UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF INDIANA
INDIANAPOLIS DIVISION

K.C., et al., Plaintiffs, v. THE INDIVIDUAL MEMBERS OF THE MEDICAL LICENSING BOARD OF INDIANA, in their official capacities, et al., Defendants.	)	Case No. 1:23-cv-00595-JPH-KMB

MEMORANDUM IN SUPPORT OF DEFENDANTS' MOTION TO EXCLUDE OPINIONS OF PLAINTIFFS' EXPERTS

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TABLE OF CONTENTS

GLOSSARY

Achille 2020	Achille, C., Taggart, T., Eaton, N. R., et al. (2020). Longitudinal impact of gender-affirming endocrine intervention on the mental health and well-being of transgender youths: Preliminary results. *Int'l J. of Pediatric Endocrinology*, 2020:8.
Allen 2019	Allen, L. R., Watson, L. B., Egan, A. M., et al. (2019). Well-being and suicidality among transgender youth after gender-affirming hormones. *Clinical Practice in Pediatric Psychol.*, 7(3):302–311.
Baker 2021	Baker, K. E., Wilson, L. M., Sharma, R., et al. (2021). Hormone therapy, mental health, and quality of life among transgender people. *J. Endocrine Soc'y*, 5(4):1–16.
Berglund 2008	Berglund, H., Lindström, P., Dhejne-Helmy, C., et al. (2008). Male-to-female transsexuals show sex-atypical hypothalamus activation when smelling odorous steroids. *Cerebral Cortex*, 18(8):1900–1908.
Brik 2020	Brik, T., Vrouenraets, L. J., de Vries, M. C., et al. (2020). Trajectories of adolescents treated with gonadotropin-releasing hormone analogues for gender dysphoria. *Archives of Sexual Behavior*, 49:2611–2618.
Chung 2002	Chung, W. C., De Vries, G. J., & Swaab, D. F. (2002). Sexual differentiation of the bed nucleus of the stria terminalis in humans may extend into adulthood. *J. of Neuroscience*, 22(3):1027–1033.
COHERE 2020	COHERE. (2020). Summary of recommendation: Medical Treatment methods for dysphoria associated with variations in gender identity in minors. (filed at Dkt. 49-8)
WPATH SOC-8	Coleman, E., Radix, A.E., Bouman, W.P., et al. (2022). WPATH standards of care for the health of transgender and gender diverse people, version 8 ("SOC-8"). *Int'l J. of Transgender Health*, 2022(23). (filed at Dkt. 49-3)
Costa 2015	Costa, R., Dunsford, M., Skagerberg, E., et al. (2015). Psychological support, puberty suppression, and psychosocial functioning in adolescents with gender dysphoria. *J. Sexual Medicine*, 12(11) 2206–14.
DSM-IV	American Psychiatric Association, "Gender Identity Disorder," *Diagnostic and Statistical Manual of Mental Disorders* (4th ed. 2000).
DSM-V	American Psychiatric Association, "Gender Identity," *Diagnostic and Statistical Manual of Mental Disorders* (5th ed. 2022).

D'Angelo 2020	D'Angelo, R., Syrulnik, E., Ayad, S., et al. (2020). One size does not fit all: In support of psychotherapy for gender dysphoria. *Archives of Sexual Behavior*, 50:7–16.
de Vries 2014	de Vries, A. L. C., McGuire, J. K., Steensma, T. D., et al. (2014). Young adult psychological outcome after puberty suppression and gender reassignment. *Pediatrics*, 134(4):1–9. (filed at Dkt. 61-3)
Green 2022	Green, A.E., DeChants, J.P., Price, M.N., et al., Association of Gender-Affirming Hormone Therapy With Depression, Thoughts of Suicide, and Attempted Suicide Among Transgender and Nonbinary Youth. *J. Adolescent Health*, 70(4):643 (2022).
Hembree 2017	Hembree, W.C., Cohen-Kettenis, P. T., Gooren,Wylie, et al, Endocrine Treatment of Gender-Dysphoric/Gender-Incongruent Persons: An Endocrine Society* Clinical Practice Guideline (2017). *J. Clinical Endocrinology & Metabolism*, 102(11):3869–3903. (filed at Dkt. 49-1).
Luders 2009	Luders, E., Sánchez, F. J., Gaser, C., et. al. (2009). Regional gray matter variation in male-to-female transsexualism, *Neuroimage*, 46(4):904–907.
Ludvigsson 2023	Ludvigsson J. F., Adolfsson J., Höistad M., et. al. (2023). A systematic review of hormone treatment for children with gender dysphoria and recommendations for research. *Acta Paediatrica*, 00:1–14.
Mehringer 2021	Mehringer, J.E., Harrison, J.B., Quain, K.M., et al. (2021). Experience of Chest Dysphoria and Masculinizing Chest Surgery in Transmasculine Youth, *Pediatrics*, 147(3).
Cass Report	The Cass Review: Independent review of gender identity services for children and young people: Interim report (Feb. 2022). (filed at Dkt. 49-7)
NICE GnRH Review	National Institute for Health and Care Excellence, Evidence Review: Gonadotrophin releasing hormone analogues for children and adolescents with gender dysphoria (Oct. 2020). (filed at Dkt. 49-5)
NICE Hormone Review	National Institute for Health and Care Excellence, Evidence Review: Gender-affirming hormones for children and adolescents with gender dysphoria (Oct. 2020). (filed at Dkt. 49-6)
Olson-Kennedy 2018	Olson-Kennedy, J., Warus, J., Okonta, V., et al., Chest Reconstruction and Chest Dysphoria in Transmasculine Minors and Young Adults: Comparisons of Nonsurgical and Postsurgical Cohorts, *JAMA Pediatrics* 172(431) (2018).

Owen-Smith 2018	Owen-Smith, A.A., Gerth, J., Sineath, C. et. al. (2018). Association Between Gender Confirmation Treatments and Perceived Gender Congruence, Body Image Satisfaction, and Mental Health in a Cohort of Transgender Individuals. *J. Sexual Med.,* 15(4):591–600. (filed at Dkt. 61-10).
Rametti 2011	Rametti, G., Carrillo, B., Gómez-Gil, E., et. al. (2011). White matter microstructure in female to male transsexuals before cross-sex hormonal treatment. A diffusion tensor imaging study. *J. Psychiatric Rsch.,* 45(2):199–204. (filed at Dkt. 61-5).
Reisner 2015	Reisner, S. L., Vetters, R., Leclerc, M., et. al. (2015). Mental health of transgender youth in care at an adolescent urban community health center: a matched retrospective cohort study. *J. Adolescent Health*, 56(3):274–279.
Savic 2011	Savic, I.; Arver, S. (2011). Sex dimorphism of the brain in male-to-female transsexuals. *Cerebral Cortex*, 21(11):2525–2533.
Tang 2022	Tang A., Hojilla J.C., Jackson. J.E., et al. (2022). Gender-Affirming Mastectomy Trends and Surgical Outcomes in Adolescents. *Ann. Plast. Surg.* 88(4 Suppl.):S325-S331.
Turban *Pediatrics* 2020	Turban, J. L., King, D., Carswell, J. M., et al. (2020). Pubertal suppression for transgender youth and risk of suicidal ideation. *Pediatrics*, 145(2).
Turban *PLoS One* 2022	Turban, J. L., King, D., Kobe, J., et al. (2022). Access to gender-affirming hormones during adolescence and mental health outcomes among transgender adults. *PlosONE*, 17(1).
van der Miesen 2020	van der Miesen, A., Steensma, T., Annelou, L., et al. (2020). Psychological functioning in transgender adolescents before and after gender-affirmative care compared with cisgender general population peers. *J. Adolesc. Health*, 66(6):699.
Cornell Review	What We Know Project, *What does the scholarly research say about the effect of gender transition on transgender well-being*, https://whatweknow.inequality.cornell.edu/topics/lgbt-equality/what-does-the-scholarly-research-say-abo ut-the-well-being-of-transgender-people/.
Wiepjes 2018	Wiepjes, C. M., Nota, N. M., de Bok, C. J. M., et al. (2018). The Amsterdam Cohort of Gender Dysphoria Study (1972–2015): Trends in Prevalence, Treatment, and Regrets, *J. Sexual Med.*, 15(4):582–590.
Zucker 2010	Zucker, K.J., Bradley, S.J., Owen-Anderson, A., et. al. (2010). Puberty-Blocking Hormonal Therapy for Adolescents with Gender Identity Disorder: A Descriptive Clinical Study, *J. Gay & Lesbian Mental Health*, 15(1):58–82.

INTRODUCTION

Many of the expert opinions underpinning plaintiffs' arguments for a preliminary injunction do not meet the requirements for admissibility. To be admissible, expert opinion must be "based on sufficient facts or data" and be "the product of reliable principles and methods" "reliably applied." Fed. R. Evid. 702(b)–(d). Frequently, however, plaintiffs' experts offer nothing more than unsupported assertion based on a one-sided view of the existing literature. They repeatedly do not substantiate their opinions, fail to account for critical limitations with existing scientific studies, and ignore whatever evidence does not support their views. That not only renders their opinions inadmissible but raises substantial questions of bias.

BACKGROUND

This case involves a challenge to S.E.A. 480, which restricts medical practitioners from providing "gender transition procedures to a minor." Ind. Code § 25-1-22-13(a). Those procedures include the use of GnRH analogues (puberty blockers) to delay normal puberty, the use of cross-sex hormones to induce features of the opposite sex, and surgeries intended to instill physical features that resemble those of the opposite sex. *Id.* § 25-1-22-5(a); *see* Dkt. 54 at 7–9 (describing procedures). Plaintiffs have moved for a preliminary injunction enjoining enforcement of S.E.A. 480, Dkt. 26, and in support of the motion, have submitted declarations from three expert witnesses: Jack Turban, Dkt. 26-1, Dan Karasic, Dkt. 26-2, and Daniel Shumer, Dkt. 26-3.

Turban is a psychiatrist who finished his training in 2022 and now serves as an assistant professor of psychiatry and director of an adult clinical psychiatry program. Dkt. 48-11 at 5 (Turban Dep. 11:25–12:20). Karasic is another psychiatrist who serves as a professor emeritus, formerly sat on the World Professional Association for Transgender Health (WPATH) board, and participated in drafting WPATH's Standards of Care. Dkt. 26-1 at 3–4 (Karasic Decl. ¶¶ 12, 17).

