Literature Review

Re: Medical necessity of mastectomy and male chest reconstruction to treat gender dysphoria in people under 18

Date: May 10, 2019

All articles cited are available upon request.

I. Chest reassignment surgery is medically appropriate for and consistent with the symptoms and proper diagnosis of the patient’s disease, gender dysphoria.

Chest reassignment surgery ("surgery") — a double mastectomy and male chest reconstruction — is a procedure that changes female secondary sex characteristics into male ones for the purpose of treating gender dysphoria.¹ Male and female chests are anatomically distinct.² Accordingly, gender dysphoria in trans males results in "significant discomfort with the presence of breasts (chest dysphoria)."³ (Ex. A).

Changing physical sex characteristics from one sex to another is the standard treatment for gender dysphoria. The goal is to “ameliorate the discrepancy between an individual’s self-perceived gender identity and assigned sex.”⁴ According to the World Professional Association for

¹ Giulia Lo Russo et al., Masculine Chest-Wall Contouring in FtM Transgender: A Personal Approach, 41 Aesthetic Plastic Surgery 369, 369 (2017) ("The first and arguably the most important step in sexual reassignment surgery in female-to-male (FtM) transsexuals is the creation of an aesthetically pleasing male chest. Breasts are a stigma of feminine identity, and their presence poses social and psychological problems for transmen."); Rachel Bluebond-Langer et al., Top Surgery in Transgender Men: How Far Can you push the Envelope?, Am. Society of Plastic Surgeons 873e, 878e (2017) ("[T]he goals of surgery are more akin to those of gynecomastia surgery: to flatten the chest and to reduce and shape the nipple to mimic the male phenotype"); Patricia Cregten-Escobar et al., Subcutaneous Mastectomy in Female-to-Male Transsexuals: A Retrospective Cohort-Analysis of 202 Patients, 9 J. of Sexual Medicine 3148, 3149 (2012) ("The principal aim in mastectomy for female-to-male transsexuals is to masculinize the chest by removing the female contour. This is an important procedure in the female-to-male transition, because it helps the patient to obtain a more male-like physique and therefore improves their psychosocial state of mind.").


³ See generally Johanna Olson-Kennedy et al., Chest Reconstruction and Chest Dysphoria in Transmasculine Minors and Young Adults, 172 JAMA Pediatrics 431-436 (2018).

⁴ Shane Morrison, Stelios Wilson & Scott Mosser, Breast and Body Contouring for
Transgender Health (WPATH), the recognized effective treatment of gender dysphoria is a triadic approach of providing mental health treatment, hormone therapy, and surgeries. The WPATH Standards of Care recognize that for those who do not experience relief due to other measures, “surgery is essential and medically necessary to alleviate their gender dysphoria . . . relief from gender dysphoria cannot be achieved without modification of their primary and/or secondary sex characteristics to establish greater congruence.”

The value of this treatment protocol is reflected in the fact that insurance companies cover surgery, hormones, and puberty delaying treatments for the purpose of changing (or preventing the change of) sex characteristics to treat gender dysphoria.

A. Chest reassignment surgery is an established, effective treatment for gender dysphoria.

Chest reassignment surgery been shown to be highly effective in treating gender dysphoria in trans males. This surgery decreases body dissatisfaction and experienced dysphoria in social interactions. It also allows people to be recognized as male by others and facilitates living in accordance with a male social role. In a 2017 study, the satisfaction rate


5 See American Medical Association (AMA) House of Delegates’ Resolution 122, Removing Financial Barriers to Care for Transgender Patients at 1, ¶¶ 24-26 (April 18, 2008) (“An established body of medical research demonstrates the effectiveness and medical necessity of mental health care, hormone therapy and sex reassignment surgery as forms of therapeutic treatment for many people diagnosed with gender dysphoria.”).


7 Transcend Legal, Transgender insurance medical policies, https://transcendlegal.org/health-insurance-medical-policies (providing links to 135+ insurance company clinical guidelines on gender reassignment surgery and related treatments).


9 Claes, supra note 2, at 372.
Medical necessity of mastectomy to treat gender dysphoria in people under 18

Literature Review - Page 3 of 28

...for trans men receiving mastectomies was 94%. Additionally, the results showed that “satisfied respondents reported a relatively positive QoL [quality of life]. This confirm[ed] that medical transition alleviates feelings of gender dysphoria and improves life satisfaction to normative levels.” A 2018 study also found improved quality of life, reduced gender dysphoria, and no regret aside from a few aesthetic concerns.

The prevailing opinion among transgender specialists both nationally and globally is that mastectomies are safe and effective for treating gender dysphoria, which is why it is recognized as medically necessary for adults under virtually all insurance company medical policies on gender dysphoria treatments. Insurance companies universally recognize that chest surgery is medically appropriate to treat gender dysphoria in people over 18 and would cover the procedure once the patient turns 18.

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10 Tim C. van de Grift et al., Surgical Satisfaction, Quality of Life and Their Association after Gender Affirming Surgery, J. of Sex & Marital Therapy 1, 4 (2017).


13 Transcend Legal, Transgender insurance medical policies, https://transcendlegal.org/health-insurance-medical-policies (providing links to 135+ insurance company clinical guidelines on gender reassignment surgery and related treatments).
A. Being under 18 does not negate the effectiveness of chest surgery in alleviating gender dysphoria.

Substantial evidence reveals that a person’s gender identity is fully formed in youth\textsuperscript{14} and that is not possible to change gender identity.\textsuperscript{15} The American Academy of Pediatrics notes that gender identity is stable by age four.\textsuperscript{16} Transgender children know and express their genders as clearly and consistently as non-transgender children express their genders.\textsuperscript{17}

While the exact biological root causes of gender dysphoria have not been identified, magnetic resonance imaging studies have shown that the brains of transgender children, adolescents and adults match the patterns associated with their affirmed sex rather than sex assigned at birth, even before any hormonal treatment.\textsuperscript{18} The regions affected play a role in body perception and self-awareness.\textsuperscript{19} Separately, family and twin studies indicate a strong genetic component.\textsuperscript{20} This biological origin is reflected in the new ICD-11; the “gender incongruence” diagnosis has been moved from a mental health diagnosis to a physical one.\textsuperscript{21}

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\textsuperscript{14} See, e.g., Sarah M. Burke et al., \textit{Hypothalamic Response to the Chemo-Signal Androstadienone in Gender Dysphoric Children and Adolescents,} 5 F\hspace{-.15cm}R\hspace{-.15cm}ONTIERS IN ENDOCRINOLOGY 1 (2014) (demonstrating that adolescents with gender dysphoria have sex-linked olfactory responses congruent with their affirmed sex rather than their sex assigned at birth indicating that their brain sex was formed during early brain development).

\textsuperscript{15} See generally Milton Diamond & H. Keith Sigmudson, \textit{Sex Reassignment at Birth: Long-term Review and Clinical Implications,} 151 ARCH. PEDIATRIC MED. 298 (1997) (arguing that gender identity is formed at an early age and cannot be changed through therapy).

\textsuperscript{16} David A. Levine and the Committee on Adolescence, \textit{Office-Based Care for Lesbian, Gay, Bisexual, Transgender, and Questioning Youth,} 132 PEDIATRICS e297, e299 (2013).

\textsuperscript{17} Kristina R. Olson et al., \textit{Gender cognition in transgender children,} 26 PSYCHOLOGICAL SCIENCE, 467–474 (2015).

\textsuperscript{18} Elyse Pine-Twaddle, \textit{Medical Management Updates for Gender Minority Youth and Difficult Cases,} 29 ADOLESCENT MEDICINE: STATE OF THE ART REVIEWS 97, 98 (2018) (compiling the literature).

\textsuperscript{19} Id.

\textsuperscript{20} Id.

\textsuperscript{21} World Health Organization, \textit{ICD-11: Classifying disease to map the way we live and die}
The widespread endorsement of and insurance coverage GnRH analog treatment at the start of puberty is based on this stability of gender identity. As Anthem notes, “Most individuals who express gender dysphoria in adolescence and later are thought to sustain the experienced gender.” There is no medical basis to believe that the patient’s need for surgery will abate or that his long-standing male identity will change to female. And the acceptance for initiating cross-sex hormone therapy by age 16 is based on the fact that most individuals of that age have sufficient mental capacity to give informed consent.

B. There is no medical basis to delay until age 18.

Insurance company bears the burden of demonstrating why the legal age of majority is an appropriate medical criterion for this treatment. There is no medically relevant event that occurs when a person turns 18, and the legal age of majority is not a relevant criterion for any other medical treatment where the patient and the parents have provided informed consent.

The symptoms of gender dysphoria are consistent whether an individual is over 18 or under 18 and stem from the physical condition of having breasts. While interventions such as talk therapy, GnRH analogs, and hormones may be sufficient to relieve some symptoms of gender dysphoria, the only way to permanently treat dysphoria caused by having breasts is to remove the breasts. The fact that the minor is under 18

(2018), http://www.who.int/health-topics/international-classification-of-diseases (“Gender incongruence, meanwhile, has also been moved out of mental disorders in the ICD, into sexual health conditions. The rationale being that while evidence is now clear that it is not a mental disorder, and indeed classifying it in this can cause enormous stigma for people who are transgender, there remain significant health care needs that can best be met if the condition is coded under the ICD.”).

22 Transcend Legal, Medical Policies on Youth Services, https://transcendlegal.org/health-insurance-medical-policies/youth-services.


Medical necessity of mastectomy to treat gender dysphoria in people under 18

Literature Review - Page 6 of 28

does not make the procedure any less effective or any less medically necessary in resolving those symptoms.25

Surgeons are focusing more attention to gender reassignment surgeries in minors.26 For the more complex surgery of vaginoplasty, over half of the surgeons practicing in this area have performed vaginoplasty on an individual under age 18.27 Nearly all surgeons relied on the term “maturity” rather than chronological age to determine patients’ readiness for the procedure.28 Only one third of the surgeons thought that age 18 was an appropriate criterion.29 Concerning the less controversial chest surgery, one study simply noted that patients who were 16 or older could be considered for virilizing mammoplasty.30 The authors of this study, Laura Edwards-Leeper, Ph.D., and Norman Spack, MD, are co-founders of the Gender Management Service of the Boston Children’s Hospital. The clinic afforded them the experience of treating hundreds of dysphoric children and adolescents, and their expertise is acknowledged in the field.31

As one researcher puts it, “transgender adults started as transgender children. This concept is finally starting to translate into an affirmative practice model across the domains of law, ethics, advocacy, and health

25 See generally Olson-Kennedy, supra note 3.


27 Milrod, Age Is Just a Number, supra note 26, at 626.

28 Id. at 631.

29 Id. at 630.

30 Laura Edwards-Leeper & Norman P. Spack, Psychological Evaluation and Medical Treatment of Transgender Youth in an Interdisciplinary “Gender Management Service” (GeMS) in a Major Pediatric Center, 59 J. OF HOMOSEXUALITY 321, 329 (2010).

31 Id. at 323-4. See also Laura Edwards-Leeper, Ph.D, Pacific University, https://www.pacificu.edu/about-us/faculty/laura-edwards-leeper-phd (last visited June 5, 2017).
Medical necessity of mastectomy to treat gender dysphoria in people under 18

At issue should be the provider’s assessment of whether the individual has gender dysphoria, is ready for treatment, and can provide informed consent—not the patient’s chronological age.33

II. This surgery is provided in accordance with applicable medical and/or professional standards and is known to be effective, as proven by scientific evidence, in materially improving health outcomes.

A. Medical opinions of professional societies hold mastectomy in transgender minors to be appropriate treatment.

The internationally recognized authorities on treatment in transgender patients and gender dysphoria are the World Professional Association for Transgender Health (WPATH) and The Endocrine Society.34

1. This surgery is in accordance with the WPATH Standards of Care, which explicitly endorse surgery for people under 18.

WPATH is recognized by the American Medical Association (“AMA”) and others as “the leading international, interdisciplinary professional organization devoted to the understanding and treatment of gender identity disorders.”35 WPATH publishes the Standards of Care for the Health of Transsexual, Transgender, and Gender Nonconforming People,36 (“SOC”) which the AMA recognized as the “interna-
ally accepted Standards of Care . . . recognized within the medical community to be the standard of care for treating people with” gender dysphoria.37 WPATH released a statement on medically necessary therapy and treatment for trans people that specifically listed mastectomy and chest reconstruction as medically necessary surgeries.38

WPATH supports social transition for transgender youth, including puberty suppression, hormones, and surgeries where appropriate.39 The criteria for adults includes the age of majority to medical treatment, but “if younger, follow the SOC for children and adolescents.”40 Specifically, WPATH notes that “[c]hest surgery in FtM patients could be carried out earlier [than genital surgery at the age of majority], 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 and expression.”41

Not only do the SOC recommend treatment for minors on a case-by-case basis, but they identify the important role of chest surgery in the health of transgender minors. A year of hormone therapy is listed as preferred, but it is not a requirement. Under WPATH standards, it is

37 AMA House of Delegates’ Resolution 122, Removing Financial Barriers to Care for Transgender Patients at 1, ¶¶ 16-20 (April 18, 2008).


39 WPATH Standards of Care supra note 36 at 10-21.

40 Id. at 59.

41 Id. at 21.
not the patient’s chronological age that determines whether surgery is appropriate, but their individual circumstances.

The most recent WPATH statement on the matter its June 2018 list of services that, based on the SOC, it recommends should be covered by insurance plans. The document lists prior approval requirements, including that informed consent has been provided, but it does not list any age requirements. Having a categorical prohibition on surgery until 18 thus contravenes the SOC.

2. Furthermore, there have been significant advances in the field since the Standards of Care were published eight years ago.

