fertility preservation procedures, and insurance-related delays. Between multidisciplinary appointments, patients may see clinic endocrinologists and nurses individually for follow-up care.

Measures

Suicidality. The Ask Suicide-Screening Questions (ASQ) instrument is a four-item dichotomous (yes, no) response measure with high sensitivity (i.e., ability to identify true positives), designed to identify risk of suicide (Horowitz et al., 2012). A patient is considered to have screened positive if they answered yes to any item. A sample item of the ASQ includes, "In the past few weeks, have you felt that you or your family would be better off if you were dead?" In our clinic's survey, we have altered the fourth item of the ASQ ("Have you ever tried to kill yourself?") and prefaced it with "In the past few weeks . . ." such that we no longer ask about lifetime suicidality. For the purposes of this study, a response of *no* was scored as 0 and a response of *yes* was scored as 1; each item was summed, generating an overall score for suicidality on a scale ranging from 0 to 4, with higher scores indicating greater levels of suicidal ideation. The ASQ has a sensitivity of 97.6% and a specificity of 65.6%. The Cronbach's alpha for the current study was .81 at pretest and at final assessment, after rounding. Prior to March 2017, only three items of the ASQ were administered. No additional data were missing. As opposed to data that may be missing in nonrandom patterns for unknown reasons possibly related to bias in the variable being measured or sampling bias, the reason for the missing data in this study is known (the item was not asked by providers prior to March 2017). Thus, for purposes of statistical analyses, the data for the ASQ item that was missing these data are considered to be missing at random because they do not likely introduce unknown bias (McKnight, McKnight, Sidani, & Figuerdo, 2007), and values were imputed with expectation maximization (N = 28 imputations at T_0; N = 10 imputations at Time 1 [T_1] after administration of GAH).

Well-being. The General Well-Being Scale (GWBS) of the Pediatric Quality of Life Inventory (Varni, Seid, & Kurtin, 1999) uses a 5-point response scale, contains seven items, and measures two dimensions (general well-being and general health). The general well-being subscale includes six items. Example items include "I feel happy" and "I think my health will be good in the future." Participants are asked to consider each item and rate how often they have felt that way over the past month from 0 (*never*) to 4 (*almost always*). The general health subscale contains one item ("In general, how is your health?"), with response options ranging from 0 (*bad*) to 4 (*excellent*). All items are scored and linearly transformed to a 0–100 scale (initial score of 0 = 0, 1 = 25, 2 = 50, 3 = 75, and 4 = 100) for standardized interpretation. High scores reflect fewer perceived problems and greater well-being. The measure has adequate to good internal consistency (ranging from .70 to .92) and clinical validity (Varni et al., 1999). The Cronbach's alpha for the current study was .81 at pretest and .82 at final assessment.

Results

Two mixed repeated-measures ANCOVAs were used to ascertain within-subject differences between pretest (T_0) and final assessment (T_1) suicidality and general well-being scores, with sex assigned at birth as the between-subjects variable. Because there is variability between duration of treatment among participants, the period of time (i.e., duration of treatment) between T_0 and T_1 functioned as a covariate. Schneider, Avivi-Reich, and Mozuraitis

(2015) point out that when the between-groups are not randomly assigned in an ANCOVA, the assumption that the covariate is the same for all participants is not valid (as it is for experimental designs). Thus, the covariate should be centered to account for differences. Accordingly, scores on the covariate were centered by subtracting the sample mean.

The first mixed ANCOVA was conducted to ascertain within-subject differences between baseline suicidality scores (T_0) and suicidality after GAH (T_1). All statistical assumptions required to conduct the mixed ANCOVA were met. Duration of treatment was not significantly related to participants' ASQ scores, $F(1, 44) = .09$, $p = .77$, partial $\eta^2 = .002$. The main effect was significant, meaning suicidality scores were significantly lower at T_1 after GAH treatment, $F(1, 44) = 15.09$, $p < .001$, partial $\eta^2 = .26$, demonstrating a large effect size (see Figure 1 and Table 2). Thus, hypothesis 1 was supported. The estimated adjusted mean for suicidality scores decreased by .84 from 1.11 at T_0 to .27 at T_1. Omitting the item for which we had missing data, an ad hoc comparison revealed that at T_0, 21 of the 47 participants endorsed at least one of the ASQ screener items (seven participants endorsed only one item, 10 participants endorsed two items, and four participants endorsed three items). At T_1, only six of the 47 participants had endorsed at least one of the ASQ screener items (three participants endorsed one item and three participants endorsed two items).