Shumer is a pediatric endocrinologist and associate professor, who directs a clinic providing gender-transition procedures to minors. *See* Dkt. 26-2 at 1 (Shumer Decl. ¶ 3).

ARGUMENT

The Court should exclude the challenged opinions of plaintiffs' experts. Under Federal Rule of Evidence 702, the party offering expert opinion must demonstrate it is "based on sufficient facts or data" and is "the product of reliable principles and methods" "reliably applied." Fed. R. Evid. 702(b)–(d); *see Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 589–90 (1993). In this context, sufficiency is measured by its impact on reliability. *See Gopalratnam v. Hewlett-Packard Co.*, 877 F.3d 771, 781 (7th Cir. 2017). Reliance on an "anemic and one-sided set of facts" will not do. *Smith v. Illinois Dep't of Transp.*, 936 F.3d 554, 558–59 (7th Cir. 2019). Whether a method or principle is reliable depends on a variety of factors, which may include whether it "can be (and has been) tested," whether it "has been subjected to peer review and publication," its "known or potential rate of error," and its "general acceptance" within the relevant community. *Daubert*, 509 U.S. at 593–94; *see Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 150–51 (1999).

Critically, however, citation of peer-reviewed articles is not sufficient for admissibility. *See Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 144 (1997). An expert must also reliably apply a method or principle by providing a "rational connection between the data and the opinion." *Gopalratnam*, 877 F.3d at 786–87 (quoting *Manpower, Inc. v. Ins. Co. of Pa.*, 732 F.3d 796, 809 (7th Cir. 2013)). Experts cannot ignore important limitations within scientific studies, *see Gen. Elec.*, 522 U.S. at 144; *C.W. ex rel. Wood v. Textron, Inc.*, 807 F.3d 827, 837–38 (7th Cir. 2015), or neglect "obvious alternative explanations," *Brown v. Burlington N. Santa Fe Ry. Co.*, 765 F.3d 765, 773 (7th Cir. 2014) (quoting *Schultz v. Akzo Nobel Paints, LLC*, 721 F.3d 426, 434 (7th Cir. 2013)). In short, "an expert must 'substantiate his opinion.'" *Huey v. United Parcel Serv., Inc.*,

165 F.3d 1084, 1087 (7th Cir. 1999). "[N]othing" requires admission of expert opinion "that is connected to existing data only by the *ipse dixit* of the expert." *Gen. Elec.*, 522 U.S. at 144.

I. Turban's Challenged Opinions Should Be Excluded

A. Turban's opinions on puberty blockers and cross-sex hormones rest upon cherrypicked data and unreliable methods

Turban's opinions on the purported benefits of puberty blockers and cross-sex hormones do not satisfy Rule 702's requirements. Repeatedly, Turban suggests that addressing gender dysphoria with puberty blockers and cross-sex hormones *causes* improved mental health. *See, e.g.*, Dkt. 26-3 at 4 (Turban Decl. ¶ 11) ("medical interventions improve mental health"); *id.* at 6 (¶ 15) ("studies have likewise found improved mental health outcomes"); *id.* at 9 (¶ 18) ("gender-affirming medical care improves mental health"); Dkt. 48-11 at 35 (Turban Dep. 132:1–4) (relationship "likely causal"); Dkt. 48-11 at 47 (177:9–12) (there is "convincing evidence of causation"). Multiple serious flaws render that opinion unsupported and unreliable.

1. No peer-reviewed literature supports Turban's assertions about causation. To date, "[n]o randomized controlled trials"—the gold standard for medical research—have been conducted that would allow researchers to draw conclusions about *causation*. Dkt. 49-10 at 10–11 (Ludvigsson 9–10); *see* Dkt. 48-1 at 28, 30 (Cantor Decl. ¶¶ 44, 52). Rather, the existing literature consists of cross-sectional or longitudinal studies that at most permit observations about correlation. Dkt. 48-1 at 116–18 (Cantor Decl. ¶¶ 260, 263–64). Even Turban admits that "[n]o single study" permits "causal inferences." Dkt. 48-11 at 34 (125:13–126:7); *see id.* 46 (174:15–8).

Nevertheless, Turban claims he can draw causal inferences from the "full body" of literature. Dkt. 48-11 at 46 (Turban Dep. 174:15–22). In attempting to do so, however, Turban points to no peer-reviewed article or statistical method justifying causal inferences from studies reporting

only correlations. Rather, he invokes his own "subjective expert opinion," admitting that no confidence level can be assigned to it. *Id.* at 36 (Turban Dep. 133:10–16). That is not a reliable, accepted method. Dkt. 48-1 at 116–18 (Cantor Decl. ¶¶ 260, 263–64).

Turban's refusal to say precisely what his "subjective" assessment of the literature involves further undermines any pretention to reliability. When taken chronologically through the studies his declaration cited on hormones, Turban admitted that any evidence for causation in 2014 and again in 2019 was "weak" but refused to say precisely when the evidence supposedly became "convincing." Dkt. 48-11 at 47 (177:9–179:23). That sort of unexplained, subjective "*ipse dixit*" does not meet Rule 702's requirements for reliability. *Gen. Elec.*, 522 U.S. at 146.

2. Turban's failure to account for serious methodological weaknesses in the literature and "obvious alternative explanations" further undermines his opinions regarding the purported benefits of puberty blockers and hormones. *Brown*, 765 F.3d at 774 (quoting *Schultz*, 721 F.3d at 434); *see Gen. Elec.*, 522 U.S. at 144; *C.W.* 807 F.3d at 837–38.

The longitudinal studies that Turban cites have significant weaknesses. First, they rely on small, curated samples of participants—nonprobability samples—that may not "represent the full U.S. population of trans people." Dkt. 48-11 at 23 (Turban Dep. 82:21–84:9). That creates a "substantial risk of selection bias." Dkt. 49-10 at 5 (Ludvigsson 4); *see* Dkt. 48-1 at 118 (Cantor Decl. ¶ 264). And since many of the studies were conducted, the population of transgender minors has changed dramatically. Historically, cases of gender dysphoria were rare, and most were reported in prepubertal male children with long histories of dysphoria. Dkt. 48-3 at 43–45 (Kenny Decl. ¶¶ 87, 89); *see* Dkt. 48-1 at 57 (Cantor Decl. ¶ 112). Today, most minors presenting with gender dysphoria are adolescent females with no history of cross-gender behavior. Dkt. 48-1 at 66–67 (Cantor Decl. ¶ 135); Dkt. 48-5 at 11–12 (Kaliebe Decl. ¶¶ 28, 30); Dkt. 48-3 at 43–45 (Kenny

Decl. ¶¶ 87–89). As an independent U.K. report observed, "[a]t present we have the least information for the largest group of patients." Dkt. 49-7 at 59 (Cass Report 58). Yet Turban's report does not mention—much less account for—the absence of studies adolescent-onset gender dysphoria. Dkt. 48-1 at 21, 67 (Cantor Decl. ¶¶ 31, 136).

Second, none of the longitudinal studies have a "control group of people who didn't receive intervention," which means any observed change may have occurred even without invention or any change may be due to confounding variables. Dkt. 48-11 at 15 (Turban Dep. 50:5–24); *see* Dkt. 48-1 at 30 (Cantor Decl. ¶ 52). For example, all or nearly all participants in all longitudinal studies received concurrent mental-health support. Dkt. 48-1 at 87 (Cantor Decl. ¶ 178); Dkt. 49-10 at 5, 10 (Ludvigsson 4, 9).[1] And the studies themselves report that "timely addressing of psychosocial problems contributes to enhanced psychological well-being"). Dkt. 48-11 at 32–33 (Turban Dep. 120:18–121:2) (quoting Costa 2015); *see id.* at 31–32 (117:23–116:12, 120:4–17) (similar). Again, however, Turban's declaration does not mention or account for active mental-health interventions despite the literature reporting their importance. Nor does it account for other confounding variables, such as the impact of receiving treatment or the "maturity and well-being" that commonly comes with "getting older." *Id.* at 33 (122:9–24); *see id.* (122:1–4) (admitting that, "if you think you're not going to get treatment for [a medical condition], that would be depressing, and if you find out you can get treatment for it, your mental health will improve").

Third, the studies on Dutch patients use a different protocol. The Dutch protocol permits

[1] Only Achille 2020 purported to control for mental-health interventions. Between the "low" sample size (50 participants) and the high rate of mental-health interventions (90% received counseling and 34% received medications), however, "most" measures "didn't reach statistical significance." Dkt. 48-11 at 30 (Turban Dep. 110:5–111:18). Additionally, Achille 2020 did not report details of the mental-health care provided. Dkt. 49-6 at 49 (Hormone Review 48). And the study admitted that "regular visits with the mental team itself" could have "helped with quality of life and mental health." Dkt. 48-11 at 31 (Turban Dep. 117:23–116:12). NICE accordingly assessed the study to be of "very low" quality, warning that it is "not possible to draw conclusions on the impact of concurrent mental health treatment" and hormone treatment from it. Dkt. 49-6 at 49, 51 (Hormone Review 48, 50).

"no social transition" before age 12, but rather prescribes "watchful waiting" and "actively treating" other "issues which may be exacerbating psychological stress or dysphoria." Dkt. 48-1 at 110–11 (Cantor Decl. ¶¶ 240, 244). And after age 12, any medical interventions are permitted only after mental health issues are resolved and only with ongoing support. *See id.* at 110 (¶ 240). By contrast, the WPATH guidelines that Turban favors permit social transition and medical interventions at any age. *Id.* at 52, 112 (¶¶ 101, 248); Dkt. 49-3 at 115–18 (WPATH SOC-8 at S12.1, S12.5). That difference means that many of the studies Turban cites do not examine the protocol he champions, another consideration he neglects to mention.

Fourth, none of the longitudinal studies follow patients long-term. Although Turban dismisses the lack of long-term studies on the ground that FDA did not require a years-long study for a medication used for bipolar depression, Dkt. 26-3 at 10–11 (Turban Decl. ¶ 21), Turban overlooks that medical interventions for gender dysphoria in minors have more permanent consequences and carry higher risks. As the Swedish systematic review observed, "[t]he absence of long-term studies is worrying because many of the individuals start treatment as minors (<18 years) and [cross-sex hormone therapy] is lifelong." Dkt. 49-10 at 11 (Ludvigsson 10). In all events, the absence of long-term studies leaves Turban without sufficient, reliable data to predict that medical interventions will improve mental health over the long-term.