Clinical decisions made now must reflect current clinical practice and not be beholden to outdated standards. The most recent SOC were released in 2011, but the field of transgender youth care has exponentially grown over the past five years. The age of people seeking care has steadily fallen. Historically, few parents supported children and adolescents who expressed that they were a different sex, but that has rapidly changed with wider societal awareness of and acceptance of transgender people. The increase in information available about gender dysphoria has led to a dramatic increase in recent years in the number of children and adolescents who, with parental support, are seeking treatment for their gender dysphoria. Increased physician awareness

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45 Melinda Chen et al., Characteristics of Referrals for Gender Dysphoria Over a 13-Year Period, 58 J. Adolesc. Health (2016) (74% of patients at the Pediatric Endocrinology, Riley Hospital for Children, Indiana University School of Medicine were referred during the last
due to the publication of clinical guidelines, such as the publication of the 2009 Endocrine Society guidelines\textsuperscript{46} and the 2011 version of the SOC itself also likely contributed to the increase in referrals to gender clinics.\textsuperscript{47} A final factor is the increased number of clinical care options, including youth-specific clinics.\textsuperscript{48} Indeed, centers specializing in the care of transgender youth have experienced profound growth in the numbers of youth seeking care related to physical gender transition.\textsuperscript{49}

The SOC recognize that the field of gender care evolves rapidly.\textsuperscript{50} Youth care has come very far since 2011. In 2011, researchers at the Amsterdam Gender Clinic noted an increase from 3\% to 30\% of youth who were socially transitioned at the time of entry into care.\textsuperscript{51} When

\begin{footnotesize}
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\item See Karine Khatchadourian et al. \textit{Clinical management of youth with gender dysphoria in Vancouver}, 164 J. OF PEDIATRICS 906, 909 (2014).
\item Christine Milrod, \textit{Age Is Just a Number: WPATH-Affiliated Surgeons’ Experiences and Attitudes Toward Vaginoplasty in Transgender Females Under 18 Years of Age in the United States}, 14 J. OF SEXUAL MEDICINE 624, 626 (2017).
\item WPATH STANDARDS OF CARE supra note 36, at 41 (“Because this field of medicine is evolving, clinicians should become familiar and keep current with the medical literature, and discuss emerging issues with colleagues.”).
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Version 7 of the SOC were released in 2011, the practice of suppressing puberty and induction of an exogenous puberty in adolescence was quite recent in the U.S. Indeed, “[b]efore 2006, medical intervention for transgender youth was almost non-existent in the United States.”

This increased time between the initiation of hormone therapy at younger ages and the delay of surgery “increases the gap between the two medical procedures and postpones the desired outcome of the transition.” It is “only logical that if social transitioning and administration of hormones are being sought at younger ages, the request for surgical procedures among younger individuals will follow.” Indeed, “the members of the working committee preparing the standards of care (SOC) could not have foreseen the explosion in gender care that was about to transpire.”

Today, however, “the concept of living full-time as an early teen in the affirmed gender is no longer considered rare or unusual.”

The SOC are undergoing changes in order to reflect the rapidly evolving field of transgender care, and a Revision Committee is reassessing the minimum age for genital surgery. The new SOC will likely suggest an even greater need to help patients make decisions on a case-by-case basis, so that sweeping recommendations do not overlook the needs of each individual. Tellingly, the most recent document issued by WPATH is its June 2018 list of services—based on the SOC—that it

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52 Johanna Olson-Kennedy, Hot Topics and Fresh Paradigms in Gender, Diversity, and Care, 29 Adolescent Medicine: State of The Art Reviews 85, 85 (2018).

53 Bizic, supra note 44, at 3.

54 Colebunders, supra note 44, at 229.


56 Milrod, How Young Is Too Young, supra note 43, at 340; Colebunders, supra note 44, at 222.

57 Colebunders, supra note 44, at 231.

58 Id.
Medical necessity of mastectomy to treat gender dysphoria in people under 18

Literature Review - Page 12 of 28

recommends should be covered by insurance plans. The document lists prior approval requirements, including that informed consent has been provided, but it does not list any age requirements.

3. The Endocrine Society endorses surgical treatment prior to age 18.

The Endocrine Society — the world’s oldest, largest, and most active organization devoted to research on hormones and the clinical practice of endocrinology — has published clinical guidelines for treatment of gender dysphoric people, which provide detailed guidance for treatment consistent with the WPATH SOC. Mastectomy is recognized as “the most important masculinizing surgery for the transgender male is mastectomy, and it does not affect fertility.” The Endocrine Society guidelines recommend medical treatment for adolescents, including puberty suppression followed by cross-sex hormones at age 16 or earlier. A transgender male who was treated according to Endocrine Society standards would initiate puberty suppression prior to breast development at Tanner stage 2 — perhaps as young as 8-12 years old — then start cross-sex hormones, and would never develop breasts. What is relevant for treatment is physiological age and the persistence of gender dysphoria, not chronological age.

The Endocrine Society recognizes the need for some patients to undergo mastectomies before reaching the age of majority. They note: “Because some transgender male adolescents present after significant

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61 Id. at 26.

62 Id. at 12 (“We suggest that clinicians begin pubertal hormone suppression after girls and boys first exhibit physical changes of puberty (Tanner stages G2/B2).”).

63 Id. at 15.

64 Id. at 13 (“We therefore advise starting suppression in early puberty to prevent the irreversible development of undesirable secondary sex characteristics.”).
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. They offer no specific age requirement: “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.” Accordingly, having a categorical prohibition on surgery until 18 contravenes the Endocrine Society clinical guidelines.

4. The American College of Obstetricians and Gynecologists endorses surgical treatment prior to age 18.

Surgery under age 18 as per the Endocrine Society guidelines is similarly endorsed by The American College of Obstetricians and Gynecologists.


The American Academy of Pediatrics (AAP) 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. The AAP endorses both WPATH and Endocrine Society approaches noting that their standards “integrate the best available evidence with

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66 Id. at 26.


clinical experience from experts in the field of assisting transgender patients with transition.” They also endorse the guidelines published by Johanna Olson, MD, et al., based on their clinical experiences with a large number of transgender youth in Los Angeles.

The AAP has published its own policy statement, *Ensuring Comprehensive Care and Support for Transgender and Gender-Diverse* endorsing medical treatment for transgender minors. (Ex. B). The policy statement, issued on October 4, 2018, is the most recent statement from a professional society on treatment for transgender youth. Accordingly, it reflects current best practices in this area more than earlier position statements.

The statement notes that surgeries to treat gender dysphoria, including even surgery on genitals or reproductive organs, are performed on adolescents on a case-by-case basis. The AAP speaks to the lack of clarity in existing protocols noting: “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.” The AAP continues: “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,

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69 Id. at e308.


72 Id. at 6.
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.”

Finally, specifically as to insurance coverage for surgery, the AAP recommends “that insurance plans offer coverage for health care that is specific to the needs of youth who identify as [transgender and gender diverse], including coverage for medical, psychological, and, when indicated, surgical gender-affirming interventions.”

6. The UCSF Center of Excellence for Transgender Health endorses surgical treatment prior to age 18.

The Guidelines for the Primary and Gender-Affirming Care of Transgender and Gender Nonbinary People published by the Center of Excellence for Transgender Health at the University of California San Francisco specifically note that any insurance policy requirement that the patient be 18 is an “arbitrary barrier[] to surgery” and recommend that providers appeal denials to ensure that their minor patients can undergo chest surgery. The Guidelines note that “care for transgender youth is a young and rapidly evolving field. In the absence of solid evidence, providers must often rely on the expert opinions of innovators and thought leaders in the field; many of these expert opinions are expressed in this

73 Id. at 7.

74 Id. at 10.

75 Center of Excellence for Transgender Health, Department of Family and Community Medicine, University of California San Francisco, Guidelines for the Primary and Gender-Affirming Care of Transgender and Gender Nonbinary People, (Madeline B. Deutsch, ed., 2nd ed. 2016), http://transhealth.ucsf.edu/trans?page=guidelines-home.

Medical necessity of mastectomy to treat gender dysphoria in people under 18

B. Peer-reviewed medical literature and clinical practitioners hold mastectomy in transgender minors to be clinically appropriate.

Peer-reviewed studies establish that this surgery is medically necessary regardless of chronological age. The Center for Transyouth Health and Development at Children’s Hospital Los Angeles is the largest trans youth clinic in the country, which currently serves over 900 gender non-conforming and transgender youth and young adults. Researchers there found that of minors who have undergone chest surgery, 93% reported being satisfied with the surgery “all of the time.”

And trans males who had not undergone surgery—as compared to those who had undergone surgery—had significant effects of chest dysphoria in the areas of emotional well-being, physical well-being, recreational, occupational, social and life relationships. In the final results of the study, 100% of postsurgical participants affirmed the statement, “It was a good decision to undergo chest reconstruction” and 67 out of 68 participants reported no regret. There is no evidence of statistically significant regret or adverse outcomes in minors who undergo this procedure.

Similarly, a retrospective observational study of youth seen at the Rady Children’s Hospital San Diego found that of fourteen subjects who had undergone chest surgery, the age ranged from 13.4 – 19.7 years.

77 Id.


79 Id.

80 Olson-Kennedy, *supra* note 3, at 434 (“Only 1 participant (who was older than 18 years at the time of surgery) reported experiencing regret ‘sometimes.’”)

81 Olson-Kennedy, *supra* note 3, at 435.

82 Maja Marinkovic and Ron S. Newfield, *Chest reconstructive surgeries in transmasculine
D). Only seven subjects had been taking testosterone for one year or longer prior to surgery and the youngest patient was only on gonadotropin-releasing hormone agonist. Readiness for surgery was not dependent on being on testosterone for a specific amount of time, but “rather on the patient’s maturity and strong desire for having the surgery.”

All subjects reported a high personal satisfaction with the surgical outcome, with the average score being 4.9 out of 5. Subjects experienced improvements in depression and anxiety, and none reported regret.

Similarly, researchers from the Children’s Hospital of Pittsburgh of UPMC reported on 25 patients who underwent bilateral mastectomy over a 17-month period. (Ex. E). Six patients were under 18 years. All patients expressed satisfaction at postoperative visits.

A recent Adolescent Medicine: State of the Art Review (AM:STARS) on LGBTQ Youth: Enhancing Care for Gender and Sexual Minorities indicates that surgery—is appropriate for people under 18 and that individual readiness, maturity, and timing should be considered instead of simply chronological age. The preface indicates that the volume “provides new information and resources and promotes best practices.”

youth: Experience from one pediatric center, 18 Int’l J of Transgenderism 376, 376 (2017).

83 Id. at 378.

84 Id. at 381.

85 Id. at 379.

86 Id. at 379.


Medical necessity of mastectomy to treat gender dysphoria in people under 18

In the Netherlands, surgery has been performed on people under 18 for over 20 years. A 1997 follow-up study found that in a group of adolescents who began hormones at 16 and had surgery at 17, gender dysphoria resolved to the point where subjects did not differ in their scores from non-transgender control group.\textsuperscript{90} (Ex. F). No subjects reported regret.\textsuperscript{91} The vast majority (90\%) were satisfied or moderately satisfied with the surgery, and disappointment about the visibility of the scars—something that will not change with delaying the surgery—was the main reason for not being satisfied with the surgery.\textsuperscript{92} As a result of these positive outcomes, the Dutch protocol was subsequently updated to include puberty suppression treatment at 12, which can result in the disappearance of any existing breast tissue.\textsuperscript{93}

Similarly, in 2014, the British Columbia Children’s Hospital Transgender Program reported patients as young as 14.9 years old undergoing chest surgery, and researchers noted that some patients treated early with GnRH analogs may not require surgery at all.\textsuperscript{94} The Center for Gender Surgery at Boston Children’s Hospital chose to deviate from the SOC and set 15 as a minimum age for undergoing a chest reconstruction or breast augmentation.”\textsuperscript{95}

\textsuperscript{90} Peggy T. Cohen-Kettenis & Stephanie H.M. van Goozen, \textit{Sex reassignment of adolescent transsexuals: a follow-up study}, 36 J. OF THE AM. ACADEMY OF CHILD AND ADOLESCENT PSYCHIATRY 263, 267 (1997). \textit{See also} Yolanda L.S. Smith, Leo Cohen & Peggy T. Cohen-Kettenis, \textit{Postoperative psychological functioning of adolescent transsexuals: a Rorschach study}, 31 ARCHIVES OF SEXUAL BEHAVIOR 255–261 (2002) (following the same population and finding “stability in psychological functioning over time and that there were some areas in which improvement was evident.”).

\textsuperscript{91} Id. at 267.

\textsuperscript{92} Id.

\textsuperscript{93} Henriette A Delemarre-van de Waal & Peggy T Cohen-Kettenis, \textit{Clinical management of gender identity disorder in adolescents: a protocol on psychological and paediatric endocrinology aspects}, 155 EUROPEAN J. OF ENDOCRINOLOGY S131, S132-33 (2006) (“In girls, the present breast tissue will become weak and may disappear completely.”)

\textsuperscript{94} Karine Khatchadourian, \textit{Clinical Management of Youth with Gender Dysphoria in Vancouver}, 164 J. OF PEDIATRICS 906, 909-10 (2014).

\textsuperscript{95} Elizabeth R. Boskey et al., \textit{Ethical Issues Considered When Establishing a Pediatrics Gender
In this emerging field, “care is often based on expert opinion.” Practicing clinicians and specialists agree on the necessity of chest surgery for transgender patients, including people under 18. A case-by-case approach is what is currently recommended when deciding to perform surgery on a patient who is under 18. Clinicians note that “[d]ecisions in such cases must necessarily be individualized.” Nothing medically or psychologically relevant occurs when the minor turns 18 that would make this procedure more effective than it would have been the day before.

C. Other insurers and state Medicaid plans acknowledge this care to be medically necessary.

That a categorical ban on surgery for people under 18 is not in alignment with prevailing medical opinion is also reflected by the fact that other insurance companies recognize the medical necessity of mastectomy for trans men under age 18. Government health plans such as

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Surgery Center 143 Pediatrics e20183053 (June 2019).

96 Lee Ann E. Conard et al., Caring for Transgender and Gender-Nonconforming Youth, 6 Current Pediatrics Reports 139 (2018).

97 See Olson-Kennedy, supra note 3 (finding “professional guidelines and clinical practice should consider patients for chest surgery based on individual need rather than chronological age.”).

98 Colebunders, supra note 44, at 229.


100 See, e.g., Asuris, Transgender Services (June 9, 2017) (surgical “age requirement will not be applied to mastectomy in Female-to-Male patients with documented provider determination of medical necessity of earlier intervention”); BCBS of Florida, Gender Reassignment Surgery (Oct. 1, 2016) (listing no age requirement for surgery); BCBS of Massachusetts, Transgender Services (Jan. 2, 2017) (“If the candidate is less than 18 years of age, then treating clinician must submit information indicating why it would be clinically inappropriate to require the candidate to meet this criterion.”); BCBS of North Carolina, Gender Confirmation Surgery and Hormone Therapy (Jan. 9, 2017) (“Requests for mastectomy for female to male transgender individuals age 17 or older may be considered only in exceptional circumstances on an individual consideration basis.”); BCBS of Texas, Gender Assignment Surgery and Gender Reassignment Surgery with Related Services (“The following services may be considered medically necessary for the treatment of gender dysphoria for children and adolescents: . . . Chest surgery for FtM individuals.”); Boston Medical Center HealthNet Plan,
Medicaid will also cover surgery for minors.101 In cases where insurers do deny this service for individuals under 18, they are routinely overturned on appeal. (Ex. G, H, I).

III. Mastectomy is the most clinically appropriate level of service considering the potential benefits and harms to the patient; the condition would be adversely affected if the services were not provided.