A second mixed ANCOVA was conducted to ascertain within-subject differences between baseline general well-being scores (T_0) and general well-being after administration of GAH (T_1). All statistical assumptions required to conduct the mixed ANCOVA were met. Duration of treatment was not significantly related to participants' general well-being scores, $F(1, 44) = .37$ $p = .54$, partial $\eta^2 = .01$, showing a small effect size. The main effect was significant, meaning general well-being scores were significantly higher at T_1 after GAH, $F(1, 44) = 11.39$, $p < .002$, partial $\eta^2 = .21$, demonstrating a large effect size (see Figure 1 and Table 2). Thus, hypothesis 2 was supported. The estimated adjusted mean for general well-being scores increased by 8.53 from 61.7 at T_0 to 70.23 at T_1. An additional ad hoc comparison of pretest and final assessment scores was made to identify potential differences among the two subgroups (GAH-only and GnRHa + GAH; see Table 3). Whereas each group appears to have equivalent outcomes with regard to general well-being scores and similar baseline suicidality scores, notably no one in the GnRHa + GAH cohort endorsed any items assessing for suicidality at T_1.

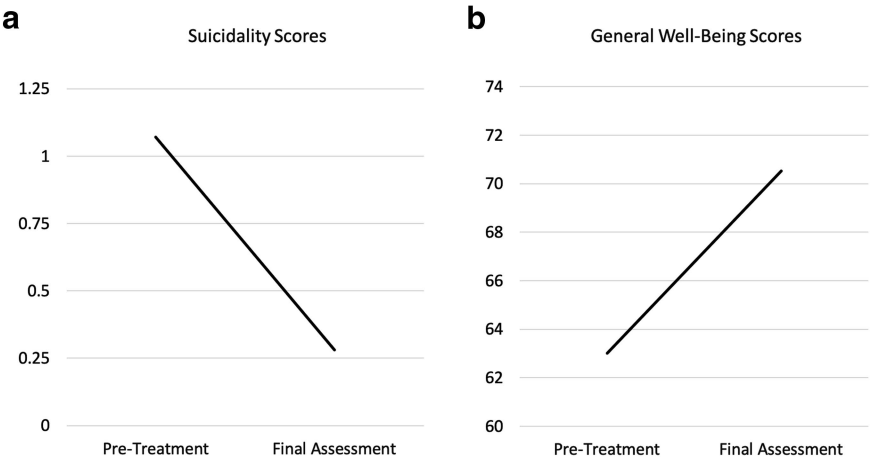

Figure 1. Estimated marginal means of suicidality (ASQ) scores adjusted for the covariate, duration of treatment, at pretest and final assessment (a). Estimated marginal means of general well-being scores (GWBS) adjusted for the covariate, duration of treatment, at pretest and final assessment (b). ASQ = Ask Suicide-Screening Questions; GWBS = General Well-Being Scale.

Table 2
Estimated Marginal Means and Standard Errors of the Analysis of Covariance for Each Dependent Variable

	T_0			T_1		
	All	AFAB	AMAB	All	AFAB	AMAB
Scale	*M* (*SE*)	*M* (*SE*)	*M* (*SE*)	*M* (*SE*)	*M* (*SE*)	*M* (*SE*)
ASQ	1.11 (.22)	1.01 (.23)	1.21 (.36)	.27 (.12)	.29 (.13)	.24 (.19)
GWBS	61.7 (2.43)	64.95 (2.66)	58.44 (4.09)	70.23 (2.15)	70.94 (2.35)	69.52 (3.62)

Note. Results from each ANCOVA are shown. The assessment point is the repeated measure, covarying duration of treatment. $N = 47$. GWBS = General Well-Being Scale; ASQ = Ask Suicide-Screening Questions; AFAB = assigned female at birth; AMAB = assigned male at birth.