Turban attempts to supplement longitudinal studies with cross-sectional studies, but those, too, have significant weaknesses that he overlooks. First, the data-collection methods create substantial risks of selection bias. One study (van der Meissen 2020) looked at a select group of Dutch patients treated using the Dutch protocol, creating a risk of selection bias. Dkt. 48-11 at 27 (Turban Dep. 99:14–18). Another study (Green 2022) collected data through a "pure online survey" in which participants were recruited through targeted ads. *Id.* at 44 (166:21–167:17). And the two

remaining studies—both conducted by Turban—relied on data collected through the 2015 U.S. Transgender Survey, a survey hosted on a website in which LGBTQ organizations recruited participants. Dkt. 48-3 at 79–80 (Kenny Decl. ¶ 151). That survey was limited to people currently identifying as transgender, which means it excluded anyone who no longer identifies as such or whose mental health was so bad it led to suicide. Dkt. 48-11 at 25 (Turban Dep. 91:22–92:4).

Turban's reliance on survey data creates additional reliability problems. The survey is known for "data irregularities," such as responses in which persons claimed to have received puberty blockers for gender dysphoria before they were available, an "unexpectedly high proportion of respondents" reporting that "they were exactly 18 years old, and responses suggesting that respondents identifying as "natal males" were in fact "natal females." Dkt. 61-4 at 9 (D'Angelo 2020 at 8); *see* Dkt. 48-5 at 18–19 (Kaliebe Decl. ¶ 48). The survey contained no mechanisms to prevent persons from taking it "multiple times." Dkt. 48-11 at 24 (Turban Dep. 86:25–87:5). And the survey relied on entirely on persons' memory of past events, which Turban admits introduces a risk of "recall bias." *Id.* (87:18–88:13). Such survey studies provide such weak, unreliable evidence that they are "exclude[d]" from "systematic reviews." Dkt. 48-1 at 31 (Cantor Decl. ¶ 55).

Second, like the longitudinal studies, the cross-sectional analyses lacked control groups. Although Turban's declaration represents his own paper as "controlling for a range of . . . variables," Dkt. 26-3 at 5 (Turban Decl. ¶ 14), he merely means the paper ran a regression analysis. The paper did not control for placebo effect or the reality that, if someone cannot get a desired intervention, it could "be depressing." Dkt. 48-11 at 25, 33, 43 (Turban Dep. 89:4–90:11, 122:1–4, 163:24–164:11). Critically, moreover, *none* of Turban's cited cross-sectional analyses ran a regression analysis that accounted for mental-health interventions or "the fact that people with better mental health are more likely to be able to access hormones." *Id.* at 25, 28–29, 43–44 (91:5–18,

103:14–106:4, 163:8–13, 165:1–16, 167:22–168:14). Turban, however, nowhere mentions that limitation or accounts for the obvious possibility that mental-health support explains the results.

Third, as with the longitudinal studies, the cited cross-sectional studies do not focus on persons with adolescent onset gender dysphoria or examine long-term outcomes. They represent a snapshot taken at a single point in time. Without long-term data, any claim Turban makes about long-term mental-health outcomes lacks a reliable foundation.

3. Another problem plaguing Turban's methodology is his reliance on "incomplete information" and a "one-sided set of facts." *Smith*, 936 F.3d at 558–59. Although Turban asserts that the research "consistently link[s]" medical interventions to "improved mental health," Dkt. 26-03 at 4 (Turban Decl. ¶ 12), the literature is anything but consistent. European systematic reviews have identified multiple studies that do "*not* support" Turban's view that giving puberty blockers and hormones associate with better mental health—an inconvenient fact that Turban neglects to mention. Dkt. 48-1 at 117 (Cantor Decl. ¶ 262); *see id.* at 73, 87–90 (¶¶ 150, 176–185). Similarly, Turban nowhere mentions that European reviews have examined the literature, found it to be of "very low" quality, and concluded that the "evidence on treatment efficacy and safety is still insufficient and inconclusive for all reported outcomes." Dkt. 48-1 at 14–22, 42–46 (Cantor Decl. ¶¶ 16–33, 77–86); *see* Dkt. 49-5 at 46–47 (NICE GnRH Review 45–46); Dkt. 49-6 at 48–51 (NICE Hormone Review 47–50); Dkt. 49-10 at 11 (Ludvigsson 10).

Turban's one-sided treatment of the literature he cites underscores his cherry picking. In his declaration, Turban opines that minors who receive puberty blockers and hormones have "lower odds of suicidality." Dkt. 26-3 at 6–7 (Turban Decl. ¶ 15); *see id.* at 5–6 (¶ 14). Turban, however, nowhere mentions that Turban *Pediatrics* 2020 "did not detect a difference in the odds of lifetime or past year suicide attempts where attempts were resulting in hospitalization." Dkt. 48-

11 at 25 (Turban Dep. 92:5–11). Nor does Turban mention that another study of his (Turban *PLoS One* 2022) failed to detect statistically significant improvements among minors receiving puberty blockers and hormones for "past-year suicide attempt," "past-year attempt requiring inpatient hospitalization," "past-month binge drinking," and "lifetime illicit drug use." *Id.* at 43 (162:2–163:3). Similarly, Turban cites Achille 2020 for the proposition that studies on hormones have "found improved mental health outcomes." Dkt. 26-3 at 6 (Turban Decl. ¶ 15). But he omits that the study failed to detect *any* statistically significant improvements for female-to-male participants—two third of the total—on *any* measure. Dkt. 48-11 at 31 (Turban Dep. 113:5–114:6). Turban's omission of anything that could potentially undermine his opinion fatally undermines its reliability.

B. Turban's opinions on surgery rest on insufficient data and are unreliable

Turban's opinion that gender-transition surgeries "improve mental health," Dkt. 26-3 at 4, 7 (Turban Decl. ¶¶ 11–12, 16), are even less well founded. He admitted there is no peer reviewed research examining genital surgeries for adolescents. Dkt. 48-11 at 50 (Turban Dep. 189:10–24). And he admitted that there are "only two studies" examining the impact of "chest surgery"—*i.e.*, double mastectomy—on the mental health of adolescents. *Id.* at 49–50, 54 (188:20–189:9, 205:19–24); *see id.* at 52–53 (200:13–201:5) (admitting Tang 2022 only looked at regret, not quality of life, depression, suicidality, or any other mental-health measure). As Turban conceded, those two studies do not provide sufficient data to "show causal effect." *Id.* at 49–50 (188:20–189:9).

Close examination of the two studies further demonstrates the unreliability of Turban's opinion. Contrary to Turban's claim, Dkt. 26-3 at 7 (Turban Decl. ¶ 16), Olson-Kennedy 2018 did not measure mental health, Dkt. 48-11 at 50 (Turban Dep. 191:22–24). It instead asked select participants who had chest surgery to take a 10-minute survey about "chest dysphoria"—which, Turban admitted, is a "novel" measurement that "has not been studied to see if it tracks along with

anxiety, depression, et cetera." *Id.* at 50–51 (190:1–191:24, 193:13–194:11). Mehringer 2021 did not objectively measure mental health or "adjust for confounders," such as continuing mental-health support, either. *Id.* at 51 (195:7–196:10). It merely reported the results of interviews with 14 participants who had chest surgeries on average 19 months earlier and 16 participants who wanted chest surgery but had not yet received it. *Id.* at 51–52 (196:11–198:4). Asking teens who recently received a desired cosmetic surgery whether they liked the results hardly allows for reliable conclusions about whether the surgery itself causes improved mental health.

In opining on the benefits of surgery, however, Turban did not discuss the limitations of the studies in his declaration or account for the significant differences between the transgender population studied and the population seeking care today. *See* pp. 4–8, *supra*. He again failed to "bridge the analytical gap" between the studies and his opinions. *Gopalratam*, 877 F.3d at 786. Turban, moreover, provided no foundation for his opinion that youth whose appearance is permanently changed and who forever lose the ability to breastfeed will not experience profound regret, anxiety, and depression later in life. *See* Dkt. 48-1, at 98–99 (Cantor Decl. ¶ 206). Turban himself admitted that both Mehringer 2021 and the study he cited on regret (Tang 2022) cannot predict long-term outcomes. Dkt. 48-11 at 52–53 (Turban Dep. 197:23–198:7, 203:5–15). And Tang 2022 was further limited by methodological choices that the authors themselves conceded likely resulted in "under-report[ing]" of regret. *Id.* at 53 (201:6–202:7).

C. Turban's persistence-regret opinions lack sufficient data and are unreliable

1. Similar problems pervade Turban's opinion that adolescents who identify as transgender "rare[ly] . . . later identify as cisgender" and that "regret" among minors who undergo gender-transition procedures is "extremely rare." Dkt. 26-3 at 12, 15 (Turban Decl. ¶¶ 24, 29). Turban's primary source on persistence is a textbook chapter he co-authored (Turban 2018), which

did not conduct any "original research." Dkt. 48-11 at 68 (Turban Dep. 261:4–15). That textbook chapter in turn based its claim about persistence on a single source—a "textbook with a large compilation of data from the Dutch clinic"—but did not specify *which* data or page purportedly supported his claim about persistence. *Id.* (261:16–263:5). That omission speaks volumes.

The Dutch studies, moreover, do not support Turban's unqualified position that minors who first present with gender dysphoria *as adolescents* and have no history of childhood identification with the opposite sex—which make up most cases today—will persist. Dtk. 48-1 at 118–19 (Cantor Decl. ¶¶ 264–65). Those studies only examine minors who present with gender dysphoria *as children*. *Id.* And even the developers of the Dutch protocol consider their own data to "unequivocally" show that, without intervention, the "vast majority" of children will no longer identify as transgender as adults. *Id.* at 59 (Cantor Decl. ¶ 116) (citation omitted); *see id.* at 59 (¶ 115).