A. Delaying care risks immediate, more severe mental health consequences.

Delaying care increases the risk of anxiety, depressive episodes and suicidal ideation. There is a direct correlation in more severe co-morbid

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their cisgender (non-transgender) peers.106 “Body image is critically important during adolescence and young adulthood,”107 and delaying surgery only prolongs and worsens these problems.

B. Delaying surgery prolongs the negative physical effects caused by chest binding.

The practice of chest binding is a self-help measure undertaken by the majority of trans men to relieve gender dysphoria.108 In addition to the negative psychological harm of delaying the surgery, there are negative physical effects caused by binding, such as back pain and respiratory problems. “Binders often restrict normal physical activity and can cause respiratory dysfunction (difficulties breathing, shortness of breath), reflux, dermatosis, and skin infections.”109 Studies on the health consequences of binding found that nearly every respondent experienced at least one negative health effect.110 The length of time one bound their chest was particularly connected to physical harms. “[D]uration (number of years spent binding regardless of frequency or intensity) was independently and positively associated with 13 health outcomes, particularly skin and soft tissue outcomes and musculoskeletal outcomes.”111 Binders restrict physical activity and result in

106 Samantha J. Gridley et al., Youth and Caregiver Perspectives on Barriers to Gender-Affirming Health Care for Transgender Youth, 59 J. OF ADOLESCENT HEALTH 254, 255 (2016); Michelle M. Johns et al. 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, 2017.68 MORTALITY WEEKLY REPORT 67, 70 (2019) (Youth Risk Behavior Survey of 131,901 students finding “transgender students are at disproportionately higher risk than are cisgender students for violence victimization, substance use, and suicide risk”).


108 Id.

109 Id. note 82, at 376.

110 Id.


112 Id. at 72.
transgender men exercising less than they would otherwise. Despite the pain, many trans males will continue binding to manage dysphoria\textsuperscript{112} even as binding becomes less effective over time. Binding can also cause transient elevation of prolactin which can cause galactorrhea, while high levels of prolactin are associated with prolactinomas.\textsuperscript{113} The need to bind would be alleviated permanently through mastectomy whereas delaying surgery will only prolong and worsen these physical consequences of binding.

\textbf{C. Chest dysphoria worsens as length of hormone treatment continues.}

Researchers note that requiring 12 months of hormone therapy prior to surgery may cause additional harm.\textsuperscript{114} Insurance coverage for testosterone therapy prior to age 18 but not surgery places transgender males in an untenable position. For transgender males who have started testosterone therapy but not undergone chest surgery, chest dysphoria increases over time.\textsuperscript{115} This reflects the fact that as testosterone masculinizes the rest of the body, there is greater disparity and distress caused by having a female chest.

Additionally, as the voice deepens and facial hair grows, the person is increasingly likely to be recognized by others as male. Having breasts increases the anxiety of being outed as transgender and also presents a significant safety concern. A person is no longer able to safely use female single-sex spaces such as bathrooms and locker rooms, but retaining breasts makes it difficult and unsafe to use male single-sex spaces or participate in male athletics.

\textsuperscript{112} Id. at 73.

\textsuperscript{113} Laura Bond Maycock and Holly Powell Kennedy, Breast Care in the Transgender Individual, \textit{59 J. of Midwifery & Women’s Health} 74, 78 (2014).

\textsuperscript{114} Olson-Kennedy, \textit{supra} note 3, at 435.

\textsuperscript{115} Id.
D. Delaying care is not a clinically appropriate or neutral act and risks long-term negative outcomes.

Worse outcomes in adults are associated with late—rather than early—treatment. Although potential regret is a concern, “it is also considered important to avoid life-long suffering due to postponement of treatment.”\textsuperscript{116} Specifically, early treatment can prevent “delay or arrest in areas that are particularly important during adolescence (e.g. peer relationships, romantic involvements or academic achievement) which may, in itself, lead to additional, yet avoidable problems. Thus, early treatment may be particularly suitable to prevent unnecessary psychological and emotional problems.”\textsuperscript{117} Indeed, Dutch researchers note “the psychological functioning of adult transsexuals is worse than in adolescent transsexuals from the same clinic who had been treated in early adolescence. The poorer psychological functioning of adult transsexuals compared with adolescent transsexuals could partly result from the enduring distress the adults had experienced in their lives.”\textsuperscript{118} In the context of puberty suppression, researchers note “[n]onintervention is not a neutral option, but has a negative life-long impact on the quality of life of nontreated adolescents. Realizing the potential harmfulness of nonintervention, one may even wonder whether not treating may not only be doubtful on ethical grounds, but also have legal implications.”\textsuperscript{119}

The possible harms of the surgery are those associated with major surgeries in general. However, surgery would improve quality of life, end the need to bind, and treat one of the main causes of gender dysphoria in transgender males. As the benefits of the surgery outweigh the risks


\textsuperscript{117} Id.


and the surgery itself is widely accepted as appropriate treatment for a patient with gender dysphoria, the procedure is medically necessary.

IV. The surgery is not experimental or investigative.

Mastectomy in patients under 18 years of age is neither experimental nor investigational. The procedure is not subject to clinical trial, IRB approval, or special consent on account of its experimental or investigational nature. There is no applicable research protocol indicating that the service is experimental or investigational. Prevailing opinion within the medical profession is settled among transgender specialists and surgeons performing this surgery. Transgender individuals with gender dysphoria experience “significant improvements” in quality of life after undergoing chest masculinization surgery. This appeal includes published research reports, medical organization consensus statements, and clinical practitioner statements that support the medical necessity of this procedure in people under 18.

V. The procedure meets the other criteria for medical necessity.

A. The procedure is not primarily for the convenience of the covered person, the covered person’s family or the provider.

The patient seeks this procedure because it is medically necessary to treat his diagnosed illness of gender dysphoria. It does not have any bearing on his providers or family.

B. Mastectomy is not more costly than an alternative service or sequence of services that is at least as likely to produce equivalent therapeutic or diagnostic results.

Rather than being more costly than an alternative service, as described above, this procedure drastically decreases future costs associated with treatment for depression and other unhealthy behaviors often associated with the stress of gender dysphoria.

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C. The procedure will be rendered in the least intensive setting appropriate for the delivery of services, supplies, or medications.

This criterion is irrelevant as it was not the basis for the denial. However, this outpatient procedure will be rendered in the least intensive setting appropriate for the surgery.

VI. A categorical denial of treatment for gender dysphoria is unlawful sex discrimination under Section 1557 of the Affordable Care Act.

Given that surgery to treat gender dysphoria in a minor can be medically necessary in at least some cases, a blanket exclusion for gender dysphoria surgeries in people under 18 is unlawful sex discrimination under Section 1557 of the Affordable Care Act (“Section 1557”). The insurance company would not deny medically necessary treatment of mastectomy to a minor under any other circumstance. If the minor had breast cancer and needed a mastectomy, the insurance company would approve the procedure. Coverage for treatment is being denied because the purpose of the surgery is to change sex characteristics and because of animus toward transgender-related health care, which is a denial of benefits on the basis of sex. Under the Department of Health and Human Services’ Office of Civil Rights regulations interpreting Section 1557—an interpretation a court would likely adopt as reasonable even absent the specific regulation—discriminatory denials of coverage for treatments related to gender transition are prohibited.  

\[\text{References}\]

121 See 42 U.S.C. § 18116 (2017); 45 C.F.R. § 92.207(b)(1) (2017) (prohibiting denial or limitation of a health-related insurance plan or policy on the basis of sex). Companies that sell plans on the Marketplace or otherwise receive federal funding are covered entities. 45 C.F.R. § 92.4 (2017).

122 45 C.F.R. § 92.207(b)(5) (2017) (providing that a covered entity shall not “[o]therwise deny or limit coverage, deny or limit coverage of a claim . . . for specific health services related to gender transition if such denial, limitation, or restriction results in discrimination against a transgender individual.”).
VII. A categorical denial of treatment for gender dysphoria is unlawful age discrimination under Section 1557.

Refusing to cover medically necessary treatment solely because of someone’s chronological age is age discrimination. Section 1557 prohibits discrimination based on age.123 Courts are beginning to recognize that denying medically necessary treatment to gender dysphoric minors is unlawful.124 The referrals submitted in support of this procedure identified the surgery as medically necessary for treatment of the minor’s gender dysphoria. They all deemed the procedure medically necessary and appropriate despite the minor’s age. The insurance company does not dispute the diagnosis of gender dysphoria or the ability of the surgery to alleviate that dysphoria; the only explanation for denying coverage was age.

Age is not being used as a legitimate measure or approximation of another characteristic, such as maturity or an individual’s readiness for treatment. The age of 18 might be the legal age of majority, but it is not a medically relevant category. As one expert in the field notes, “[t]he rationale of the arbitrary age of 18 years is probably based more on a fear of malpractice suits … than on something intrinsically good for SR [sex reassignment] applicants… The age of psychological and somatic maturity varies largely inter-individually. Adhering to such limits would severely hamper the development of a mature adolescent.”125 The arbitrary denial of necessary medical treatment targets—without justification—persons below the age of majority and therefore constitutes unlawful age discrimination.

123 42 U.S.C. § 18116 (2017); 45 C.F.R. § 92.207(b)(1) (2017) (prohibiting denial or limitation of a health-related insurance plan or policy on the basis of age).


VIII. A categorical denial of treatment for gender dysphoria is unlawful disability discrimination under Section 1557 and the ADA.

Failing to cover this procedure because the minor has gender dysphoria is also disability discrimination. Section 1557 prohibits discrimination on the basis of disability, as does the Americans with Disabilities Act (ADA). Gender dysphoria is a disability. A medically necessary mastectomy would have been provided to a minor suffering from a different illness (i.e., breast cancer) regardless of age. Here, the same treatment was denied because of the diagnosis. This is a diagnosis-based exclusion that has no nondiscriminatory justification. As demonstrated above, the insurer denied coverage because of animus-based discriminatory treatment of gender dysphoria, not sound medical evidence. In denying this surgery, the insurer goes against established authority on the treatment of gender dysphoria and is internally inconsistent even with the insurer’s own policies regarding puberty suppression and cross-sex hormone therapy for minors. The insurer must cover this procedure to be in compliance with established medical standards of care as well as Section 1557 and the ADA.

IX. Conclusion

Denying coverage for mastectomy in a minor with gender dysphoria is not only in contravention of terms of the plan, but it is also discrimination. In refusing medically necessary treatment on the basis of sex, disability, and age, the insurer is in violation of federal nondiscrimination law. Accordingly, the insurer should promptly reverse its denial of coverage and eliminate categorical age requirements in its clinical policy.

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126 See 42 U.S.C. § 18116 (2017); 45 C.F.R. § 92.207(b)(1) (2017) (prohibiting denial or limitation of a health-related insurance plan or policy on the basis of disability).

127 Title III of the ADA prohibits places of public accommodation, including insurance companies, from offering services that discriminate on the basis of disability. 42 U.S.C. § 12182(a); 28 C.F.R. §36.201(a). Title II also prohibits a state entity from engaging in discrimination. 42 U.S.C.A. § 12132.

Exhibit A
Chest Reconstruction and Chest Dysphoria in Transmasculine Minors and Young Adults: Comparisons of Nonsurgical and Postsurgical Cohorts

Johanna Olson-Kennedy, MD; Jonathan Warus, MD; Vivian Okonta, MPH; Marvin Belzer, MD; Leslie F. Clark, PhD, MPH

**IMPORTANCE** Transmasculine youth, who are assigned female at birth but have a gender identity along the masculine spectrum, often report considerable distress after breast development (chest dysphoria). Professional guidelines lack clarity regarding referring minors (defined as people younger than 18 years) for chest surgery because there are no data documenting the effect of chest surgery on minors.

**OBJECTIVE** To examine the amount of chest dysphoria in transmasculine youth who had had chest reconstruction surgery compared with those who had not undergone this surgery.

**DESIGN, SETTING, AND PARTICIPANTS** Using a novel measure of chest dysphoria, this cohort study at a large, urban, hospital-affiliated ambulatory clinic specializing in transgender youth care collected survey data about testosterone use and chest distress among transmasculine youth and young adults. Additional information about regret and adverse effects was collected from those who had undergone surgery. Eligible youth were 13 to 25 years old, had been assigned female at birth, and had an identified gender as something other than female. Recruitment occurred during clinical visits and via telephone between June 2016 and December 2016. Surveys were collected from participants who had undergone chest surgery at the time of survey collection and an equal number of youth who had not undergone surgery.

**MAIN OUTCOMES AND MEASURES** Outcomes were chest dysphoria composite score (range 0-51, with higher scores indicating greater distress) in all participants; desire for chest surgery in patients who had not had surgery; and regret about surgery and complications of surgery in patients who were postsurgical.

**RESULTS** Of 136 completed surveys, 68 (50.0%) were from postsurgical participants, and 68 (50.0%) were from nonsurgical participants. At the time of the survey, the mean (SD) age was 19 (2.5) years for postsurgical participants and 17 (2.5) years for nonsurgical participants. Chest dysphoria composite score mean (SD) was 29.6 (10.0) for participants who had not undergone chest reconstruction, which was significantly higher than mean (SD) scores in those who had undergone this procedure (3.3 [3.8]; P < .001). Among the nonsurgical cohort, 64 (94%) perceived chest surgery as very important, and chest dysphoria increased by 0.33 points each month that passed between a youth initiating testosterone therapy and undergoing surgery. Among the postsurgical cohort, the most common complication of surgery was loss of nipple sensation, whether temporary (59%) or permanent (41%). Serious complications were rare and included postoperative hematoma (10%) and complications of anesthesia (7%). Self-reported regret was near 0.

**CONCLUSIONS AND RELEVANCE** Chest dysphoria was high among presurgical transmasculine youth, and surgical intervention positively affected both minors and young adults. Given these findings, professional guidelines and clinical practice should consider patients for chest surgery based on individual need rather than chronologic age.

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The last decade has seen an unprecedented number of youth presenting for care related to gender dysphoria at gender-specific clinics and centers around the United States, Canada, and Europe. Transmasculine youth (those assigned a female sex at birth who have a gender identity along the masculine spectrum) who have undergone an endogenous female puberty and subsequent breast development commonly experience significant discomfort with the presence of breasts (chest dysphoria). Many but not all of these youth desire surgical intervention to achieve a flatter chest contour. This procedure involves a double mastectomy with downsizing and regrafting of the nipple areola complex or a minimally invasive procedure that spares the nipple.

As an interim strategy prior to chest surgery, many youth bind their chest in order to achieve a flatter, more masculine appearance. In a recent study of 1800 adults, Peitzmeier et al report an exhaustive list of negative health outcomes related to the practice of binding. These included pain, rib fractures, light-headedness, weakness, skin infection, and others.