In the first mixed ANCOVA, a significant effect was not observed for sex assigned at birth with regard to suicidality scores, after controlling for duration of treatment, $F(1, 44) = .08$, $p = .79$, partial $\eta^2 = .002$ (see Table 2). In the second mixed ANCOVA, the predicted interaction effect of sex assigned at birth with regard to well-being scores was also nonsignificant, $F(1, 44) = 1.00$, $p = .32$, partial $\eta^2 = .02$, demonstrating a small effect size (see Table 2). Thus, hypothesis 3 was not supported (i.e., the observed differences in suicidality and well-being scores after GAH treatment did not differ based on birth-assigned sex).

Discussion

Results of the analyses confirmed our primary hypotheses. We found that at final assessment, participants' suicidality scores had significantly decreased following administration of GAH, confirming hypothesis 1. Prior to receiving GAH patients, on average, endorsed at least one item of suicidality. At final assessment after receiving GAH, however, participants endorsed almost no symptoms of suicidality. In addition, we found that at final assessment, participants' general well-being scores significantly increased, supporting hypothesis 2. Despite having roughly equivalent pretest suicidality scores, an ad hoc comparison revealed that, in contrast to the GAH cohort with a T_1 mean ASQ score of .33, the GnRHa + GAH cohort endorsed no suicidality after treatment. The disparity in suicidality outcomes may be due to the initiation of GAH at younger ages among the GnRHa + GAH cohort, contributing to improved psychological and physical outcomes (de Vries et al., 2014). It may also be that participants who had been administered GnRHa

Table 3
Suicidality and General Well-Being Score Means and Standard Deviations for the GAH-Only ($n = 39$) and GAH + GnRHa ($n = 8$) Subgroups at T_0 and T_1

	T_0		T_1	
	GAH-only	GnRHa + GAH	GAH-only	GnRHa + GAH
Scale	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)
ASQ	1.06 (1.3)	1.08 (1.49)	.33 (.77)*	.01 (.02)[a,*]
GWBS	62.75 (16.43)	64.29 (8.32)	70.79 (13.46)	69.2 (12.8)

Note. GAH-only refers to participant who did not received gonadotropin-releasing hormone agonists (GnRHa) prior to being administered gender-affirming hormones (GAH). GnRHa + GAH refers to participants who had received GnRHa prior to being administered GAH. ASQ = Ask Suicide-Screening Questions; GWBS = General Well-Being Scale.
[a] The mean value of .01 is an artifact of the imputations conducted for the item omitted from the ASQ prior to March 2017. Participants in the GnRHa + GAH subgroup did not endorse any suicidality items at T_1.
* Statistically significant difference between GAH-only and GnRHa + GAH mean values at T1 ($p < .05$).

prior to GAH have more, or earlier, parental support.

Hypothesis 3 (i.e., those assigned female at birth will experience greater improvements in general well-being and larger decreases in suicidality) was not supported. Although hypothesis 3 was not supported, this finding may have been due to insufficient power because we did observe a small effect size for general well-being scores. Ultimately, we may infer from our findings that GAH is associated with less suicidality and greater well-being for all youth, regardless of assigned sex at birth.

Our findings demonstrate that levels of suicidality decrease, whereas general well-being increases, among adolescents diagnosed with GD after receiving GAH. The findings contribute to a growing literature supporting the hypothesis that transgender adolescents and adults benefit from GAH in terms of quality of life and psychological functioning (de Vries et al., 2014; Keo-Meier et al., 2015). Clinicians and advocates working with transgender youth and their families can cite these data as support that GAH is associated with improved psychological outcomes among transgender youth. Our study, specifically, speaks to reduced risk for suicidality and improved well-being, both of which are prominent worries of parents. Parents often struggle with the decision about whether to provide permission for irreversible steps in medical transition, such as initiation of GAH. Their fears may be alleviated to some extent as the emerging evidence supports use GAH among transgender youth.

Concordant with existing guidelines (American Psychological Association, 2015, Guideline 11), our findings also support the notion that transgender people tend to have more positive life experiences when they receive gender-affirming care. Affirmative care may help to counteract the wide range of societal, personal, and environmental discrimination that transgender youth often encounter. However, the pathway through which beneficial outcomes arise following affirming care is not entirely clear. GAH facilitate secondary sex characteristics consistent with one's experienced gender. Access to this treatment may reduce GD and lower body-related uneasiness (Fisher et al., 2014), resulting in increased well-being and decreased suicidality. It may also be that the sense of affirmation that comes with receiving care by affirming professionals and a potential increase in parental acceptance lessens distal minority stress factors (i.e., nonaffirmation; see Testa, Habarth, Peta, Balsam, & Bockting, 2015), thereby resulting in improved mental health.