The only other source Turban cites (Olson 2022) is no more helpful. It, too, focused on minors who presented *as children*, not as adolescents. Dkt. 48-1 at 60 (Cantor Decl. ¶ 119). And Olson 2022 suffers from other, significant limitations. To start, it examined only a carefully selected group of transgender children who underwent a "complete, binary . . . social transition, including a change of pronouns." *Id.* As the Endocrine Society observes, however, "social transition . . . has been found to contribute to the likelihood of persistence." Dkt. 49-1 at 12 (Hembree 3879); *see* Dkt. 48-1 at 61–63 (Cantor Decl. ¶¶ 122–24 (discussing limitations of Rae 2019, which Turban cites as contrary). So Olson 2022 cannot show what would happen absent interventions. Additionally, Olson 2022 followed children with an average age of 8 for only 5 years, *i.e.*, to age 13. Dtk. 48-1 at 60 (Cantor Decl. ¶ 119). It thus cannot be used to predict outcomes after puberty. The authors themselves state they need to follow the minors "into adolescence and adulthood" because their "gender identities could change." Dkt. 48-11 at 69–70 (Turban Dep. 268:16–269:13);

see id. at 70 (270:3–271:4). Turban, however, overlooks all those limitations.

Turban quibbles with studies showing high rates of desistance for using DSM-IV's definition of "gender identity disorder" rather than DSM-5 TR's definition of "gender dysphoria." Dkt. 26-3 at 13 (Turban Decl. ¶ 26); *see* Dkt. 48-11 at 68 (Turban Dep. 264:4–19). But that critique undermines his own reliance on Olson 2022. Olson 2022 did not use the DSM-5 criteria for gender dysphoria either. Dkt. 48-1 at 121 (Cantor Decl. ¶ 268); Dkt. 48-11 at 68 (Turban Dep. 267:20–268:2). Turban overlooks that DSM-IV defines gender identity disorder in children as a "strong and persistent cross-gender *identification* (not merely a desire for any perceived cultural advantages of being the other sex)." Dkt. 48-1 at 120–22 (Cantor Decl. ¶¶ 266–67). And while he points out that DSM-V requires a "strong desire to be of the other gender or an insistence that one is the other gender," Turban does not explain how eliminating "identification" and replacing "repeatedly stated" with "strong" ensures no "tomboys" or males with feminine interests are diagnosed with gender dysphoria, Dtk. 58-4 at 10 (Turban Rebuttal Decl. ¶ 17). There is no objective test for or measurement of gender identity. A minor's "desire to be of the other gender" rests instead on cultural and social stereotypes about what it means to be the opposite gender.

2. Turban's opinions on regret are unreliable as well. None of the studies he cites look at regret rates among transgender persons generally—much less among ones with adolescent-onset gender dysphoria. Wiepjes 2018 instead examined the experiences of transgender persons, including adults, who elected to *continue visiting* a Dutch clinic. Dkt. 48-11 at 71–72 (Turban Dep. 2767:24–277:9). It did not examine whether the 36% of patients who stopped coming to the clinic experienced regret, *i.e.*, persons who Turban admitted will have "higher" "odds of regret." *Id.* at 72–73 (278:22–279:1, 281:14–24). Brik 2020 suffers from similar flaws. It, too, examined Dutch patients who elected to *continue with hormones*, excluding persons who "did not wish hormonal

treatment" and had "stopped attending appointments." *Id.* at 72 (279:10–280:6). That purposeful exclusion alone leaves Turban without any reliable basis for asserting that regret rates among all transgender adolescents are low. Dkt. 48-1 at 122 (Cantor Decl. ¶ 271).

Turban's reliance on studies of Dutch patients that include adults is particularly flawed considering the dramatic changes in patient populations and treatment protocols. Neither of Turban's studies focused on persons with adolescent-onset gender dysphoria who are susceptible to peer and social media influences and for whom there is no long-term data regarding persistence. Dkt. 48-1 at 66–67, 122 (Cantor Decl. ¶¶ 135, 269); *see* Dkt. 48-5 at 130–17 (Kaliebe Decl. ¶¶ 33–45). Nor do his studies focus on persons who are treated using WPATH guidelines rather than the more conservative Dutch protocol that provides for watchful waiting without the social or medical interventions that contribute to persistence. Dkt. 48-1 at 122 (Cantor Decl. ¶ 269). They do not examine the same populations among which "there is increasing evidence of regret and detransition" today. Dkt. 48-4 at 27 (Weiss Decl. ¶ 137); *see* Dkt. 48-1 at 22 (Cantor Decl. ¶ 31). At bottom, Turban's opinions regarding regret rest on his own "*ipse dixit*." *Gen. Elec.*, 522 U.S. at 144.

D. Turban's opinions on S.E.A. 480's potential impacts and the absence of alternatives rest on false assumptions and unreliable speculation

Turban's opinions about the effects of S.E.A. 480 should be excluded as well. He opines that the law "is expected to lead to substantial deterioration of mental health for adolescents with gender dysphoria," including "worsening suicidality." Dkt. 26-3 at 11 (Turban Decl. ¶ 22). But that opinion rests upon the erroneous assumption that "*untreated* adolescent gender dysphoria" causes harm and no alternatives to gender-transition procedures exist. *Id.* (emphasis added). Far from banning all treatment for gender dysphoria, however, S.E.A. 480 permits mental-health interventions, such as psychotherapy, that have a track record of helping patients.

Turban's assertion that mental-health support is not "evidence-based" rests upon a one-

sided look at the evidence. Dkt. 26-3 at 9 (Turban Decl. ¶ 19). The Dutch have provided psychosocial support and psychotherapy for years to patients whom Turban claims have improved mental health. *See* Dkt. 48-1 at 87–88, 90-94 (Cantor Decl. ¶¶ 178–79, 188–96); Dkt. 48-4 at 7 (Weiss Decl. ¶ 26); Dkt. 48-5 at 57–58, 66, 70 (Kaliebe Decl. ¶¶ 150, 183, 195). Although Turban prefers to attribute any improvements to puberty blockers and hormones, the studies themselves recognize that the improvements could be due to ongoing mental and social support. *See* pp. 5–8, *supra*. Indeed, one of the studies Turban cites reported that "psychological support is associated with better psychosocial functioning in [gender dysphoric] adolescents, especially if presenting with psychological/psychiatric problems." Dkt. 48-11 at 32–33 (Turban Dep. 120:4–121:2). And several European authorities "now endorse psychotherapy as the treatment of choice for minors." Dkt. 48-1 at 14 (Cantor Decl. ¶ 16). Even Karasic agreed that "psychotherapy" is "very valuable for a lot of people" with gender dysphoria. Dkt. 48-9 at 21 (Karasic Dep. 76:18–24).

In critiquing alternative approaches, moreover, Turban wrongly conflates professional psychotherapy with nebulously defined "conversion efforts" and "conversion therapy." The two approaches are distinct. Dkt. 48-5 at 59 (Kaliebe Decl. ¶¶ 154–55); *see* Dkt. 48-1 at 128 (Cantor Decl. ¶ 289). And the paper Turban co-authored on conversion efforts did not attempt to distinguish between them or even ask about the type, degree, or intensity of the conversion efforts. Dkt. 48-11 at 60, 62–63 (Turban Dep. 229:2–7, 238:8–241:22). Nor did it examine the effects of "conversion efforts" on persons who no longer identify as transgender. It limited itself to examining suspect data collected from persons on whom any efforts did not work. *Id.* at 63 (241:10–22).

Turban's claim about worsening suicidality is bereft of reliable evidence as well. As support, he cited two surveys—one of parents with transgender youth, one of gender-transition providers—asking about the feared impact of laws restricting gender-transition procedures. Dkt. 26-

3 at 11 (Turban Decl. ¶ 22). In his deposition, however, Turban admitted that he "wouldn't recommend" using those surveys to "look at mental health outcomes." Dkt. 48-11 at 64 (Turban Dep. 246:5–16, 247:14–25). The surveys, he said, were "just meant to illustrate that parents" and providers "are concerned." *Id.* Similarly, Turban admitted that the only other paper he cited (Green 2022)—a "pure online survey"—could not be "use[d] . . . to draw causal conclusions." *Id.* at 44, 64 (166:21–167:17, 245:14–21); *see* Dkt. 48-1 at 118 (Cantor Decl. ¶ 264).

Making matters worse, Turban neglected unfavorable evidence. His declaration does not discuss other papers suggesting that medical "*transition did not reduce suicide*" or mention that some cited papers failed to find statistically significant associations regarding various measures of suicidality. Dkt. 48-1 at 65 (Cantor Decl. ¶ 147); *see* pp. 8–9, *supra*. Turban's use of cherrypicked data, unreliable surveys, and unsupported speculation renders his opinions unreliable.

II. Karasic's Challenged Opinions Should Be Excluded

A. Karasic's opinions on efficacy are unsupported and unreliable

Karasic's opinions on the purported benefits of puberty blockers, cross-sex hormones, and reassignment surgeries do not satisfy Rule 702's requirements either. To support his opinion that "puberty blockers and hormone therapy are effective treatments for adolescents with gender dysphoria," Karasic cited a single source: "Cornell, 'What We Know' review." Dkt. 26-1 at 12–13 (Karasic Decl. ¶¶ 47–48). But that review examined adults, not adolescents. In fact, it "eliminated studies . . . that investigated minors instead of adults." Dkt. 61-2 at 2 (Cornell Search Methodology). Karasic, however, nowhere discloses or addresses that significant limitation.

At his deposition, Karasic attempted to backfill his opinion with papers from "Allen, Chen, Tordoff," "de Vries," and "Baker"—three of which his bibliography did not disclose. Dkt. 48-9 at 31–33 (Karasic Dep. 115:8–23, 116:22–117:25, 122:11–12). But that tactic violates Federal Rule

of Civil Procedure 26. Under Rule 26, an expert report "must contain" a "complete statement of all opinions the witness will express and *the basis and reasons for them*," including any "facts or data considered by the witness." Fed. R. Civ. P. 26(a)(2)(B)(i)–(ii) (emphasis added). Put another way, the report must "explain why [the expert] reached [a] conclusion." *Cripe v. Henkel Corp.*, 858 F.3d 1110, 1112 (7th Cir. 2017). Karasic's failure to disclose that he was relying on sources other than the Cornell review requires exclusion of opinions resting on those undisclosed sources. *See* Fed. R. Civ. P. 37(c)(1); *Ciomber v. Cooperative Plus, Inc.*, 527 F.3d 635, 641 (7th Cir. 2008) (explaining that exclusion for a Rule 26(a)(2) violation is "automatic and mandatory unless the offending party can establish that its violation . . . was either justified or harmless").