There are no measures that capture the discomfort and subsequent consequences of chest dysphoria. The purpose of this study was to develop a measure that captures the distress associated with having a feminine chest contour (breasts) experienced by minors (persons younger than 18 years) and young adults (those aged 18 to 25 years) with a masculine gender identity, understand the association with chest surgery, and determine if there are differences in this association between young adults and minors. These results may serve to inform the practice of health care professionals with lingering concerns about potential complications, patient regret, and lawsuits, particularly for minors.

Surgical interventions for transgender individuals undergoing phenotypic gender transition have been considered an integral part of the transitioning process from as far back as the 1950s. Dissatisfaction with primary and secondary sex characteristics aligned with the chromosomes and gonads one has, rather than one's gender of identity, is a fundamental characteristic of gender dysphoria. While surgical procedures are not desired by all individuals with transgender experience, these procedures are commonly sought in order to bring the physical body into better alignment with the experienced gender. Satisfaction rates across studies of adult transmasculine individuals undergoing chest reconstruction are 97%, and regret is present in less than 1% of transmasculine patients. Hormone therapy and surgery have been found to be medically necessary to diminish gender dysphoria. Few data have been published concerning the outcomes of these procedures among minors, despite the growing numbers of youth presenting for care.

Most transmasculine youth are accessing care after or near completion of breast development, necessitating surgical intervention for those who wish to have a masculine-appearing chest contour. Because pubertal development of people who are assigned female at birth may begin as early as 8 or 9 years of age, completion of puberty is plausible even as young as 12 years.

National guidelines regarding surgical interventions for minors are outlined in the World Professional Association for Transgender Health Standards of Care, version 7. These guidelines recommend that adolescents defer genital surgery until the age of consent, but acknowledge that individual minors might be candidates for chest reconstruction. Despite this acknowledgment, many insurance plans continue to impose a mandatory age requirement of 18 years for chest surgery, as well as the use of testosterone for a full year prior to surgery to ensure the best results. While breast tissue does tend to atrophy with the use of testosterone, this effect is only partial.

The adolescent section of the Standards of Care, version 7, recommends 1 year of testosterone use prior to chest surgery, but specifically states elsewhere that “hormone therapy is not a pre-requisite” for surgery. It leaves unclear why the recommendation is in place for adolescents but not for adults. The recommendation to omit the requirement of hormone administration acknowledges that there are individuals who desire chest surgery but do not wish to undergo hormone therapy for phenotypic gender transition.

This study was undertaken to determine if chest reconstruction diminishes chest dysphoria and if it should be considered a medically necessary intervention for both transmasculine minors and young adults. Additionally, in providing data on the experience of youth younger than 18 years, we hope to inform future revisions of existing guideline recommendations regarding transgender minors seeking surgical interventions to help mitigate gender dysphoria.

Key Points

**Question** Is chest dysphoria (distress about breasts) more common among transmasculine youth who have not had chest reconstruction compared with those who have undergone this surgery?

**Findings** In this cohort study, chest dysphoria was significantly higher in the nonsurgical vs postsurgical cohort. Among the nonsurgical cohort, 94% perceived chest surgery as very important; among the postsurgical cohort, serious complications were rare, and 67 of 68 reported an absence of regret.

**Meaning** Professional guidelines and clinical practice should recommend patients for chest surgery based on individual need rather than chronologic age.

### Methods

**Practice Setting**

The Center for Transyouth Health and Development at Children's Hospital Los Angeles has been serving the medical and mental health needs of transgender adolescents and young adults since 1993. At the time of this study, the center was serving 818 gender-nonconforming and transgender youth. Of the youth in care, 384 (46.9%) were assigned the female sex at birth; 93 youth (24.2%) had undergone chest reconstruction surgery before the study commenced.

**Consent Procedures**

The research study was approved by the Children's Hospital Los Angeles institutional review board. One or more parents or legal guardians provided consent for eligible minors. All participants provided verbal consent before completing the survey.
Study Eligibility
Youth in the nonsurgical group and the postsurgical group were considered eligible to complete the survey if they were 13 to 25 years old, assigned female at birth, identified their gender as something other than female, were able to read and understand English, and were able to provide consent.

Youth were included in the nonsurgical group if they had not undergone chest reconstruction surgery and had chest tissue consistent with female development. Prepubertal youth and those who had been administered puberty-blocking medications early in development were ineligible.

Youth were included in the postsurgical group if they had undergone chest reconstruction surgery. All participating youth who had undergone chest reconstruction surgery had done so after obtaining referral letters from medical and mental health professionals as required by the surgeons and insurance plans. The process by which individual mental health professionals assess readiness for surgery varies across practices. The common goal of health care professionals is to assure that patients have the capacity to provide consent and are fully informed about the mechanics, recovery, and irreversible nature of the surgery.

Study Recruitment and Data Collection
Participants were recruited from the youth visiting the Center for Transyouth Health and Development for routine gender-related care between June 2016 and December 2016. A total of 52 patients (13.5%) were ineligible to participate in this study because they did not have chest tissue as a result of being either prepubertal or having taken puberty-blocking medications early in development. The remaining 332 transmasculine youth in active care were considered eligible for the study. All transmasculine youth who met study inclusion criteria and came for visits during this time were approached to participate. Non-surgical youth outnumbered postsurgical youth in active care at the clinic by a ratio of 3.5:1, and to survey as many postsurgical youth as possible, study staff attempted to contact via telephone all postsurgical youth who had not visited the clinic during the enrollment period. Two postsurgical youth refused the survey, and 24 (26%) could not be contacted. Of those who could not be contacted, 12 had no working phone number, 7 did not respond to 3 messages left, and 5 agreed to participate but could not coordinate a time. Telephone calls and clinic visits during the study period yielded 68 (72%) completed surveys from postsurgical participants.

To obtain a sample of youth without surgery, we recruited until a comparable number of surveys were completed during the window of clinical visits. None of the youth who had not undergone surgery who were approached refused to participate.

The 10-minute survey collected demographic information, characteristics of surgery, and chest dysphoria. No incentive was provided for survey completion. Study data were collected and managed using Research Electronic Data Capture electronic data capture tools, which are hosted at the Southern California Clinical and Translational Science Institute.12

Development of the Chest Dysphoria Scale
To develop the Chest Dysphoria Scale, 21 survey items were generated that queried multiple aspects of chest dysphoria based on clinical experience of the first author over the past 11 years of delivering clinical care for transgender youth in a large, urban, hospital-based gender clinic. To establish face validity from the community perspective, the scale was reviewed by a small number of transmasculine youth and transmasculine adults who evaluated whether the questions captured elements of chest dysphoria effectively, used appropriate language, and was otherwise generally acceptable. The scale includes items related to physical functioning, including hygiene and exercise, intimate partnerships and dating, being perceived as a member of a gender other than their gender of identity, and disruption of future plans. Items such as “I avoid bathing/showering in order to avoid seeing my chest,” and “I avoid seeking medical care because of my chest” were scored using a Likert scale, from 0 (never) to 3 (all the time). The complete Chest Dysphoria Scale is displayed in Table 1.

A principal components extraction method by an oblique (oblimin) rotation yielded a single factor comprised of 17 items (eigenvalue, 11.1). The same factor structure emerged when analyses were conducted with nonsurgical and postsurgical cohorts separately. After imputing the mean of all completed items in place of missing values, the 17 items yielded a composite score ranging from 0 to 51, with higher scores indicating greater chest dysphoria. Missing data were minimal (<5%) for all items. Data with mean imputations were used to calculate the α and also for subsequent analyses involving the Chest Dysphoria Scale. Results of tests for internal consistency suggest high reliability (Cronbach α for postsurgical patients, .79; Cronbach α for nonsurgical patients, .89). See Table 1 for information about the 4 items dropped from the scale.

Statistical Analysis
Descriptive characteristics for both nonsurgical and postsurgical cohorts were summarized. The ages of respondents were stratified by age for binary analyses (<18 years and ≥18 years). In the nonsurgical cohort, the analysis was dichotomized based on age at the time of survey, and in the postsurgical cohort, the analysis was based on age at time of chest surgery. To examine the utility of the 1 year taking testosterone prior to surgery recommended by insurance plans, a simple linear regression model was used to evaluate the relationship between duration of time taking testosterone and chest dysphoria scores in nonsurgical cohort respondents. Results were expressed as regression coefficients with 95% confidence intervals. Analyses were conducted using IBM SPSS Statistics, version 17.0 (IBM Corporation).

Results
Descriptive Characteristics
At the time of survey, the mean (SD) age of postsurgical participants was 19 (2.5) years (range, 14-25 years). The length of time between survey and chest surgery varied from less than 1 year to 5 years (Table 2). The mean (SD) age at chest surgery in this cohort was 17.5 (2.4) years (range, 13-24 years), with 33 (49%) being younger than 18 years. Of the 33 postsurgical participants younger than 18 years at surgery, 16 (48%) were 15

Table 1

<table>
<thead>
<tr>
<th>Item</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>I avoid bathing/showering in order to avoid seeing my chest</td>
<td>10</td>
<td>26%</td>
</tr>
<tr>
<td>I avoid seeking medical care because of my chest</td>
<td>12</td>
<td>33%</td>
</tr>
<tr>
<td>I feel like I do not fit in with other transgender youth</td>
<td>15</td>
<td>42%</td>
</tr>
<tr>
<td>I feel like I do not fit in with my friends</td>
<td>14</td>
<td>39%</td>
</tr>
<tr>
<td>I feel like I do not fit in with my family</td>
<td>13</td>
<td>36%</td>
</tr>
<tr>
<td>I feel like I do not fit in with my community</td>
<td>12</td>
<td>33%</td>
</tr>
<tr>
<td>I feel like I do not fit in with strangers</td>
<td>11</td>
<td>30%</td>
</tr>
<tr>
<td>I feel like I do not fit in with my peers</td>
<td>9</td>
<td>26%</td>
</tr>
<tr>
<td>I feel like I do not fit in with my schoolmates</td>
<td>8</td>
<td>22%</td>
</tr>
<tr>
<td>I feel like I do not fit in with my school</td>
<td>7</td>
<td>19%</td>
</tr>
<tr>
<td>I feel like I do not fit in with my teachers</td>
<td>6</td>
<td>17%</td>
</tr>
<tr>
<td>I feel like I do not fit in with my classmates</td>
<td>5</td>
<td>14%</td>
</tr>
<tr>
<td>I feel like I do not fit in with my friends</td>
<td>4</td>
<td>11%</td>
</tr>
<tr>
<td>I feel like I do not fit in with my family</td>
<td>3</td>
<td>8%</td>
</tr>
<tr>
<td>I feel like I do not fit in with my community</td>
<td>2</td>
<td>6%</td>
</tr>
<tr>
<td>I feel like I do not fit in with my school</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>I feel like I do not fit in with my schoolmates</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>I feel like I do not fit in with my schoolmates</td>
<td>1</td>
<td>3%</td>
</tr>
</tbody>
</table>

**Note:** The scale includes items related to physical functioning, including hygiene and exercise, intimate partnerships and dating, being perceived as a member of a gender other than their gender of identity, and disruption of future plans. Items such as “I avoid bathing/showering in order to avoid seeing my chest,” and “I avoid seeking medical care because of my chest” were scored using a Likert scale, from 0 (never) to 3 (all the time). The complete Chest Dysphoria Scale is displayed in Table 1.
years or younger (Figure). At the time of survey, the mean (SD) age of participants without surgery was 17 (2.5) years (range, 13-23 years), with 39 (57%) being younger than 18 years.

Emotional and Physical Features of Postsurgical Cohort
All postsurgical participants (68 of 68; 100%) affirmed the statement, “It was a good decision to undergo chest reconstruction.” Sixty-seven of 68 postsurgical respondents reported no regret about undergoing the procedure. Only 1 participant (who was older than 18 years at the time of surgery) reported experiencing regret “sometimes.” The most common complications reported following chest surgery were temporary and permanent loss of nipple sensation (40 of 68, or 59%, and 22 of 68, or 32%, respectively; permanency was assessed as continuation of the condition from surgery to the time of survey collection), loss of sensation in other areas of the chest (28 of 68; 41%), and unequal chest appearance (9 of 68; 13%) (Table 3). There were no statistically significant differences in complication rates reported between those younger than 18 years vs those 18 years or older at the time of surgery. Mean (SD) chest dysphoria scores among postsurgical participants were 3.3 (3.8) and were not significantly associated with length of time between surgery and survey, complication rates, or age group (minors vs those 18 years or older). Items from the Chest Dysphoria Scale indicating functional limitations were rarely endorsed (Table 1).

Nonsurgical Cohort
Interest in chest reconstruction among respondents was high, with nearly 70% responding to the question, “How important

<table>
<thead>
<tr>
<th>Item</th>
<th>Nonsurgical Patients (n = 68)</th>
<th>Postsurgical Patients (n = 68)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I like looking at my chest in the mirror</td>
<td>7 (10)</td>
<td>57 (84)</td>
</tr>
<tr>
<td>Taking a shower/bath is difficult because I have to see my chest</td>
<td>40 (59)</td>
<td>1 (2)</td>
</tr>
<tr>
<td>I avoid going to the beach and/or swimming in public places because of my chest</td>
<td>55 (81)</td>
<td>7 (10)</td>
</tr>
<tr>
<td>I get gendered as female because of my chest</td>
<td>24 (35)</td>
<td>1 (2)</td>
</tr>
<tr>
<td>Dating/forming intimate partnerships is more difficult because of my chest</td>
<td>34 (50)</td>
<td>1 (2)</td>
</tr>
<tr>
<td>Physical intimacy/sexual activity is difficult because of my chest</td>
<td>41 (60)</td>
<td>2 (3)</td>
</tr>
<tr>
<td>I have struggled to make future plans because of my chest</td>
<td>39 (57)</td>
<td>1 (2)</td>
</tr>
<tr>
<td>I avoid exercise because of my chest</td>
<td>32 (47)</td>
<td>1 (2)</td>
</tr>
<tr>
<td>I avoid shopping/buying clothing because of my chest</td>
<td>21 (31)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>I avoid seeking medical care because of my chest</td>
<td>9 (13)</td>
<td>1 (2)</td>
</tr>
<tr>
<td>I feel like my life hasn’t started because of my chest</td>
<td>40 (59)</td>
<td>1 (2)</td>
</tr>
<tr>
<td>I avoid swimming in private places because of my chest</td>
<td>44 (65)</td>
<td>2 (3)</td>
</tr>
<tr>
<td>I have to buy/wear certain clothes because of my chest</td>
<td>54 (79)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>I sleep with a binder on at night</td>
<td>11 (16)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>I avoid using locker rooms because of my chest</td>
<td>53 (78)</td>
<td>5 (7)</td>
</tr>
<tr>
<td>I worry that people are looking at my chest</td>
<td>57 (84)</td>
<td>7 (10)</td>
</tr>
<tr>
<td>I participate in life less than others because of my chest</td>
<td>41 (60)</td>
<td>1 (2)</td>
</tr>
<tr>
<td>Thinking about my chest does not get in the way of daily activities</td>
<td>13 (19)</td>
<td>40 (59)</td>
</tr>
<tr>
<td>My chest does not get in the way of attending school/work</td>
<td>15 (22)</td>
<td>42 (62)</td>
</tr>
<tr>
<td>I avoid bathing/showering in order to avoid seeing my chest</td>
<td>11 (16)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>I bind my chest in the daytime</td>
<td>60 (88)</td>
<td>0 (0)</td>
</tr>
</tbody>
</table>

* Frequencies and corresponding percentages represent combine responses of “frequently” and “all the time.”