Limitations and Directions for Future Research

Confounding variables of this study may include level of familial support, whether a patient is actively receiving psychotherapy, or differences in the specifics of gender-affirming medications (e.g., dosage). Given the protective role of parental support in health and well-being among transgender youth (Simons, Schrager, Clark, Belzer, & Olson, 2013), it could be argued that such support affected the improvements in well-being and decreases in suicidality observed in this study. However, it should be noted that at baseline, a relatively high level of parental support was required among all participants (compared with youth, e.g., who do not have access to gender-affirming medical care because of lack of parental support) because the parents at our clinic must provide permission for their child to receive gender-affirming medical interventions. That is, most participants in this study had some degree of parental support. Consequently, these findings may not be generalizable to transgender youth with unsupportive parents. It may be that GAH, combined with parental support or other types of support (e.g., individual counseling, support groups), are active ingredients in producing beneficial outcomes, but our study did not assess these factors. Future research may want to examine the concomitant roles of parental support and gender-affirming medications on psychological outcomes among transgender youth. Moreover, GD is a clinical diagnosis, and often it is difficult to ascertain the degree of GD an individual is experiencing. Future studies may benefit from assessing the severity of gender dysphoria before and after undergoing gender-affirming medical intervention as a means of evaluating the impact of the intervention on GD itself.

As noted by others (Costa et al., 2015), it may be the case that by virtue of scheduling an appointment with a gender-affirming multidisciplinary treatment team, adolescents have an immediate reduction in distress, knowing they are one step closer to receiving gender-affirming treatment. In this case, the pretest

scores would not have captured any immediate relief resulting from the knowledge that an initial appointment was scheduled. Additionally, it is also unclear whether the beneficial outcomes associated with GAH take effect immediately after administration of the medication, come about after physical changes begin to manifest, or vary over time. Future studies might examine change over time (e.g., using a time-series design) and age of initiation of treatment while also accounting for level of parental support and outward physical appearance because these factors may explain or alter the intervention's effect on suicidality and well-being. Future studies would further benefit from including measures that specifically assess symptoms of anxiety and depression to further evaluate the potential role of GAH on emotional functioning. In addition, our longitudinal study lacked a control group, so we cannot infer that GAH are causally responsible for the beneficial outcomes observed. Because withholding potentially lifesaving treatment from youth seeking medical care would be unethical, future studies should address this limitation by including data with appropriate comparison groups to strengthen findings. For example, future researchers might compare transgender youth who have received GAH with age- and demographic-matched peers seeking therapy for issues that are also thought to be influenced by gender dysphoria (e.g., depression, anxiety).

In addition, the total sample was primarily White (83%) and thus unrepresentative of the diverse overall population of transgender youth. For transgender youth of color, who experience additional discrimination and societal barriers (James et al., 2016), such discrimination could attenuate the beneficial outcomes observed with gender-affirming medical interventions. Research from other regions of the United States with more racially diverse clinical populations can help answer such a research question. Furthermore, our study did not make any distinction among participants for nonbinary gender identities and classified participants based on sex assigned at birth. To date, no studies have outlined GAH regimens for nonbinary individuals (Chen, Edwards-Leeper, Stancin, & Tishelman, 2018). Future studies should explore the trajectory of nonbinary and genderqueer identities over time and describe outcomes associated with affirming medical interventions, given that nonbinary youth report higher rates of attempted suicide compared to transgender adolescents assigned male at birth and their cisgender peers (Toomey, Syvertsen, & Shramko, 2018).

In addition, youth served in our clinic receive comprehensive care by an experienced multidisciplinary team. Thus, these findings may not generalize to all transgender youth prescribed GAH regimens (and not all transgender youth desire medical treatment). However, our findings likely generalize well to other patients in clinics with similar treatment models.

Conclusion

GAH appears to be associated with improvements in general well-being and decreasing suicidality among transgender youth. To our knowledge, this is the first study to demonstrate that levels of suicidality decrease, and general well-being increases, among adolescents diagnosed with GD after receiving GAH. The findings contribute to a growing literature showing that transgender adolescents and adults benefit from GAH in terms of improved quality of life and psychological functioning (e.g., Keo-Meier et al., 2015).

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