The additional studies cannot not rehabilitate Karasic's opinions regardless. As explained above, significant methodological weaknesses plague the existing adolescent literature on puberty blockers and hormones. Those weaknesses include (1) no controlled trials capable of establishing causation; (2) selection and/or recall bias; (3) no control for critical variables, such as concurrent mental-health interventions; (4) no focus on adolescent-onset gender dysphoria; (5) excessive focus on the Dutch protocol rather than the WPATH approach; and (6) no long-term studies of adolescents. *See* pp. 4–8, *supra*; *see also* Dkt. 48-1 at 49–50, 90, 91, 93–96 (Cantor Decl. ¶¶ 94–97, 186–88, 190, 196–99); Dkt. 48-11 at 18–22, 38–41 (Turban Dep. 64:4–79:7, 142:7–156:4). Like Turban, however, Karasic glances past those weaknesses and alternative explanations, undermining reliability. *Gen. Elec.*, 522 U.S. at 144; *C.W.* 807 F.3d at 837–38; *Brown*, 765 F.3d at 773. In fact, Karasic was not even sure whether de Vries 2014 and Allen 2019 controlled for mental-health interventions. Dkt. 48-9 at 33–34 (Karasic Dep. 121:15–23, 124:18–125:20).

In citing undisclosed studies, moreover, Karasic repeats Turban's error of taking a "one-sided" view of the literature. *Smith*, 936 F.3d at 558–59. He does not mention studies reporting

inclusive results or "increases in each of suicidal ideation (from 25% to 38%), attempts (from 2% to 5%), and non-suicidal self-injury (10% to 17%)." Dkt. 48-1 at 73 (Cantor Decl. ¶ 150); *see* pp. 8–9, *supra*. Nor does Karasic mention European systematic reviews finding the very papers he cited at his deposition to be "very low" quality. *See* p. 8, *supra*. And Karasic ignores observations that undermine his opinions, such as de Vries's statement that "mental health support" or "natural maturation" could account for improvements. Dkt. 48-1 at 90 (Cantor Decl. ¶ 188).

Karasic's principal source for his opinions about the purported benefits of puberty blockers and hormones appears to be his "clinical experience in treating gender dysphoric patients." Dkt. 26-1 at 13 (Karasic Decl. ¶ 49). But Karasic cannot rest opinions on "experience" without showing "how his experience . . . led to his conclusions." *Varlen Corp. v. Liberty Mut. Ins. Co.*, 924 F.3d 456, 459–60 (7th Cir. 2019). And here he merely invokes generic experiences with patients, without examining whether any observed improvements were due to biases or confounding variables (*e.g.*, natural maturation, mental-health interventions, social support). In any event, allowing Karasic's personal experience to "overcome" European systematic reviews finding that medical interventions offer no proven benefit would contravene "foundational principles of evidence-based medicine." Dkt. 48-1 at 24–25, 26 (Cantor Decl. ¶¶ 38, 41); *see id.* at 14–22, 42–46 (¶¶ 16–33, 77–86); *see* Dkt. 49-5 at 46–47 (NICE GnRH Review 45–46); Dkt. 49-6 at 48–51 (NICE Hormone Review 47–50); Dkt. 49-10 at 11 (Ludvigsson 10).

B. Karasic's opinions that the benefits of medical interventions outweigh the risks are unsupported and unreliable

Karasic's opinion that the benefits of treatment outweigh the risks suffers from equally serious methodological problems. Although Karasic asserts that there is no "foundation" for "[c]laims that the risks outweigh the benefits of treatment," he does not explain what "claims" he is addressing, what the "risks" are, or why the benefits purportedly outweigh them. Dkt. 26-1 at

13 (Karasic ¶ 50). In fact, his declaration does not list the risks of treatment anywhere. That failure to provide a reasoned basis for his assertion requires its exclusion. "An expert who supplies nothing but a bottom line supplies nothing of value to the judicial process." *Huey*, 165 F.3d at 1087.

Similarly, in opining on risks versus benefits, Karasic offers nothing to support his assertion that a "treating doctor will not offer gender-affirming medical treatments unless they have concluded after weighing the risks and benefits of care that treatment is appropriate." Dkt. 26-1 at 13 (Karasic ¶ 50). Karasic might hope physicians will do as he says. But he has no experience practicing in Indiana or observing physicians who practice here. Nor does he cite any literature examining whether Indiana physicians adhere to his aspirations in practice.

C. Karasic's opinions on regret, desistance, and biological influences lack sufficient support and are unreliable

Karasic similarly lacks a reliable basis for his opinion that "[r]egret among those who are treated with gender-affirming medical care is rare." Dkt. 26-1 at 14 (Karasic Decl. ¶ 51). His own declaration describes three of the four studies as concerning persons who received surgery after they "reached the age of majority" or "adults." *Id.* (¶¶ 51–52). Those studies do not measure regret rates among still developing minors who receive gender-transition surgeries before they have the capacity to consent. Additionally, the only study focusing on adolescents (de Vries 2014) has serious methodological weaknesses. Those include: (1) a small sample from a single Dutch clinic, creating a risk of "selection bias"; (2) focus on minors with childhood-onset gender dysphoria, not adolescent-onset gender dysphoria; (3) use of the Dutch protocol, not WPATH standards; (4) concurrent use of ongoing mental-health and social support; (5) assessment only one year after surgery, preventing inferences about long-term outcomes; and (6) no examination of patients who discontinued treatment, who would more likely be dissatisfied than the patients included. Dkt. 61-3 at 1–2, 9 (de Vries 2014 at 696–97, 703; *see* Dkt. 48-1 at 90, 111 (Cantor Decl. ¶¶ 186–88, 244).

Once again, however, Karasic does not account for those weaknesses or address contrary evidence.

In opining on desistance, Karasic commits similar errors to Turban. Karasic cites studies examining minors who were gender dysphoric at puberty to claim that "desistance is rare" after puberty begins. Dkt. 26-1 at 15 (Karasic Decl. ¶ 54). But that assertion ignores that the minors in those studies had *childhood-onset* gender dysphoria and any observations about that population cannot be generalized to minors with *adolescent-onset* gender dysphoria. *See* pp. 12–13, *supra*. Karasic, moreover, overlooks other critical limitations in his studies, including their focus on persons who *received medical interventions*. For example, he ignores the de Vries studies' exclusion of patients who elected not to receive hormonal treatments, Dkt. 48-11 at 19 (Turban Dep. 66:17–21)—which forecloses assessment of desistance rates *without medical intervention*. He similarly neglects that Wiepjes 2018 focused on patients who received—and elected to continue receiving—medical interventions, omitting data for the 36% of participants who declined further care. *Id.* at 72 (278:9–279:1). He overlooks that Brik 2020 excluded patients who "did not wish hormonal treatment" and "stopped attending appointments." *Id.* (279:15–280:6). And he neglects that Zucker 2010 examined not desistance but rather whether physician recommendations for hormonal treatment correlated with demographic and other variables. Dkt. 61-9 at 22 (Zucker 2010 at 76).

Perhaps Karasic believes desistance is unlikely due to his view that gender identity "has biological bases" and "is not a product of external influence." Dkt. 26-1 at 7 (Karasic Decl. ¶ 28). Karasic, however, does not even attempt to support that opinion, even though Shumer admits that cultural and social factors contribute to gender identity. Dkt. 48-10 at 19 (Shumer Dep. 65:13–66:16). Nor does Karasic address contrary literature. *See* Dkt. 48-01 at 79–80 (Cantor Decl. ¶ 162). He supplies only a "bottom line," *Huey*, 165 F.3d at 1087, which makes his opinion excludable.

D. Karasic's opinions that withholding gender-transition procedures causes harm should be excluded

Exclusion is also required of Karasic's opinions that "lack of access to gender-affirming care directly contributes to poorer mental health outcomes for transgender people" and that "no alternative treatments" are "effective." Dkt. 26-1 at 17–18 (Karasic Decl. ¶¶ 57–58). To support his opinion, the only study Karasic cites is Owen-Smith 2018. *Id.* But Owen-Smith is not a study of gender dysphoric minors. It is a cross-sectional study of a select population of transgender *adults* who were actively seeking medical care, who declined care "exclusively from mental health providers," and who took an online survey. Dkt. 61-10 at 5, 10 (Owen-Smith 2018 at 4, 9). That choice not only makes the study prone to selection bias but also means the study itself did not examine whether mental-health support provides a viable alternative to medical interventions for minors. Overlooking that limitation is not Karasic's only error. Although he describes Owen-Smith 2018 in causal terms, the authors themselves disclaim "causal inferences" can be drawn. *Id.* at 9 (at 8). And they further caution that the study included "only a small population" who received no medical interventions, limiting the inferences that can be drawn about that group. *Id.* at 10 (at 9).

Karasic again falls back on unspecified "experience," asserting that "*[s]ome*" patients received no relief from gender dysphoria "until receiving medical intervention." Dkt. 26-1 at 17 (Karasic Decl. ¶ 59) (emphasis added). But Karasic's personal experience with some patients of unknown ages and backgrounds cannot reliably show that psychotherapy is generally ineffective. In fact, Karasic admits that "psychotherapy" is "very valuable for a lot of people." Dkt. 48-9 at 21 (Karasic Dep. 76:18–24). Karasic, moreover, cites no research purporting to conclude that psychotherapy is inferior to medical interventions for minors given its low risk-benefit ratio. Nor does he consider the "thousands of studies showing the positive results of psychotherapy." Dkt. 48-5 at 67 (Kaleibe Decl. ¶ 184). He instead cites the American Psychological Association's position on

"conversion efforts," Dkt. 26-1 at 17 (Karasic Decl. ¶ 58)—a nebulous term that refers to something different from professional therapy, Dkt. 48-5 at 60 (Kaleibe Decl. ¶ 160).