Graph includes all study participants who had undergone chest reconstruction (n = 68).
Chest Dysphoria and Chest Reconstruction Surgery in Transmasculine Youth

Original Investigation Research

Comparison of Chest Dysphoria Scale Scores by Cohort

Table 3. Complications of Chest Reconstruction Surgery

<table>
<thead>
<tr>
<th>Complication</th>
<th>Participants, No. (%) (n = 68)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temporary loss of nipple sensation</td>
<td>40 (59)</td>
</tr>
<tr>
<td>Loss of sensation of other areas of the chest</td>
<td>29 (41)</td>
</tr>
<tr>
<td>Long-term loss of nipple sensation</td>
<td>22 (32)</td>
</tr>
<tr>
<td>Keloid (excessive) scarring</td>
<td>10 (15)</td>
</tr>
<tr>
<td>Unequal chest appearance</td>
<td>9 (13)</td>
</tr>
<tr>
<td>Postoperative hematoma</td>
<td>7 (10)</td>
</tr>
<tr>
<td>Postoperative pain beyond normal healing time</td>
<td>6 (9)</td>
</tr>
<tr>
<td>Nipple/areola(s) too large</td>
<td>5 (7)</td>
</tr>
<tr>
<td>Complications related to anesthesia</td>
<td>5 (7)</td>
</tr>
</tbody>
</table>

Comparison of Chest Dysphoria Scale Scores by Cohort

Possible chest dysphoria composite scores ranged from 0 to 51, with higher scores indicating greater distress. Chest dysphoria composite mean (SD) scores differed significantly between those who had not undergone chest reconstruction (29.6 [10.0]; n = 68) and those who had (3.3 [3.8]; n = 68; P < .001). There was no significant difference in mean chest dysphoria score between those who had surgery at ages younger than 18 years vs those who had surgery at 18 years or older.

Discussion

Concern exists among parents and professionals about surgical interventions for transgender youth, particularly those of minority age status. Professionals harbor concerns about liability in performing transgender-related surgeries that patients may potentially regret after the procedure. This study demonstrated very low rates of regret among postsurgical youth among minors as well as those 18 years and older at the time of surgery. Reported adverse effects in the postsurgical cohort were also relatively minimal.

Chest dysphoria can negatively affect the health of young transmasculine individuals. Within our cohort of youth who had not undergone surgery, substantial numbers of youth were avoiding seeking medical care because of their chests and were binding their chests frequently or all the time, including during sleep. Youth feeling that their chest impeded life plans is an indicator of the negative effect of having an internal masculine gender identity that is at odds with the outward appearance of a female chest contour. Comparison of postsurgical and nonsurgical youth suggests that chest reconstruction had a positive effect both transmasculine minors and young adults.

Many insurance companies require continuous 12 months of testosterone use prior to undergoing chest surgery. The nonsurgical cohort in this study had been taking testosterone for periods ranging from less than 1 month to 52 months, with chest dysphoria increasing the longer their time on hormones. This finding should not be construed as an endorsement to withhold or delay testosterone initiation to avoid chest dysphoria intensity. It is unclear if the chest dysphoria increase is specific to the length of time taking testosterone or simply because of a longer waiting period between initiation of physical gender transition and surgery. The increasing chest dysphoria after testosterone treatment begins does reflect a common clinical phenomenon: a honeymoon period after testosterone initiation that quickly becomes eclipsed by the greater disparity between a more masculine presentation and a female chest contour. Clinicians should advise patients and families that chest dysphoria may increase over time after starting hormone therapy. In addition, the recommendation of many insurance companies that individuals take hormones for 12 months prior to chest surgery may create additional barriers to chest surgery and cause additional harm.

Limitations

Despite our participants being recruited from a single site, these data are likely generalizable to youth receiving care at clinic sites in similar settings: large, urban, academically affiliated clinics serving multiethnic youth. This investigation was limited by the cross-sectional research design; a prospective design collecting data on the same participants before and after surgical intervention would likely yield results more specific to the intervention of chest reconstruction.

An additional limitation of the study was the small sample size. The nonsurgical cohort was a convenience sample, recruited from those with appointments during the data collection period. There could be unknown imbalances between the nonsurgical and postsurgical cohorts that could have confounded the study findings.

Finally, the Chest Dysphoria Scale is not yet validated, and may not represent distress or correlate with validated measures of quality of life, depression, anxiety, or functioning. Our intent is to move forward with the process of validation, so that it might be useful in clinical practice.

Conclusions

In future studies, it would be informative to determine whether the outcome of either chest dysphoria or chest surgery varies with race/ethnicity, type of surgery, or gender identity (nonbinary vs masculine). Future studies should consider investigating the outcome of chest dysphoria on participation and functioning in school, work, and family activities.
Given the numerous complications associated with chest binding, the negative emotional and mental effects of chest dysphoria, and the positive outcome of chest surgery demonstrated in this study, changes in clinical practice and in insurance plans’ requirements for chest surgery seem essential. Youth should be referred for chest surgery based on their individual needs, rather than their age or time spent taking medication. Individualized, patient-centered care plans should be considered the standard of care for all transgender adolescents, and referrals should be made accordingly.

REFERENCES
Exhibit B
Gender-affirming hormones and surgery in transgender children and adolescents

Simone Mahfouda, Julia K Moore, Aris Siafarikas, Timothy Hewitt, Uma Ganti, Ashleigh Lin*, Florian Daniel Zepf*

The Endocrine Society Clinical Practice Guidelines on the treatment of gender incongruent people recommend the use of gender-affirming cross-sex hormone (CSH) interventions in transgender children and adolescents who request this treatment, who have undergone psychiatric assessment, and have maintained a persistent gender identity. The intervention can help to affirm gender identity by inducing masculine or feminine physical characteristics that are congruent with an individual’s gender expression, while aiming to improve mental health and quality-of-life outcomes. Some transgender individuals might also wish to access gender-affirming surgeries during adolescence; however, research to inform best clinical practice for surgeons and other medical professionals is scarce. This Review explores the available published evidence on gender-affirming CSH and surgical interventions in transgender children and adolescents, amalgamating findings on mental health outcomes, cognitive and physical effects, side-effects, and safety variables. The small amount of available data suggest that when clearly indicated in accordance with international guidelines, gender-affirming CSHs and chest wall masculinisation in transgender males are associated with improvements in mental health and quality of life. Evidence regarding surgical vaginoplasty in transgender females younger than age 18 years remains extremely scarce and conclusions cannot yet be drawn regarding its risks and benefits in this age group. Further research on an international scale is urgently warranted to clarify long-term outcomes on psychological functioning and safety.

Introduction

Transgender is an umbrella term used to describe individuals for whom gender identity is incongruent with sex assigned at birth. Marked distress associated with this incongruence is often referred to as gender dysphoria.1 Gender-affirming cross-sex hormones (CSHs), which include oestrogens for transgender females and testosterone for transgender males, remain the cornerstone of interventions for many individuals who identify as transgender or experience gender dysphoria, or both. These interventions help to affirm gender identity by inducing masculine or feminine physical characteristics that are congruent with an individual’s gender expression, and additionally improve mental health functioning and quality of life.2,3 Some transgender individuals might also pursue gender-affirming surgery, which includes vaginoplasty, orchietomy, hysterectomy and salpingo-oophorectomy, metoidioplasty or phalloplasty, breast augmentation or bilateral mastectomy and chest reconstruction, and facial and laryngeal or tracheal surgeries, depending on gender identity and personal preference.

The benefits and risks of hormonal and surgical interventions have been studied in transgender adults,4–8 but there are very few studies in transgender adolescents. The scarcity of studies in adolescents could be because gender-affirming hormones and surgeries have only been used in adolescents since the late 1980s to the 1990s, and access remains restricted and variable in different geographical locations.8 The clinical care trajectory of transgender adolescents is notably different to that of transgender adults examined in the literature, and findings from adult studies might not translate to younger age groups. For example, transgender adolescents could be offered gender-affirming CSHs following puberty suppression regimens,9–11 whereas adults commence CSHs after puberty is complete. Referrals to child and adolescent gender clinics have continued to increase worldwide annually,12,13 and very few transgender young people who are eligible for hormonal interventions, in accordance with the World Professional Association of Transgender Health (WPATH) Standards of Care (SoC),14 receive these treatments.17

Longitudinal data since the year 2000 indicate that the incidence of gender-affirming surgery has also increased,18 including a notable rise in the number of transgender female minors seeking vaginoplasty.19 Collectively, these observations—combined with historic global developments in transgender rights,20 and recognition on the importance of supportive gender-affirming care for minors21—emphasise the importance of collating an optimum knowledge base to inform best clinical practice in the care of this group. Hence, in this Review, we explore the available published evidence on gender-affirming CSHs in transgender adolescents, amalgamating findings on mental health outcomes, cognitive and physical effects, and safety variables. We also discuss the available published research examining gender-affirming surgery in transgender adolescents,22–24 synthesising findings on psychological outcomes and adverse effects.

Historical underpinnings

Historically, transgender children and adolescents were offered behavioural and psychodynamic therapies, with the goal of encouraging identification with the birth-assigned sex. However, long-standing clinical observations in transgender children and adolescents from the VU University Medical Centre in Amsterdam, the Netherlands, found that gender dysphoria did not change, despite extensive therapeutic efforts.24 The use of puberty
suppression, followed by CSHs, commenced in the late 1980s in the Netherlands. Since then, it has been a topic of dispute: some clinicians express the opinion that puberty should be experienced in its entirety, as gender identity is still developing, and arguments against CSH initiation in this age group cite concern about the adolescent’s ability to consent to treatment that has permanent physical effects (eg, lowered voice pitch and laryngeal prominence in transgender males receiving testosterone).

In 1998, WPATH issued guidelines on the clinical care of transgender adolescents minors. Gender-affirming interventions were conceptualised as a triad, with progressive levels of irreversibility: Stage 1, puberty suppression (reversible); Stage 2, gender-affirming hormones (partially irreversible), and Stage 3, gender-affirming surgery (entirely irreversible). Although the guidelines stated that surgical interventions (eg, vaginoplasty in transgender females, gonadectomy in transgender males) should not be done in patients younger than age 18 years, they also advised that puberty suppression was possible for some transgender adolescents younger than age 16 years, but only when pubertal development was well established. Gender-affirming CSHs were accessible for eligible candidates from age 16 years, but these candidates were advised to delay the decision until adulthood. Additionally, the capacity of the adolescent to provide informed consent was pivotal. Clinical practice has evolved since these first guidelines, and CSHs are now prescribed to transgender people younger than age 16 years in some centres. Several guidelines available advise on clinical decision making, with respect to the age at which children and adolescents are likely to have the capacity to appropriately consent to such treatments (table 1). Minimum eligibility criteria for initiating gender affirming care in transgender children and adolescents are also summarised (panel 1).

Gender-affirming CSHs
Almost all the studies done in transgender adolescents have used longitudinal retrospective methods, in which limitations include loss to follow-up, and sample sizes are often small. Intervention regimens are also heterogeneous and adherence can be inconsistent. Findings are predominantly based on short-term safety profiles, and medium to high levels of bias (through participation, attrition, and outcome measures) have been reported. Published studies that examined gender-affirming CSHs in adolescents are summarised (table 2).

Psychological benefits
Mental health concerns, including anxiety disorders, and suicidal ideation are much more prevalent in transgender young people than in the cisgender population (people in whom sex assigned at birth corresponds with gender identity). The clinical consensus is that poor mental health is often a consequence of the incongruence between sex assigned at birth and gender identity, and that stigma, bullying, and family non-acceptance are also important contributing factors. In transgender adults, gender-affirming CSHs and surgical interventions have been associated with a substantial reduction in psychological distress and body dysphoria, and improvements in quality of life.

Only two studies have investigated the potential for gender-affirming CSHs to improve mental health outcomes and alleviate body dysphoria in transgender adolescents. De Vries and colleagues assessed gender dysphoria, body satisfaction, and psychological functioning in 55 transgender adolescents at baseline (T0), during puberty suppression (T1), and in adulthood, following CSH for all at age 16 years, and gender-affirming surgery for some (T2). Compared with T0 and T1 scores, a substantial decrease was observed in gender dysphoria at T2. Both transgender males and females also reported significantly less dissatisfaction with primary and secondary sexual characteristics, less psychopathology, and improved global functioning, with quality of life similar to age-matched cisgender peers. A limitation of the

Key messages

- Over the past few years the clinical landscape of gender-affirming care for transgender children and adolescents has rapidly evolved.
- The Endocrine Society Clinical Practice Guidelines for the Endocrine Treatment of Gender Dysphoria/Gender Incongruent Persons, published in 2017, now recognise that there might be compelling reasons to initiate gender-affirming cross-sex hormonal (CSH) interventions in transgender minors younger than aged 16 years.
- In Australia, following the legal cases of Re: Kelvin and Re: Matthew, application to the Family Court of Australia for permission to commence gender-affirming CSHs and chest reconstruction surgery for transgender adolescents younger than aged 18 years is now no longer required, provided that there is no dispute between the child, parents, and treating doctors.
- On June 18, 2018, the first clinical guidelines focusing exclusively on the care of transgender and gender diverse children were published by the Royal Children’s Hospital Service, Melbourne, Australia.
- Research indicates that the number of transgender adolescents seeking gender-affirming hormonal and surgical interventions (ie, bilateral mastectomy for transgender males and vaginoplasty for transgender females) has increased worldwide over the past few years.
- Although guideline recommendations advise waiting until older than 18 years, vaginoplasties are being done in transgender adolescent females in several regions in the world (USA, Asia, Europe).
- Surgeons have noted a marked shift in the age demographic seeking vaginoplasty in general, towards younger transgender females.
- According to the 11th revision of the International Classification of Diseases, the number of children and adolescents seeking supportive gender-affirming care is likely to continue to rise, because of the increased acceptance of transgender people in society and the depathologisation of transgender identity (including childhood transgender identities).
- There are gaps in the evidence base regarding gender-affirming interventions for transgender children and adolescents; however, examination of the available evidence will help to guide best practice in the clinical care of this group.
study was that gender dysphoria and psychological functioning were not assessed during intervention with CSHs only, which was before surgical intervention in adulthood for many participants, so it was not possible to disentangle the psychological benefits of CSHs from that of surgical interventions. Importantly, these participants were originally from a larger cohort (n=70), whose outcomes following puberty suppression in adolescence were reported previously.49 The findings of De Vries and colleagues for absence of regret and high quality of decision making, no empirical evidence regarding an appropriate age (assessment of capacity to consent is emphasised) reports of initiating CSHs at age 14 years in the USA,50 and age 15 years in Japan51 is consistent with the findings in the literature for transgender adolescents12 which could interfere with treatment have been addressed, such that the adolescent’s situation and functioning are stable enough to start hormonal treatment and that the adolescent has sufficient mental capacity to estimate the consequences of the (partly) irreversible treatment. A study that acknowledged the high rate of problematic weight management behaviours in transgender adolescents assessed body dissatisfaction and disordered eating in gender non-conforming youth (n=50).18 Transgender adolescent females and males were found to have significantly more symptoms of disordered eating than their cisgender peers when assessed at baseline. However, at 6 months, participants who had commenced gender-affirming CSHs (n=18) had lower levels of body dissatisfaction and less disordered eating behaviours than those who had not yet received treatment. The data complemented findings from an adult transgender health service in the UK (n=563),28 where individuals receiving gender-affirming hormones showed less disordered eating psychopathology than those who had not yet received treatment. Collectively, the findings from the very small amount of data available suggest that gender-affirming hormones are associated with improvements in gender dysphoria or mental health, or both, in transgender adolescents, which is consistent with the findings in the literature for transgender adults.4 The evidence presented by De Vries and colleagues for absence of regret and high quality of life is based on a cohort that commenced CSHs at age 16 years, but clear findings were not obtained as to whether starting CSHs at a younger age could result in different outcomes. Studies examining psychological outcomes

<table>
<thead>
<tr>
<th>Panel 1: Minimum requirements for gender-affirming cross-sex hormones in transgender adolescents‡</th>
</tr>
</thead>
<tbody>
<tr>
<td>A qualified mental health practitioner has confirmed:</td>
</tr>
<tr>
<td>• The presence of persistent gender dysphoria</td>
</tr>
<tr>
<td>• That co-existing psychological, medical, or social problems that could interfere with treatment have been addressed, such that the adolescent’s situation and functioning are stable enough to start hormonal treatment</td>
</tr>
<tr>
<td>• That the adolescent has sufficient mental capacity to estimate the consequences of the (partly) irreversible treatment</td>
</tr>
</tbody>
</table>

The adolescent:

• Has been informed of the (irreversible) effects and side-effects of the treatment (including potential loss of fertility and options to preserve fertility)
• Has given informed consent and—particularly when the parents or other caretakers or guardians have consented to the treatment and are involved in supporting the adolescent throughout the treatment process

A paediatric endocrinologist or other clinician experienced in pubertal induction:

• Agrees with the indication of sex hormone treatment
• Has confirmed that there are no medical contraindications of hormone treatment

---

Table 1: Guidelines on capacity to consent to treatment and age for commencement of treatment

<table>
<thead>
<tr>
<th>WPATH SoC version 7</th>
<th>Endocrine Society practice guidelines for gender dysphoric or incongruent individuals124</th>
<th>Australian SoC treatment guidelines1</th>
<th>Other experiences in clinical practice from the literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender-affirming hormones</td>
<td>Does not specify absolute age but mentions that many countries consider legal adulthood to be aged 16 years for medical decisions</td>
<td>Most adolescents will have capacity to give informed consent at age 16 years and there could be compelling reasons to initiate CSHs before age 16 years, despite minimal published data</td>
<td>Adolescents vary in the age of competency for medical decision making; no empirical evidence regarding an appropriate age (assessment of capacity to consent is emphasised)</td>
</tr>
<tr>
<td>Gender-affirming surgery</td>
<td></td>
<td></td>
<td>Reports of initiating CSHs at age 14 years in the USA,50 and age 15 years in Japan51</td>
</tr>
<tr>
<td>Genital surgery</td>
<td>Delay until the individual is 18 years or older, and has spent at least 1 year living in gender role congruent with gender identity</td>
<td>Delay until the individual is 18 years or older</td>
<td>Reports of vaginoplasties in transgender female adolescents in the USA,52 Asia,53 and Europe54 as young as 15 years in Thailand55 and the USA56</td>
</tr>
<tr>
<td>Chest surgery (transgender males)</td>
<td>Allowed in transgender males &lt;18 years preferably after living in desired gender role with at least 1 year of testosterone treatment</td>
<td>Clinicians determine optimal timing on the basis of physical and mental status of the individual</td>
<td>Might be appropriate in adolescence; decisions made jointly with adolescent, guardian and clinician</td>
</tr>
</tbody>
</table>

WPATH=World Professional Association for Transgender Health. SoC=standards of care. CSH=cross-sex hormone. *Endorsed by the American Association of Clinical Endocrinologists, American Society of Andrology, European Society for Pediatric Endocrinology, European Society of Endocrinology, Pediatric Endocrine Society, and World Professional Association for Transgender Health. †From the Royal Children’s Hospital Melbourne, Murdoch Children’s Research Institute, Australian Children’s Gender Clinics Network; endorsed by Australian and New Zealand Professional Association for Transgender Health.
<table>
<thead>
<tr>
<th>Country</th>
<th>Study design</th>
<th>Participants (n)</th>
<th>Demographic information</th>
<th>Intervention</th>
<th>Conclusions</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>De Vries et al (2014)</td>
<td>Netherlands Longitudinal</td>
<td>55 (33 transgender males, 22 transgender females)</td>
<td>Mean age of transgender females: 13.6 years (SD 1.8) at baseline, 14.8 years (2.0) at start of GnRHa, 16.5 years (1.30) at start of GAH, 19.6 years (0.9) at GAS, 21.0 years (1.1) post GAH or GAS</td>
<td>Puberty suppression: GnRHa; GAH: unspecified, refer to the Dutch Protocol on endocrinology management of transgender adolescents; GAS: surgical procedures unspecified</td>
<td>Gender dysphoria was alleviated and global functioning improved</td>
<td>Data are from one clinic, potential selection bias because of sample loss from the original cohort</td>
</tr>
<tr>
<td>Trotman et al (2014)</td>
<td>USA Retrospective pilot study</td>
<td>14 (8 transgender males, 6 transgender females)</td>
<td>Not available</td>
<td>GAH (type and dosage unspecified)</td>
<td>Significant changes in haematocrit in transgender males (only metabolic variable affected); large-scale studies required</td>
<td>Pilot study (very small sample size)</td>
</tr>
<tr>
<td>Klink et al (2015)</td>
<td>Netherlands Longitudinal</td>
<td>34 (19 transgender males, 15 transgender females)</td>
<td>Transgender males: mean age at start of GnRHa, 15.0 years (SD 2.0); median duration of GnRHa, 15.0 years (range 0.25–5.20); mean age at start of GAH, 16.4 years (2.3)</td>
<td>Puberty suppression: GnRHa 3.75 mg (intramuscularly every 4 weeks); GAH: incremental estradiol (oral) in transgender females, mixed testosterone esters every 2–4 weeks in transgender males</td>
<td>BMD was below pretreatment potential; either attainment of peak bone mass was delayed or peak bone mass itself was attenuated</td>
<td>Data on total BMD are missing; findings are limited by lack of information influencing bone mass accrual (dietary calcium intake, 25-hydroxyvitamin D blood concentration, and weight-bearing exercise)</td>
</tr>
<tr>
<td>Tack et al (2016)</td>
<td>Belgium Retrospective chart review</td>
<td>70 (transgender males only), 45 on lynestrenol monotherapy, 25 on lynestrenol plus testosterone</td>
<td>Mean age at start of lynestrenol monotherapy, 15.8 years; mean treatment duration, 12.6 months; Mean age at start of lynestrenol plus testosterone, 17.4 years; mean treatment duration, 11.4 months</td>
<td>Puberty suppression: lynestrenol at Tanner Stage IV breast development; GAH: testosterone esters—if adolescent was aged &gt;16 years (but &lt;17 years), intramuscular testosterone was initiated at 50 mg (once every 2 weeks, increased by 25 mg every 2 weeks until 125 mg every 2 weeks is reached); if adolescent was aged 17–19 years, intramuscular testosterone is initiated at 100 mg every 2 weeks and increased to 125 mg every 2 weeks after 6 months; after reaching adult replacement dose, long-acting intramuscular testosterone undecylate was initiated</td>
<td>Lynestrenol plus testosterone was effective and safe; close monitoring of liver enzymes is advised</td>
<td>Risk for PCOS and thromboembolism unclear</td>
</tr>
<tr>
<td>Burke et al (2016)</td>
<td>Sweden, Netherlands Longitudinal</td>
<td>21 transgender males, 20 cisgender males, 21 cisgender females</td>
<td>Transgender males: mean age at baseline, 16.1 years (SD 0.8); mean age after testosterone treatment initiated (T1), 17.1 years (0.7); mean treatment duration of GnRHa, 24 months (range 2–48); mean treatment duration of testosterone, 10 months (range 6–15)</td>
<td>Puberty suppression: GnRHa 3.75mg (intramuscularly every 4 weeks); GAH: testosterone esters every 2 weeks or testosterone undecylate every 12 weeks; if &gt;16.5 years, initiation dose was 25 mg/m² every 2 weeks; if aged &lt;16.5 years, initiation was 75 mg/m² every 2 weeks</td>
<td>Little influence of GAH on cognitive function</td>
<td>Cannot rule out the potential effects of GnRHa; effects of menstrual cycle or oral contraceptive pill not accounted for</td>
</tr>
</tbody>
</table>

(Table 2 continues on next page)
from multiple transgender adolescent cohorts are urgently required to replicate the already available promising but preliminary data, and to explore the effect of changes in treatment protocols that have been evolving internationally. An important research topic would be whether starting CSHs at a younger age is associated with improved quality of life of transgender adolescents, or is associated with increased rates of regret or detransition.

![Table](Table 2 continues on next page)
Cognitive and brain-related effects

Neuroimaging studies in transgender adults suggest that gender-affirming hormones can affect brain structure and circuitry.12,13 Ventricle volume and thickness,14 hypothalamic neuropsychiatry,15 and functional connectivity.16 Steroid-dependent reorganisation of neural circuits is a central feature of adolescent brain development and is dependent on steroids.17

To the best of our knowledge, only one study has investigated gender-affirming hormones and brain function in transgender adolescents.18 Testosterone therapy in transgender males (n=21; mean age 16·1 years) was associated with altered cognitive processes, as assessed by the mental rotation task (MRT).19,20 A measure of visuospatial working memory that elicits cognitive sex differences.21,22 Cisgender males showed stronger activation of superior parietal regions, whereas cisgender females showed decreased frontal and temporal brain activation of superior parietal regions, whereas cisgender males, before the transgender male

Table 2: Summary of published studies evaluating gender-affirming cross-sex hormones in transgender adolescents

<table>
<thead>
<tr>
<th>Country</th>
<th>Study design</th>
<th>Participants (n)</th>
<th>Demographic information</th>
<th>Intervention</th>
<th>Conclusions</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>Retrospective medical review</td>
<td>192 (121 transgender males, 71 transgender females)</td>
<td>Age range starting GAH 12–23 years (mean age 18 years); 13 started before age 16 years</td>
<td>Puberty suppression: transgender males, GnRHa started in adolescence, before study (n=2); transgender females, GnRHa started in early puberty, before study (n=1); spironolactone (100–200 mg/day orally); GnRH, or progesterone started with CSHs (n=27); no GnRHa because of expense (n=7)</td>
<td>A 2-year treatment course of GAHs appears to be safe, with no clinically significant changes observed; for pubertal induction, extensive laboratory monitoring might be unnecessary</td>
<td>Some missing data, small sample size for most physiological variables</td>
</tr>
<tr>
<td>USA</td>
<td>Prospective longitudinal chart review</td>
<td>101 at baseline, 59 at follow-up (25 transgender females, 34 transgender males)</td>
<td>Age range starting GAH 12–23 years (mean age 18 years); 13 started before age 16 years</td>
<td>Puberty suppression: transgender males, GnRHa started in adolescence, before study (n=2); transgender females, GnRHa started in early puberty, before study (n=1); spironolactone (100–200 mg/day orally); GnRH, or progesterone started with CSHs (n=27); no GnRHa because of expense (n=7)</td>
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</tr>
</tbody>
</table>

 Estradiol is a synthetic form of oestradiol. GnRHα=gonadotropin-releasing hormone agonist. GAH=gender affirming hormone (either oestrogen or testosterone). GAS=gender-affirming surgery. BMD=bone mineral apparent density. ADHD=attention deficit hyperactivity disorder. ALT=alanine aminotransferase. AST=aspartate aminotransferase. LBM=lean body mass. WHR=waist to hip ratio.

Table 2: Summary of published studies evaluating gender-affirming cross-sex hormones in transgender adolescents

Cognitive and brain-related effects

Neuroimaging studies in transgender adults suggest that gender-affirming hormones can affect brain structure and circuitry.12,13 Ventricle volume and thickness,14 hypothalamic neuropsychiatry,15 and functional connectivity.16 Steroid-dependent reorganisation of neural circuits is a central feature of adolescent brain development and is dependent on steroids.17

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administered testosterone. Compared with cisgender females, transgender males also showed a significant difference in frontal brain activation, although no differences were detected between transgender males and cis males. After the second MRT, transgender males and cisgender males showed increased bilateral parietal and left frontal activation (brain areas involved in mental rotation). The authors concluded that these preliminary findings could suggest that transgender males have atypical sexual differentiation of brain areas involved in visuospatial cognitive functioning.

Clinical and biochemical effects

Oestrogen and testosterone therapies in transgender adults can exert transient or long-term effects on metabolic variables such as lipid status, which is supported by evidence from other studies in adolescent and adult populations that have received hormonal treatments for medical conditions (eg, testosterone for delayed pubertal development in cisgender males). Transgender adults have an elevated mortality risk compared with the cisgender population, but data suggest that this risk is attributable to extraneous factors, such as suicide, lifestyle factors, and complications related to HIV, rather than hormonal interventions.

The primary goal of gender-affirming CSH interventions is the degree of masculinisation or feminisation achieved in accordance with the patient’s wishes, rather than quantitative hormone values; for individuals that do not identify within the male or female binary distinction, target ranges might lie between male and female norms. Side-effects of gender-affirming hormonal interventions in transgender adolescents have been summarised (table 3). When monitoring changes in metabolic and biochemical variables over time, clinicians should refer to reference ranges of the individual’s affirmed gender. Sex-specific increases are observed in bone mineral density because of exposure to pubertal hormones; however, Z and T scores of the sex assigned at birth should be used on examination of bone variables.