E. Several of Karasic's opinions on WPATH and Endocrine Society guidelines are unsupported and unreliable

Several of Karasic's opinions on WPATH and Endocrine Society guidelines should be excluded as well. According to Karasic, WPATH's "SOC 8 is based upon a rigorous and methodological evidence-based approach," "informed by a systematic review of evidence and an assessment of the benefits and harms of alternative care options" that was graded using "modified GRADE." Dkt. 26-1 at 9–10 (Karasic Decl. ¶ 35). That statement is unsupported and misleading in multiple ways. First, the literature review that WPATH commissioned (Baker 2021) "did not use the GRADE system." Dkt. 48-1 at 49 (Cantor Decl. ¶ 94); *see* Dkt. 61-8 at 4 (Baker 2021 at 3); Dkt. 48-5 at 44 (Kaliebe Decl. ¶ 119) (observing SOC-8's recommendations "lack a[ny] grading system"). Second, when it came to minors, the review asked about how pubertal suppression affected "quality of life" and the "psychological effects" of hormone therapy. Dkt. 48-1 at 49 (Cantor Decl. ¶ 93). It did not examine potential harms from those interventions. *See id.*

Third, the evidence supporting SOC-8 is nowhere as rigorous or as complete as Karasic suggests. In SOC-8, WPATH admitted there are multiple research gaps. *See* Dkt. 48-1 at 85–86 (Cantor Decl. ¶ 175) (collecting admissions). Similarly, the review WPATH commissioned on adolescents identified only four studies focused on adolescents. *Id.* at 49 (¶ 94). Three of those were studies a Swedish review excluded due to "high risks of bias." *Id.* Even with consideration of that evidence, however, the review rated the quality of evidence as "low due to methodological limitations" and found it was "impossible to draw conclusions about the effects of hormone therapy on death by suicide." Dkt. 61-8 at 13 (Baker 2021 at 12).

Fourth, in adopting SOC-8, WPATH departed from the systematic review and allowed

"consensus-based expert opinion" to overrule literature-based recommendations. Dkt. 48-1 at 50–51 (Cantor Decl. ¶¶ 98–99) (quoting SOC-8 at S8). For example, WPATH made recommendations for hormone reviews while admitting that "a systematic review regarding outcomes of [hormonal] treatment in adolescents is not possible." *Id.* at 51 (¶ 100) (quoting SOC-8 at S46). WPATH also initially included age minimums for treatments but then "remove[d] all age minimums" after SOC-8's release without citing any studies or other supporting evidence. *Id.* at 52 (¶ 101).

Fifth, Karasic cites no evidence that WPATH considered the European systematic reviews finding the evidence to be of very low quality, even though he admitted they are "relevant." Dkt. 48-9 at 30–31 (Karasic Dep. 112:22–123:1). WPATH's results-driven process cannot be squared with Karasic's assertion that the "evidence base" supporting SOC-8 is "comparable" to the evidence supporting treatment recommendations for "other," unspecified conditions. Dkt. 26-1 at 10 (Karasic Decl. ¶ 35); *see* Dkt. 48-1 at 124 (Cantor Decl. ¶ 276).

Equally unreliable is Karasic's assertion that WPATH's "Standards of Care are widely accepted in the medical community." Dkt. 26-1 at 10 (Karasic Decl. ¶ 36); *see id.* at 16 (¶ 56). He provides no evidence for his claim, despite contrary evidence and increasing European rejection of any medical interventions for minors. *See* Dkt. 48-1 at 124 (Cantor Decl. ¶ 277); *see* Dkt. 49-17 at 6–7, 10–11 (Reed Decl. ¶¶ 10–11, 21). And the WPATH guidelines themselves refute Karasic's view that minors must complete "work with mental health professionals," "live[] in accordance with their gender identity for a significant period of time," and address mental-health problems before receiving medical interventions under SOC-8. Dkt. 26-1 at 11–12 (Karasic Decl. ¶¶ 43, 45). SOC-8 removes age and psychotherapy requirements. Dkt. 48-1 at 125–26 (Cantor Decl. ¶¶ 280–81); *see* Dkt. 48-9 at 21 (Karasic Dep. 76:9–17) (admitting no therapy is required).

Karasic errs in describing the Endocrine Society guidelines too. Contrary to his claim, Dkt.

26-1 at 10 (Karasic Decl. ¶ 37), the "Endocrine Society provides no mental health readiness protocols whatsoever," Dkt. 48-1 at 124–25 (Cantor Decl. ¶ 278); *see id.* at 47–48 (¶¶ 88–89) (observing the Endocrine Society reviewed the safety of hormones but not efficacy). It merely "reproduce[s]" WPATH's Standards of Care. Dkt. 49-1 at 11 (Hembree 2017 at 3878). Additionally, while Karasic characterizes the Endocrine Society guidelines as "widely recognized in the medical community as safe, effective, and medically necessary," Dkt. 26-1 at 16 (Karasic Decl. ¶ 56), they were drafted by a select committee—consisting almost entirely of WPATH leaders and authors—and were "never submitted to the entire Endocrine Society membership for comment and approval," Dkt. 48-2 at 50–51 (Hruz Decl. ¶ 86); *see* Dkt. 48-5 at 47–48 (Kaliebe Decl. ¶ 128). And as with WPATH guidelines, the European medical community increasingly rejects them.

III. Shumer's Challenged Opinions Should Be Excluded

A. No reliable evidence shows that gender identity is biologically based

No reliable evidence supports Shumer's assertion that "gender identity . . . has a strong biological foundation." Dkt. 26-2 at 7 (Shumer Decl. ¶ 29). The only support Shumer cites are neuroimaging studies, *id.*—which Shumer admits are "not in [his] wheelhouse." Dkt. 48-10 at 21 (Shumer Dep. 76:17–22). In fact, he twice could not answer questions in his deposition about the studies he cited and why they supported his view, explaining that he was "not very familiar" with neuroscience and did not "feel comfortable going into more detail about what all" their findings mean. *Id.* at 22, 27 (79:16–80:5, 97:11–100:7). Those admissions disqualify Shumer from claiming that his views are rooted in superior "knowledge, skill, experience, training, or education." Fed. R. Evid. 702; *see Dura Auto. Sys. of Ind., Inc. v. CTS Corp.*, 285 F.3d 609, 614 (7th Cir. 2002).

The neuroimaging studies do not support his opinion regardless. Most significantly, the studies provide only "correlational data" and cannot show whether any "brain differences cause

gender identity or if gender atypical behavior modifies the brain over time, such as through neuroplasticity." Dkt. 48-01 at 80 (Cantor Decl. ¶ 162). In fact, Luders 2009 conceded "further research" is needed "to resolve whether the [neurological differences] influence . . . gender identity or . . . are a consequence of being [transgender]." Dkt. 48-10 at 23 (Shumer Dep. 83:22–84:13). And Savic 2011 expressly found that neuroimaging does not "support the notion that brains of [male-to-female transitioners] are feminized." *Id.* at 22 (79:16–80:14). Even Shumer eventually admitted the studies are not a "smoking gun" and cannot prove causality. *Id.* at 24 (85:2–19). In his declaration, however, Shumer does not mention—much less account—for the weaknesses in the literature he cites, rendering his opinion unreliable. *See Gen. Elec.*, 522 U.S. at 144.

The studies also suffer from other significant methodological problems, such as failure to control significant confounding variables. Brain imaging studies have identified statistically significant differences associated with sexual orientation. Dkt. 48-01 at 79 (Cantor Decl. ¶ 162). And given the "powerful associations" between homosexuality and transgenderism, any differences seen in transgender brains can often be just as easily explained by sexual orientation. *See id.* But several of the studies Shumer cites did not control for that variable. *See* Dkt. 48-10 at 27 (Shumer Dep. 97:11–100:7) (discussing Berglund 2008). For example, Rametti 2011 compared *homosexual* transgender men to "*heterosexual* controls." Dkt. 61-5 at 3–5 (Rametti 2011 at 950–52) (emphasis added). And Chung 2002, which examined post-mortem brains, did not report data on sexual orientation. *See* Dkt. 61-7 at 1 (Chung 2002 at 1027). That weakness fatally undermines their conclusions. As recent peer-reviewed papers have observed, neuroanatomical differences previously attributed to gender identity "should instead be attributed to sexual orientation." Dkt. 48-01 at 79

(Cantor Decl. ¶ 162).[2] Shumer's opinions about gender identity's purported biological foundation—which rest on a few flawed studies from outside his area of expertise—should be excluded.

B. Shumer's opinions on safety, reversibility, and efficacy lack reliable support

1. Shumer's opinions on safety and reversibility of GnRHa and hormones are unsupported and must be excluded. To start, Shumer's opinions are predicated on the false assumption that using GnRH analogues to treat "precocious puberty" is equivalent to using them to treat "gender dysphoria." Dkt. 26-2 at 15, 17–18 (Shumer Decl. ¶¶ 59, 67–68). But delaying normal puberty affects children differently than merely postponing puberty until the appropriate age. When used for treating precocious puberty, the goal is to allow a child to enter puberty at a normal age, lest early puberty stunt their ultimate bone growth—as Shumer admitted. Dkt. 48-10 at 36 (Shumer Dep. 136:3–22); Dkt. 48-2 at 21, 25 (Hruz Decl. ¶¶ 37, 45). When used to treat gender dysphoria in minors, the objective is to delay natural puberty and to prevent the development of secondary sex characteristics (*e.g.*, facial hair in natal males and breasts in natal females). Dkt. 48-2 at 14–15, 33–34 (Hruz Decl. ¶¶ 25, 59); *see* Dkt. 26-2 at 13–15 (Shumer Decl. ¶¶ 54, 57–58) (similar).

Significant research gaps exist between using GnRH analogues to treat precocious puberty and using them to treat gender dysphoria. Using GnRHa to treat precocious puberty should cease when a child reaches normal pubertal age to minimize the risk of "adverse effects, including reduced bone marrow density." Dkt. 48-2 at 25 (Hruz Decl. ¶ 45); *see* Dkt. 48-4 at 20 (Weiss Decl. ¶ 92). Administering GnRHa to prevent *normal* puberty is a different use of unproven safety. Dkt. 48-2 at 46–47 (Hruz Decl. ¶ 80). GnRH analogues to delay ordinary puberty in minors with gender

[2] At his deposition, Shumer cited unspecified "twin studies," Dkt. 48-10 at 19 (Shumer Dep. 68:18–23), which he did not disclose in his declaration, *id.* at 20 (69:2–10). Shumer's failure to disclose those studies as the basis for his opinion, however, precludes him from relying on them. *See* Fed. R. Civ. P. 26(a)(2)(B)(i)–(ii); pp. 15–16, *supra*.

dysphoria implicate healthy bone and brain development, *id.* at 36–37 (¶¶ 62–64), and psychological development, Dkt. 48-1 at 35 (Cantor Decl. ¶ 66) ("[P]atients become subject to the issues and risks associated with being late-bloomers, *very* late-bloomers."). To date, "no controlled trials . . . prove the safety" of using GnRHa to treat gender dysphoria in minors with normal puberty. Dkt. 48-4 at 20 (Weiss Decl. ¶ 89). Indeed, the United Kingdom's recent systematic review observed "the lack of reliable comparative studies" limited identification of the "safety of GnRH analogues for children and adolescents with gender dysphoria." Dkt. 49-5 at 41 (NICE GnRH Review 40). It determined that all available evidence on safety was "very low" quality, but the results "suggest that GnRH analogues may reduce the increase in bone density which is expected during puberty." *Id.* at 47 (at 46). Sweden likewise identified the "risks" of "delay bone maturation and gain in bone mineral density" from use of GnRHa for minors with gender dysphoria. Dkt. 49-10 at 13 (Ludvigsson 12). Shumer's opinion fails to consider these critical differences.