Haematological variables

Elevations in haemoglobin and haematocrit have been noted in several populations that receive testosterone therapies, including transgender adult males, as well as men older than 74 years with subnormal serum testosterone concentrations and reduced mobility. Because testosterone therapies stimulate erythropoiesis, increases in haemoglobin and haematocrit are an anticipated physiological response. In contrast, cisgender men and women with low testosterone concentrations tend to have lower haemoglobin concentrations.

In a retrospective analysis of pre-existing data from five gender clinics in the USA, Jarin and colleagues found that a 6 month course of testosterone therapy in transgender adolescent males (n=72, mean age 16 years) was associated with statistically significant elevations in mean haemoglobin and haematocrit concentrations. A stimulating effect of testosterone on erythropoiesis (dependent on dose) has been noted in men receiving intramuscular testosterone enantate. Several other studies in transgender adolescent males have also showed a statistically significant increase in haemoglobin and haematocrit concentrations in response to testosterone therapy. Importantly, no clinical complications were observed to warrant treatment discontinuation. In their transgender adolescent male sample (n=25, mean age 17.4 years), Tack and colleagues noted that haemoglobin and haematocrit concentration variables increased, but had stabilised at 6 months.

In transgender adolescent females that received estradiol (a synthetic form of oestradiol), two separate studies found that haemoglobin and haematocrit had not decreased at either 6 months (n=44, mean age 18 years), or 12 months (n=28, median age 16 years). Conversely, Olson-Kennedy and colleagues noted a statistically significant decline in haemoglobin concentrations after a 2 year course of estradiol in their sample of transgender adolescent females (n=25, mean age 18 years).

Cardiovascular health

A systematic review of metabolic variables in transgender men that received testosterone consistently found decreased high density lipoprotein (HDL) concentrations, the most consistently affected lipid variable. Lowered HDL concentrations have been reported in young women receiving androgen replacement therapy for gonadal dysgenesis secondary to Turner syndrome, and in adolescent cisgender boys receiving testosterone therapy for delayed pubertal development.

A statistically significant decline in mean serum HDL concentration has been noted in transgender adolescent males after 6 months of testosterone treatment. In a separate study that examined HDL over a 2 year period (in a different sample of transgender adolescent males using testosterone) the mean HDL reduction was clinically significant. No changes in low-density lipoprotein (LDL) or triglycerides have been documented in the short term for transgender adolescent males, although statistically significant increases in triglyceride concentrations were observed by Olson-Kennedy and colleagues after 2 years of receiving testosterone. Overall, none of the studies reviewed showed significant changes in mean total cholesterol concentrations. Elevations in systolic and diastolic blood pressure with testosterone treatment have been observed after 2 years, but not 6 months. Changes in HbA1c, glucose, or insulin have not been observed.

Evidence regarding alterations in the aforementioned variables in transgender adolescents is in accordance with findings from a study in transgender adult males, which found that exogenous testosterone did not alter metabolic variables associated with polycystic ovarian syndrome.

A retrospective pilot study of transgender adolescent females (n=6) found a trend towards increasing HDL...
Table 3: Gender-affirming hormone medications and side-effects in transgender adolescent males and females

<table>
<thead>
<tr>
<th>Gender-affirming hormone medication administered in transgender adolescent males</th>
<th>Clinical investigation</th>
<th>Clinical outcome and interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lyslestrol and testosterone esters</td>
<td>Acne (n=13),27,28 metrorrhagia (n=4),28 raised cholesterol concentrations (n=6)29</td>
<td>Cholesterol &gt;200 mg/dL29</td>
</tr>
<tr>
<td>OCP containing ethinylestradiol to control menstrual cycle, plus testosterone cipionate injections (25 mg weekly); additional medications: dexamethasone, prednisolone, nortriptyline</td>
<td>Shortness of breath and pleuritic chest pain (n=1)31</td>
<td>Case study5 of one patient aged 17 years with a background history of obesity and smoking who presented to emergency department; CT angiography (chest) showed multiple bilateral pulmonary emboli, but no evidence of DVT on ultrasound of lower extremities; thrombophilia testing indicated no evidence of inherited thrombophilia, but weak evidence of lupus anticoagulant (no anticardiolipin or β2 glycoprotein antibodies)</td>
</tr>
</tbody>
</table>

| Testosterone (dose unspecified) | Secondary erythrocytosis (haematocrit >50%; n=2), acne (n=5)32 | Case 1:39 elevated haematocrit concentrations at 3 months; case 2:39 elevated haematocrit at 6 months (51.0%) and 9 months (52.7%); testosterone-induced or exacerbated acne39; severe nodulocystic acne (n=2); severe papulopustular acne (n=2), moderate comedonal acne (n=1) | Findings from a placebo-controlled meta-analytic study5 of testosterone therapy in transgender adult men indicate that intramuscular testosterone administration, and higher dose regimens, conferred a greater risk for elevated red cell indices.41 Nodulocystic acne treated with isotretinoin 20 mg/day for several months (one partial and one complete remission); papulopustular acne treated with doxycycline (50 mg or 100 mg/day for 6 weeks, additional topical tretinoin 0.05% for 3 months used for one case (one partial and one complete remission); comedonal acne treated with 3% benzoyl peroxide (complete remission)5 |

<table>
<thead>
<tr>
<th>Gender-affirming hormone medication administered in transgender adolescent females</th>
<th>Clinical investigation</th>
<th>Clinical outcome and interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyproterone acetate and estradiol</td>
<td>Breast and nipple tenderness (n=12); emotionality (n=6); hot flushes (n=3); hunger (n=3)31</td>
<td>The side effects were frequently reported</td>
</tr>
<tr>
<td>Ethinylestradiol (200 mg)</td>
<td>Elevated creatinine concentrations (n=1), hyperprolactinaemia and galactorrhoea (n=1)42</td>
<td>Creatinine level just greater than the normal range, 46–96 μmol/L after 1 year, but this resolved spontaneously (n=1); prolactin concentrations were elevated at 3 months and continued to slowly increase up to 3.2 μmol/L after 42 months (normal, &lt;0.6 μmol/L); no pituitary lesion on MRI</td>
</tr>
<tr>
<td>Spironolactone (100 mg daily) plus oestrogen</td>
<td>Hyperonataemia and hyperkalaemia (n=1)42</td>
<td>Sodium concentrations of 132 meq/L, potassium concentrations of 5.1 meq/L; patient’s care was complicated by multiple medical comorbidities including HIV, (treated with active antiretroviral therapy), and secondary syphilis (treated with oral antibiotics)</td>
</tr>
</tbody>
</table>

Estradiol is a synthetic form of oestradiol. OCP—oral contraceptive pill. DVT—deep vein thrombosis. VTE—venous thromboembolism. meq=millequivalents of solute.

Additional safety variables for monitoring hormone therapy

Studies that have examined safety indices in transgender adults receiving testosterone and oestrogen have mostly been reassuring, with many supporting the short-term safety of treatment, when taken in the context of medical supervision to monitor risks (eg, polycythaemia in transgender males, venous thromboembolism in transgender females).57,58

For transgender females, oestrogen therapy alone is insufficient to produce the desired feminising effects. Spironolactone, an aldosterone antagonist with weak oestrogenic properties, is one of the most commonly used adjuncts to support oestrogen therapy in transgender females. As a potassium-sparing diuretic, spironolactone can cause hyperkalaemia (refer to table 3 for case study details), therefore potassium concentrations should be monitored every 3 months. Other adjuncts that can support oestrogen therapy in transgender females include...
cypionate, which has progestational and antiandrogenic properties. Although widely used in Europe and Australia, it is not approved in the USA because of concerns over acute hepatic dysfunction, and rarely, occurrence of meningiomas. Use of smaller doses (12.5 mg) has substantially reduced the risk of these side-effects. Progestins and 5-α reductase inhibitors are also occasionally used.79

The study did not report any changes in other measures of liver or renal function. Although high doses of oestrogens might increase the risk and incidence of venous thrombo-embolic events in transgender women,80 lifestyle factors such as smoking, and the use of conjugated or synthetic oestrogens (eg, ethinylestradiol) might contribute to the elevated rate.81,82

| Table 4: Summary of published studies evaluating gender-affirming surgery in transgender adolescent minors |
|-----------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Country         | Study design  | Participants (n) | Demographic Information | Surgery                                                                 | Findings                                       | Limitations                                                                 |
| Cohen-Kettenis et al (1997) | Netherlands   | Longitudinal  | 19 (14 transgender males, 5 transgender females) | Mean age: 17 ± years (range 15-20) at baseline; 22 ± 0 years (range 19-27) at puberty suppression | Transgender males: bilateral mastectomy, hysterectomy with ovariectomy (most had not undergone phalloplasty) | Gender dysphoria resolved, no regret reported | Small sample size, sample selection bias |
| Smith et al (2001) | Netherlands   | Prospective follow-up study | Treatment group: n=20 (12 transgender males, 7 transgender females); non-treatment group: n=14 (9 transgender males, 5 transgender females) | Mean age in treatment group: 16 ± 6 years (range 15-0-19 0) at surgery; 23 ± 0 years (range 19-0-23 0) at follow-up; mean age in non-treatment group: 17 ± 3 years (range 13-7-20 2) at baseline; 21 ± 6 years (range 15-7-28 2) at follow-up | Transgender males in treatment group: bilateral mastectomy, phalloplasty (n=1); transgender females: vaginoplasty | Gender dysphoria significantly decreased in both groups compared with their pre-treatment scores, but decrease was significantly larger in the treatment group; no regret reported with surgery; some dissatisfaction due to visibility of scars (transgender males) | Small sample size, sample selection bias |
| De Vries et al (2014) | Netherlands   | Longitudinal  | 53 (33 transgender males, 22 transgender females) | Mean age of transgender females: 13-6 years (SD 1.8) at baseline; 14-8 years (2.0) at start of GnRHa, 16-5 years (1.0) at start of GAH, 19-6 years (0.9) at GAS, 21-0 years (1.1) post GAS; mean age of transgender males: 14-9 years (SD 2.0) at baseline, 14-9 years (1.9) at start of GnRHa, 16-8 years (1.0) at start of GAH, 19-0 years (0.8) at start of GAS, 20-5 years (0.8) post GAS | Transgender males: bilateral mastectomy, hysterectomy with ovariectomy (most had not undergone phalloplasty); transgender females: vaginoplasty | Gender dysphoria was alleviated and psychological functioning improved | Physical variables were not assessed; missing data |
| Marinovic et al (2017) | USA           | Retrospective observational | 14 (transgender males only) | Mean age 17 ± 2 years (range 13-4-19 7) | Chest reconstructive surgery | All patients were very satisfied with the aesthetics of the surgical outcome; self-reported complication rate was low | Very small sample size, lack of objective measures for patient satisfaction and psychological functioning; complications were similar to surgical outcomes in transgender adults; relatively high complication rates (five [36%] of 14) |
| Olson-Kennedy et al (2018) | USA           | Cross-sectional | Surgical group: 68 (transgender males only); non-surgical group: 68 (transgender males only) | Mean age at survey: 18-9 years (SD 2.5; range 14-25) in surgical group; 16-9 years (SD 2.5; range 13-23) in non-surgical group | Chest wall masculinisation (surgical group only) | Treatment group showed significantly less chest dysphoria than non-treatment group; surgical complications similar between minors and young adults | Chest Dysphoria Scale has not been validated; non-surgical group was a convenience sample |

GAH=gender affirming hormones. GAS=gender affirming surgery.
Importantly, median prolactin concentrations of the transgender adolescent female sample in Hannema and colleagues’ study did not change over the 3 years of treatment. Elevated prolactin concentrations have been associated with estradiol use in transgender adult women, with the greatest changes observed in the first 3 months of treatment. Evidence suggests that these increases could be at least partially attributed to concurrently prescribed cyproterone acetate, because prolactin concentrations fall after gonadectomy, corresponding to the time at which cyproterone acetate is discontinued. A study that examined estradiol treatment in transgender women (n=98) with spironolactone as the adjunct anti-androgen found no evidence for increased prolactin concentrations, with data available for up to 6 years for some patients. Other investigations into the short-term safety of gender-affirming hormones in transgender adolescent females have found statistically significant changes in some variables, including potassium, alanine transaminase (ALT), prolactin, and thyroid-stimulating hormone (TSH).

In transgender adolescent males, statistically significant increases have been observed in concentrations of aspartate transaminase (AST), ALT, and potassium, and thyroid function (TSH and free thyroxine). Collectively, the consensus among the authors of these studies is that the changes observed in transgender adolescents do not pose a clinical risk, but additional studies are warranted to clarify long-term safety. Additionally, two of these studies used progestins (lynestrenol in transgender adolescent males, cyproterone acetate in transgender adolescent females) with the CSH regimen, rather than GnRHa.

**Bone development**

Adolescence is the time of peak bone mass accrual that influences an individual’s risk of osteoporosis later in life. Bone mass development is supported by optimal nutrition, particularly calcium intake, vitamin D status, and weight-bearing exercise. The rise in sex steroid concentrations during puberty is also an important contributing and supporting factor.

Klink and colleagues found that lumbar spine areal bone mineral density (aBMD) Z scores fell during puberty suppression with GnRHa for transgender adolescent females but did not increase following oestrogen treatment. In a separate study, bone turnover markers (procollagen type 1 N-terminal propeptide [PINP] and cross-linked carboxy-terminal telopeptide of type 1 collagen [ICTP]) declined following gonadal suppression, reflecting the decreased bone turnover. Following 24 months of oestrogen, PINP and ICTP had continued to decline, although a significant increase in bone mineral density (predominantly lumbar spine) was observed. These findings might reflect the initial low dose of oestrogen used for feminising puberty. In transgender female adults, combined high dose estradiol valerate (6 mg/day) and GnRHa for a 24 month period is reported to increase BMD, representing either stimulated bone formation or increased bone mineralisation.

However, pre-treatment BMD values were already compromised in both of these samples of transgender adolescent females. In transgender adolescent males, a reduction in lumbar spine aBMD scores have been observed during pubertal suppression but these scores increased following CSH treatment, probably because of the rapid dose increments of testosterone. Similarly, bone turnover markers had declined during the suppression phase, although bone mineral density significantly increased, predominantly at the lumbar spine following CSHs. In accordance with the Endocrine Society Guidelines, monitoring BMD parameters in transgender adolescents is recommended both prior to and during gender-affirming hormonal treatment.