The same is true of Shumer's opinion that delaying normal puberty is "reversible." Delaying normal puberty causes children to be developmentally behind and is not "reversible." Dkt. 48-2 at 35–38 (Hruz Decl. ¶¶ 61–66). For a child who does not develop characteristics during the time of normal puberty due to pubertal suppression, ceasing pubertal suppression for that individual in adulthood "is not a 'reversal,' since the sequence of development has already been disrupted." *Id.* at 35 (¶ 61). Suppressing puberty alters "the normal coordinated pattern of adolescent psychological development," and even once suppression ends, "the person cannot 'buy back' the time when the physical process of puberty has been disrupted at the time when it would normally occur with complementary psychological processes in that stage of the person's life." *Id.* at 37 (¶ 63). Thus, the effects of using GnRH analogues to delay normal puberty on minors' final stature, bone density, and brain development may be irreversible, in contrast to the effects of GnRH analogues on

a minor to delay precocious puberty. *Id.* at 35–38 (¶¶ 61–66).

Shumer likewise assumes that using hormones to treat gender dysphoria is the same as using them for "any . . . other condition[]," "such as delayed puberty." Dkt. 26-2 at 20 (Shumer Decl. ¶ 74). But he neglects to consider that "[t]here are major and highly significant differences between male and female responses to sex hormones." Dkt. 48-2 at 27 (Hruz Decl. ¶ 48). For example, testosterone can be used to restore health in males by raising low testosterone due to damaged testes or by treating delayed male puberty with "low doses of testosterone for 3–4 months." *Id.* at 27–28 (¶¶ 49–50). But giving testosterone to a female would yield "serious adverse effects," including "impaired fertility, alopecia (hair loss), disfiguring acne, and metabolic changes that increase risk of heart disease and diabetes." *Id.* at 28 (¶ 52). Instead, females are given estrogen to "to treat the same conditions testosterone treats in young males." *Id.* at 28–29 (¶ 53). In contrast, cross-sex hormone treatment for gender dysphoria involves giving females doses of testosterone 20–40 times higher than normal, and giving males doses estrogen about 5 times higher than normal. Dkt. 48-2 at 39–40 (Hruz Decl. ¶ 68); Dkt. 48-4 at 23 (Weiss Decl. ¶¶ 107–08).

Data indicates those differences matter. When natal females take testosterone, "breast cancer onset is 20 years earlier than expected," the risk of heart attacks is 3.5 times greater, and the risk of strokes is doubled. Dkt. 48-4 at 24 (Weiss Decl. ¶¶ 115, 117–18). Natal males taking estrogen experience a "22-fold increase in the rate of breast cancer" and a "36-fold higher risk of strokes." *Id.* at 24–25 (¶¶ 119–23). A recent review by the United Kingdom of the evidence of safety of administering cross-sex hormones to minors concluded that "[a]ny potential benefits of gender-affirming hormones must be weighed against the largely unknown long-term safety profile of these treatments in children and adolescents with gender dysphoria." Dkt. 49-6 at 15 (NICE Hormone Review 14). Shumer's declaration, however, fails to acknowledge, let alone refute, the

risks specific to administering cross-sex hormones to minors.

Shumer's statements on the effects of GnRHa and cross-sex hormones on fertility—and the reversibility of those effects—are unsupported and unreliable as well. Shumer states "GnRHa *on its own* does not have long-term implications on fertility." Dkt. 26-2 at 18 (Shumer Decl. ¶ 69). Critically, however, he overlooks that his preferred treatment protocol prescribes initiating pubertal suppression at the earliest signs of puberty and then prescribing hormones "[i]n mid-adolescence." *Id.* at 16 (¶ 61). That combination presents different risks. Dkt. 48-4 at 20–21 (Weiss Decl. ¶¶ 90–96). Shumer himself recognizes that "[progression through natal puberty is required for maturation of egg or sperm," Dkt. 26-2 at 18 (Shumer Decl. ¶ 69), and there is no data supporting the notion that persons who suppress puberty and then take hormones will be fertile, Dkt. 48-2 at 44 (Hruz Decl. ¶ 77). Even "advocates of transgender hormone therapy" recognize "that hormonal treatment impairs fertility, which may be irreversible." *Id.*

Shumer suggests that "an adult patient [who] withdraw[s] from hormones and allow[s] pubertal progression" could achieve "fertility." Dkt. 26-2 at 18–19 (Shumer Decl. ¶¶ 69–70). But the only data he cites concerns persons "who initiate hormones *after completing puberty*." *Id.* at 19 (¶70) (emphasis added). Shumer's admission that it is "important" to discuss "fertility" with patients, *id.* (¶ 71), underscores the absence of support for his view there are no fertility risks.

2. Shumer's opinions that the "relevant medical literature clearly" shows that using GnRHa and hormones to treat gender dysphoria are unsupported and unreliable. Dkt. 26-2 at 19–20 (Shumer Decl. ¶¶ 72, 76). To support his view, Shumer simply cites a list of studies. *Id.* As noted above, however, the studies purporting to find benefits suffer from significant methodological weaknesses and limitations. Those include selection bias, the failure to control for mental-health interventions, and the absence of long-term studies. *See* pp. 4–8, *supra*. Shumer, however,

does not acknowledge those weaknesses or account for them. Nor does he mention inclusive studies, contrary data, or the European reviews finding that the evidence of benefits is weak and inclusive. *See* pp. 8–10, *supra*. Shumer's assertion that the literature "clearly" supports medical interventions for gender dysphoria in minors rests on an insufficient, one-sided view of that literature.

Shumer further asserts that in his "own practice," "adolescent[s] . . . with significant distress at the onset of puberty routinely have dramatic improvements in mood, school performance, and quality of life with appropriate use of GnRHa." Dkt. 26-2 at 19 (Shumer Decl. ¶ 73). To rely on experience, however, Shumer must show "how his experience . . . led to his conclusions." *Varlen*, 924 F.3d at 459–60. He does not explain how his own limited practice would allow him to make broad statements about the efficacy of GnRH analogues. Dtk. 48-1 at 30–31 (Cantor Decl. ¶ 53). Nor does he explain how he could have controlled for biases and confounding variables (*e.g.*, natural maturation, mental-health support, social support) or made long-term observations. In any event, allowing Shumer's personal observations to overrule European reviews finding no evidence of benefit from GnRH analogues and significant unanswered questions about their safety would contravene "foundational principles of evidence-based medicine." *Id.* at 24, 26 (¶¶ 38, 41).

Shumer also cites "research on the efficacy of hormone treatment in transgender adults," saying it "bolster[s]" the evidence for treating minors. Dkt. 26-2 at 21 (Shumer Decl. ¶ 78). He, however, cites no principle saying that it is appropriate to apply studies of adults to minors. Nor does he account for important differences in the populations studied, such as that minors are still developing psychologically and physically, that minors do not have the same capacity to make medical decisions as adults, and that most minors who identify as transgender desist.

3. Shumer's opinion that, "[if] left untreated" by medical interventions, gender dysphoria "can result in severe anxiety and depression, eating disorders, substance abuse, self-harm,

and suicidality," Dkt. 26-2 at 8 (Shumer Decl. ¶ 35), is not supported by reliable evidence either. Shumer cites only Reisner 2015 for this statement, but that paper merely describes a health care center's "remov[al of] unnecessary barriers to hormone therapy; it provides no evidence of the effects of removing such "unnecessary barriers." Dkt. 48-1 at 128 (Cantor Decl. ¶ 291).

Shumer's opinion that "S.E.A. 480 might lead to a staggering increase in mental health problems including suicidality for adolescents with gender dysphoria in Indiana," Dkt. 26-2 at 21 (Shumer Decl. ¶ 80), is unreliable and should be excluded. To start, Shumer does not sufficiently explain his opinion, nor does he provide any support for it. Presumably, he means that no other treatment is available apart from those covered in S.E.A. 480. That, however, is wrong. *See* Dkt. 48-4 at 7 (Weiss Decl. ¶ 26); Dkt. 48-5 at 57–58, 70 (Kaliebe Decl. ¶¶ 150, 195). Shumer never mentions the availability and efficacy of psychotherapy, which is widely used and "proven effective for virtually every mental health condition" researched—including conditions present at "high levels" in patients with gender dysphoria. Dkt. 48-5 at 61–62 (Kaliebe Decl. ¶ 167). Indeed, all minors in the longitudinal studies Shumer cites received psychotherapy alongside other interventions, indicating such therapy is appropriate and likely effective. Dkt. 48-1 at 87 (Cantor Decl. ¶ 178); Dkt. 49-10 at 5, 10 (Ludvigsson 4, 9). Several European authorities "now endorse psychotherapy as the treatment of choice for minors." Dkt. 48-1 at 14 (Cantor Decl. ¶ 16).

Instead of addressing psychotherapy, Shumer merely contends that "conversion therapy," which he describes as "attempts to force transgender people to align their gender identity with their birth sex," is not a viable treatment option for children and adolescents experiencing gender dysphoria. Dkt. 26-2 at 6–7 (Shumer Decl. ¶ 28). Shumer's opinion on "conversion therapy" has no relevance in this matter, however, as S.E.A. 480 does not prescribe or endorse "conversion ther-

apy." To the extent Shumer conflates what he calls "conversion therapy" with professional psychotherapy, he is clearly wrong. His reference to "conversion therapy" follows recent trends of "activists . . . misattributing information about sexual orientation to gender identity" "mislabel[ing]" "any therapy failing to provide affirmation-on-demand." Dkt. 48-1 at 128 (Cantor Decl. ¶ 289). Shumer's opinion on "conversion therapy" should be excluded as unreliable and unsupported, or at least disregarded as irrelevant.

C. Shumer's opinions that medical organizations undertook "rigorous" reviews and represent the scientific "consensus" are unsupported

Shumer also claims that "the WPATH SOC 8," which he relies on for his conclusions, "is based on a rigorous review of the best available science and expert consensus." Dkt. 26-2 at 10 (Shumer Decl. ¶ 43). That is a contradiction in terms. "Expert consensus" is the opposite of a "rigorous review of the best available data." Dkt. 48-01 at 51 (Cantor Decl. ¶ 99). And while WPATH commissioned a review as part of the process of developing SOC-8, that review did not examine safety. *Id.* at 49 (¶ 93). Nor did the review conduct a rigorous analysis of efficacy for adolescents. It identified only a handful of studies focused on adolescents, it combined them with studies focusing on adults, and it still found that the quality of evidence was inclusive or low. *Id.* at 50 (¶97). On top of that, WPATH admitted it lacked research on critical issues in releasing SOC-8, claiming that the evidence was so scanty it was not possible to conduct "systematic review regarding outcomes of [hormonal] treatment in minors." *Id.* at 51 (¶100); *see* pp. 21–23, *supra*. And contrary to Shumer's suggestion, Dkt. 26-2 at 10 (Shumer Decl. ¶ 43), SOC-8 "lacks a grading system," Dkt. 48-5 at 44 (Kaliebe Decl. ¶ 119). It does not say how studies were rated. Nor does it "clearly document what reviews were attempted, raising the possibility that reviews were buried upon unfavorable results." *Id.* at 43 (¶ 118). SOC-8 "obscures the most important element required for a trustworthy clinical practice guideline: the assessment of the strength of the evidence." *Id.*

Shumer also claims the Endocrine Society guidelines "were developed by rigorous scientific processes that followed the approach of the [GRADE] group, an international group with expertise in the development and implementation of evidence-based guidelines." Dkt. 26-2 at 10–11 (Shumer Decl. ¶¶ 45). That is misleading. First, in creating the guidelines, the Endocrine Society commissioned a review on how sex steroid use affects "lipids and cardiovascular outcomes" and on how it affects "bone health." Dkt. 48-1 at 47–48 (Cantor Decl. ¶ 88) (citation omitted). But it did not examine other questions affecting safety (*e.g.*, effects on brain development, fertility, or reversibility). *Id.* at 48 (¶ 89). "Dr. [G.H.] Guyatt, a co-developer of the GRADE system, [thus] found serious problems with the Endocrine Society guidelines," including that they "didn't look at the effect of the interventions on gender dysphoria itself, arguably the most important outcome." Dkt. 48-2 at 49 (Hruz Decl. ¶ 84). Second, the Endocrine Society rated the quality of evidence as "low" or "very low" under the GRADE system. *Id.* at 48–49 (¶ 83). Third, despite the low-quality evidence, the Endocrine Society made "strong recommendations"—a practice "discouraged" in other contexts. *Id.* at 49 (¶ 84); *see* Dkt. 48-5 at 47 (Kaliebe Decl. ¶ 127).

Shumer's suggestion that the Endocrine Society guidelines represent the opinions of its 18,000 members, Dkt. 26-2 at 10 (Shumer Decl. ¶ 44), is "highly misleading" as well, Dkt. 48-2 at 50 (Hruz Decl. ¶ 86). "The committee that drafted these guidelines was composed of *less than a dozen members*" and the guidelines "were never submitted to the entire Endocrine Society membership for comment and approval prior to publication." *Id.* at 50–51 (¶ 86). In fact, they "did not undergo external review" at all. *Id.* at 51 (¶ 86). Further, "nine out of ten authors of the Endocrine Society Clinical Practice Guideline are also WPATH leaders or authors." Dkt. 48-5 at 47–48 (Kaliebe Decl. ¶ 128). Thus, "a small number of physicians, empowered by these organizations, can create a false impression of broad consensus." *Id.* at 48 (¶ 128).

IV. The "Rebuttal" Reports Cannot Cure the Deficiencies

With their reply in support of their preliminary injunction, plaintiffs included so-called "rebuttal" declarations. Dkt. 58-2 (Karasic Rebuttal Decl.); Dkt. 58-3 (Shumer Rebuttal Decl.); Dtk. 58-4 (Turban Rebuttal Decl.). Those submissions, however, cannot cure the methodological deficiencies in their original filings. Under the Federal Rules, the initial expert disclosure must contain "a *complete* statement of all opinions the witness will express and the basis and reasons for them." Fed. R. Civ. P. 26(a)(2)(B)(i) (emphasis added). Rebuttal declarations must be used "solely to contradict or rebut evidence on the same subject matter identified by another party." Fed. R. Civ. P. 26(a)(2)(D)(ii). They cannot be used merely to "support to an argument made in a party's case in chief" or to "change methodologies to account for noted deficiencies." *Bowman v. Int'l Bus. Mach. Corp.*, No. 1:11-CV-0593-RLY-TAB, 2013 WL 1857192, at *7 (S.D. Ind. May 2, 2013) (citation omitted). The supplemental declarations cannot be used to cure the failures of plaintiffs' experts to support their opinions or use a reliable methodology in the first instance.

The impropriety of plaintiffs' declarations is particularly clear with respect to opinions regarding gender identity's supposed "biological basis." In the original declarations of plaintiffs' experts, only Karasic and Shumer opined that gender identity had a biological basis. Only Shumer attempted to support that opinion with scientific literature. And he cited only unreliable imaging studies, Dkt. 26-2 at 7 (Shumer Decl. ¶ 29); pp. 24–25, *supra*—studies on a topic that Shumer admits is "not in [his] wheelhouse," Dkt. 48-10 at 21 (Shumer Dep. 76:17–22). In his latest declaration, Shumer does not attempt to defend his reliance on flawed imaging studies. Instead, plaintiffs have Turban—an expert who never initially opined on gender identity's origins—offer *new* opinions about gender identity's supposed biological basis while relying on entirely different evidence ("twin studies" and "gene sequencing") that defendants' experts did not have a chance to

address. Dkt. 58-4 at 19–20 (Turban Rebuttal Decl. ¶ 29). That amounts to an improper attempt to smuggle in new opinions in response to noted deficiencies and must be excluded.

V. At the Very Least, the Challenged Opinions Should Receive No Weight

To the extent the Court does not exclude the challenged opinions, it should accord them no weight. The unreliable methods of plaintiffs' experts, their failure to account for significant methodological weaknesses, and their one-sided presentation of the evidence fatally undermine the persuasive value of their assertions. It also raises significant questions of bias. In this litigation, plaintiffs' experts repeatedly claim that all "relevant medical literature" supports their opinion, Dkt. 26-2 at 19 (Shumer Decl. ¶ 72); *see* Dkt. 26-3 at 4 (Turban Decl. ¶ 11), that "[a]ll relevant major medical organizations" support their reviews," Dkt. 26-3 at 4 (Turban Decl. ¶ 13), and that their views are "widely-accepted," Dkt. 26-1 at 2, 10 (Karasic Decl. ¶¶ 6, 36). Those claims are demonstrably false. Not only do individual studies report inclusive or contrary results, as shown above, but multiple European countries, and the American College of Pediatricians, unequivocally reject their conclusions about medical interventions for gender dysphoric minors. *See* Dkt. 48-1 at 14–23, 38–46 (Cantor Decl. ¶¶ 16–36, 72–86); Dkt. 48-3 at 77 (Kenny Decl. ¶ 146). "Relevance" for plaintiffs' experts appears to be code for "agrees with their views."

In the last four years, the United Kingdom, Sweden, Finland, and Norway have all conducted systematic reviews of the evidence. For example, the U.K.'s National Institute for Health Care Excellence concluded the literature was of "very low" quality, Dkt. 49-5 at 41–42 (NICE GnRH Review 40–41); Dkt. 49-6 at 15, 48 (NICE Hormone Review 14, 47), and the U.K.'s National Health Service has restricted gender-transition procedures for minors, explaining that "[l]ittle is known about the long-term side effects of hormone or puberty blockers," Dkt. 61-1 at 2 (Treatment: Gender Dysphoria); *see* NHS, *Implementing Advice from the Cass Review*,

https://www.england.nhs.uk/commissioning/spec-services/npc-crg/gender-dysphoria-clinical-programme/implementing-advice-from-the-cass-review/. Sweden's systematic review likewise concluded the evidence of efficacy is "insufficient and inconclusive for all reported outcomes" and that the "risks" of medical interventions "currently outweigh the possible benefits." Dkt. 48-1 at 19–20 (Cantor Decl. ¶ 28) (citation omitted); *see* Dkt. 49-10 at 13 (Ludvigsson 12) ("long-term effects of hormone therapy on psychosocial and somatic health are unknown, except that GnRHa treatment seems to delay bone maturation and gain in bone mineral density"). And Finland's and Norway's reviews reached similar conclusions. Dkt. 48-1 at 16–18, 21–22 (Cantor Decl. ¶¶ 22–24, 30–33). The failure of plaintiffs' experts to even mention contrary voices speaks volumes.

One does not have to look far for a possible explanation for the one-sided presentation. All three of plaintiffs' experts practice the unproven methods of treatment they are trying to defend; Karasic sat on WPATH's board and participated in drafting the WPATH's Standards of Care, Dkt. 26-1 at 4 (Karasic Decl. ¶17); and Turban, a recently minted assistant professor, has built much of his brief professional career on producing heavily criticized articles that support gender-transition procedures for minors, *see* Dkt. 48-3 at 79–81 (Kenny Decl. ¶¶ 150–53); Dkt. 48-5 at 104–06 (Kaliebe Decl. ¶¶ 47–49). Indeed, despite multiple European reviews undermining his work, Turban appears unwilling even to entertain the idea that fair-minded people can disagree with him. On Twitter—a space in which he frequently supports transgender rights—Turban recently pronounced politicians who enacted a law prohibiting gender-transition procedures for minors to be "[u]neducated and lazy." Dkt. 61-6 (Tweet from May 13, 2023, 4:36 PM). Turban's views are more in keeping with those of a transgender activist than of an objective, open-minded expert.

CONCLUSION

The Court should grant the motion to exclude opinions of plaintiffs' experts.

Dated: June 12, 2023

Respectfully submitted,

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