**Panel 2: Side effects and complications associated with gender-affirming surgery in transgender adolescents**

In one sample of transgender adolescents (n=68), complications associated with chest reconstruction surgery included temporary loss of nipple sensation (n=40), long-term loss of nipple sensation (n=22), nipples or areolae being too large (n=5), loss of sensation in other areas of the chest (n=29), unequal chest appearance (n=9), keloid scarring (n=10), postoperative haematoma (n=7), postoperative pain beyond normal healing time (n=6), and complications related to anaesthesia (n=5). Marinkovic and colleagues reported that of their sample of transgender adolescents who had undergone chest surgery (n=14), five patients had hypertrophic scar tissue and keloids, and most patients had a temporary decrease or permanent loss of sensation in the nipple area. None had serious adverse effects (necrosis or infection). In a study exploring surgical satisfaction in transgender people (n=132), eight cases of surgical dissatisfaction were reported, two of which were in transgender adolescents (none <18 years). Case 1 (age 19 years, transgender male) underwent mastectomy and uterus extirpation with several postsurgical complications (haematoma, skin numbness of the chest, abdominal adhesions); he was dissatisfied with the outcome and expressed minor regret because he had recurring abdominal pain and continued to depend on exogenous testosterone. Case 2 (age 19 years, transgender male) also underwent surgical mastectomy and uterus extirpation and was dissatisfied with the cosmetic appearance of the procedure, which resulted in surplus skin. The dissatisfaction with the gender-affirming surgeries in these two cases occurred because of long-term complications or suboptimal and aesthetic functioning, or both, rather than a wish to detransition. Smith and colleagues reported that two from a sample of seven transgender adolescent females who had undergone vaginoplasty as minors were unable to achieve orgasms when reassessed in early adulthood, while another had vaginismus in response to sexual intercourse.
therapy have increased adiposity around the buttocks and thighs, and a decrease in lean body mass.77

A retrospective chart review examined the effects of gender affirming hormones on body composition and shape. In a large sample (n=192, of which 121 were transgender males), Klaver and colleagues41 found that CSHs initiated in adolescence (age 16 years) were associated with changes in body composition at age 22 years. In young transgender men, an increase in lean body mass and waist-to-hip ratio and a decrease in body fat were observed. From the transgender adult literature, male-affirming changes associated with testosterone include increased body and facial hair, and deepening of the voice (expected onset 6–12 months), with the maximum effect observed over 18–24 months.32

When receiving oestrogen, young transgender women showed the opposite pattern in trends observed in lean body mass, waist-to-hip ratio, body fat, and facial hair than those observed in transgender males. Initiation of puberty suppression in early puberty was associated with closer resemblance to the body composition of the affirmed gender.42 Estradiol has been shown to induce breast development within 3 months of intervention in transgender adolescent females (83%; n=23), with Tanner breast stage IV or V development seen in 86% (n=24) within 3 years. Testicular volume decreased in the first year of treatment but no further changes were observed.30

**Gender-affirming surgery**

For transgender adults who choose to proceed with gender-affirming surgery and meet eligibility criteria, psychological benefits and improvements in quality-of-life outcomes have been documented. Positive findings have been observed with bilateral mastectomy31 and genital gender-affirming surgery32 in transgender men, and facial feminisation procedures33 and vaginoplasty34 in transgender women. Findings from a multicentre European study35 showed that minor regret (n=2) or disappointment (n=6) has been reported (entire sample=136) in transgender adults, although these feelings were predominantly related to postsurgical medical, functional, or aesthetic issues.

Published studies examining gender-affirming surgery in transgender adolescents younger than 18 years are summarised (table 4). From the literature, gender-affirming surgery that has been done in adolescents includes chest wall masculinisation (bilateral mastectomy) in transgender males, and vaginoplasty in transgender females. Transgender adolescent males often describe functional limitations and psychological distress from having breasts (eg, discomfort from binding breasts, limitations on choice of physical activity and clothing, difficulty in being recognised as male) and present a convincing argument for accessing the so-called top procedure. Breast augmentation is less frequently requested in the transgender female adolescent population.

Cohen-Kettenis and colleagues36 were the first to explore postoperative functioning in transgender adolescents (n=19; 14 transgender males, five transgender females; mean age 17.5 years). Compared with before surgery, gender dysphoria was markedly reduced when the sample was assessed postoperatively, after a mean of 2.6 years. 40% of transgender males expressed satisfaction with their breast removal, 50% were moderately satisfied, and 10% were dissatisfied with the result. Disappointment about the visibility of the scars was the main reason for dissatisfaction with the breast removal. Overall, 80% of transgender males felt comfortable baring their chest.

Overall, postsurgical body satisfaction was reported in 60% of transgender males (40% felt neutral), and 100% of transgender females. Transgender female patients in this sample had undergone vaginoplasty; however, young transgender males had been advised to postpone genital surgery because of improvements to surgical methods.

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**Panel 3: Surgeons’ experiences and attitudes towards vaginoplasty in transgender female adolescents younger than 18 years**37

**Participants**

- World Professional Association of Transgender Health (WPATH) surgeons (n=20) based in the USA
- 11 had done vaginoplasty in a minor

**Surgical technique**

- Preferred method: one-stage penile inversion most often augmented by full-thickness scrotal skin graft
- When there is insufficient penile tissue: flank skin grafts, scrotal tissue expander implant, donor tissue matrix (external flank scarring was avoided), sigmoid-derived or ileum-derived grafts

**Anatomical issues**

- Penoscrotal hypoplasia or limited tissue availability (as a consequence of early puberty suppression)

**Minimum eligibility criteria required by surgeons**

- Psychological maturity (main criterion)
- Valuation letters from two mental health professionals (occasionally a third letter from an independent psychiatrist or endocrinologist)
- Professional quality of each letter (must be an expert in transgender issues)
- Strong family support
- Essay from adolescent outlining the reasons for wanting to undergo the procedure for which she is asked to "describe what her feelings are in her identity as a person"

**Reasons for agreeing to perform vaginoplasty in a transgender female minor**

- Full transition is complete before entering work force or college
- Patient outcome can be compromised once at college or work (eg, busy schedule makes it difficult to adhere to postoperative self-care)
- Younger patients have the support of their families (can ensure the minor adheres to postoperative dilation schedule)
- Patient still living at home (importance of a safe and affirming environment to recuperate)
- Benefits might outweigh risks in transgender females entering college or very sensitive social roles
Evidence from the transgender adult literature indicates that phalloplasty has very high complication rates, with one recent retrospective study (n=149) citing urethral complications in approximately a third (n=47) of cases. Given the comparative complexity of phalloplasty over vaginoplasty (penile inversion technique), in future studies, vaginoplasty will probably continue to be associated with a more favourable postsurgical outcome.

A subsequent prospective follow-up study by the same research group evaluated the next consecutive 20 patients (13 transgender male, seven transgender female; mean age 16–6 years) that underwent gender-affirming surgery in adolescence (treatment group) and were assessed again in adulthood (at approximately age 21 years). Post-test scores of anxiety, depression, and hostility in the treatment group were lower than at pre-surgery, but no significant changes were observed with respect to psychological functioning. Post-surgery scores were similar to age-matched peers from the cisgender population.

In a retrospective observational study, the psychological and physical effects of chest surgery were examined in a sample of transgender adolescent males (n=14, mean age at surgery 17.2 years). All patients were in the advanced phases of pubertal development at the time of surgery (Tanner Stage V). Depending on breast size, the surgical technique used was either a keyhole approach (n=4; smaller breast volume) or a double incision procedure (n=10). Almost all transgender adolescents had been on testosterone therapy at the time of the surgery. The exception was the youngest patient (13.4 years at surgery), who had been receiving GnRHa only (testosterone commenced age 13.9 years). Mean postsurgical aesthetic and comfort satisfaction score, as assessed on a 1–5 Likert scale, was 4.9 (5=highest satisfaction). Before surgery, all but one adolescent had a history of depression or anxiety, or both, and ten adolescents had a history of deliberate self-harm. Postsurgical scores assessing mental health, available for ten of the adolescents, indicated that one patient continued to experience high levels of depression, but almost all patients subjectively reported improvements in symptoms. Postsurgical complications were high, as 36% (n=5) of the sample had adverse scar outcomes. Complications related to gender-affirming surgery in transgender adolescents are further discussed in panel 2.

Olson-Kennedy and colleagues examined chest dysphoria in transgender male young people who had either undergone surgical chest reconstruction (postsurgical group; n=68, mean age at time of surgery 17.5 years) or had not (non-surgical group; n=68, mean age 17 years). Participants were excluded from the non-surgical group if they were prepubertal or had received puberty suppression regimens in early development. The authors used a novel method of assessment for chest dysphoria that yielded high levels of internal consistency in both the postsurgical (α=0.79) and non-surgical groups (α=0.89). The non-surgical group had significantly higher levels of chest dysphoria than the postsurgical group and were often functionally limited; 47% (n=32) avoided exercise, 60% (n=43) felt intimacy was difficult, and 59% (n=40) felt life had not started because of how they felt towards their chest. One participant from the postsurgical group, older than 18 years at the time of the surgery, reported occasional regret “sometimes”. Surgical complication rates were also similar between the transgender males who had been younger than 18 years at the time of surgery (n=33; 16 aged <15 years), and those who had been older than 18 years (n=35). The data are consistent with findings from the transgender adult literature, which showed that chest dysphoria decreased substantially following bilateral mastectomy or chest wall masculinisation, or both, and measures of quality of life improved. A qualitative study investigated attitudes and experiences of US surgeons affiliated with WPATH.
We searched MEDLINE and Embase (from inception until June 9, 2018), without language restrictions, using the following search terms: “gender dysphoria” OR “gender identity” OR “gender incongruence” OR “transgender” OR “transsexual” AND “hormone” OR “oestrogen” OR “oestrone” OR “testosterone” OR “sex reassignment surgery” OR “gender reassignment surgery” OR “mastectomy” OR “vaginoplasty” AND “adolescence” OR “young people” OR “youth”. Studies were included when the mean or median age of the sample was below 18 years. Case studies were excluded, and only included when examining side-effects. 12 studies were examined to evaluate gender-affirming cross-sex hormones: two assessing psychological outcomes, one assessing cognitive and activation effects, two assessing bone metabolism or body composition, and seven assessing safety outcomes. Five studies that assessed psychological or physical outcomes, or both, were examined to evaluate gender-affirming surgery. Guidelines by the World Professional Association for Transgender Health Standards of Care, Endocrine Society Clinical Practice Guidelines on the Treatment of Gender Dysphoric/Gender Incongruent Persons, and Australian Standards of Care and Treatment Guidelines for Transgender and Gender Diverse Children and Adolescents were also reviewed. Relevant peer-reviewed articles cited within these references were also included.

Conclusions
As gender-affirming care in adolescents continues to rapidly evolve, a comprehensive evidence base synthesising all available data is essential to help guide clinical decision making and inform best practice. The scarce and preliminary available evidence indicates that gender-affirming CSHs are associated with mental health benefits and improved quality-of-life outcomes in eligible transgender adolescents, but additional studies are needed to improve the quality of the evidence base. Panel 4 summarises future research priorities. Longer-term evaluations of metabolic and other physical variables are warranted to clarify long-term safety. Several preliminary studies have shown benefits of gender-affirming surgery in adolescents, particularly regarding bilateral mastectomy in transgender adolescent males, but there is a scarcity of literature to guide clinical practice for surgical vaginoplasty in transgender adolescent females. The optimal age and developmental stage for initiating CSHs and performing gender-affirming surgeries remains to be clarified. Clinical decisions on eligibility should be weighed up on an individualised basis, informed by Endocrine Society Practice Guidelines, the WPATH SoC, and other expert consensus including the Australian SoC and Treatment Guidelines for Transgender and Gender Diverse Children and Adolescents, until further data become available.

Contributors
SM contributed to the conceptualisation and primary writing of the review, including panels, under supervision and guidance of AL and FDZ. Recommendations and analyses on the basis of specialist clinical expertise in child and adolescent transgender care were provided by JKM (psychiatry), AS and UG (endocrinology), and TH.

Declaration of interests
We declare no competing interests.

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Search strategy and selection criteria
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Exhibit C
Ensuring Comprehensive Care and Support for Transgender and Gender-Diverse Children and Adolescents

Jason Rafferty, MD, MPH, EdM, FAAP, COMMITTEE ON PSYCHOSOCIAL ASPECTS OF CHILD AND FAMILY HEALTH, COMMITTEE ON ADOLESCENCE, SECTION ON LESBIAN, GAY, BISEXUAL, AND TRANSGENDER HEALTH AND WELLNESS

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.
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.

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### TABLE 1 Relevant Terms and Definitions Related to Gender Care

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>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.</td>
</tr>
<tr>
<td>Gender identity</td>
<td>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.</td>
</tr>
<tr>
<td>Gender expression</td>
<td>The external way a person expresses their gender, such as with clothing, hair, mannerisms, activities, or social roles.</td>
</tr>
<tr>
<td>Gender perception</td>
<td>The way others interpret a person’s gender expression.</td>
</tr>
<tr>
<td>Gender diverse</td>
<td>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, gender fluid, gender creative, gender independent, or noncisgender. &quot;Gender diverse&quot; 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.</td>
</tr>
<tr>
<td>Transgender</td>
<td>A subset of gender-diverse youth whose gender identity does not match their assigned sex and generally remains persistent, consistent, and consistent over time; the term “transgender” also encompasses many other labels individuals may use to refer to themselves.</td>
</tr>
<tr>
<td>Cisgender</td>
<td>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.</td>
</tr>
<tr>
<td>Affirmed gender</td>
<td>A term that is used to describe a person who does not identify having a particular gender. When a person’s true gender identity, or concern about their gender identity, is communicated to and validated from others as authentic.</td>
</tr>
<tr>
<td>MTF, affirmed female, trans female</td>
<td>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.</td>
</tr>
<tr>
<td>FTM, affirmed male, trans male</td>
<td>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.</td>
</tr>
<tr>
<td>Gender dysphoria</td>
<td>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.</td>
</tr>
<tr>
<td>Gender identity disorder</td>
<td>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.</td>
</tr>
<tr>
<td>Sexual orientation</td>
<td>A person’s sexual identity in relation to the gender(s) to which they are attracted; sexual orientation and gender identity develop separately.</td>
</tr>
</tbody>
</table>

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.”

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. 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. 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. 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.

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%). 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.

**MENTAL HEALTH IMPLICATIONS**

Adolescents and adults who identify as transgender have high rates of depression, anxiety, eating disorders, self-harm, and suicide. 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. In a 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. 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.

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.

This was affirmed by the American Psychological Association in 2008 (with practice guidelines released in 2015) 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.*

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. 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 and were also at particular risk for not knowing their HIV status.
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 unsuccessful38 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
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 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.

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. 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. 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. 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. Explaining and maintaining confidentiality procedures promotes openness and trust, particularly with youth who identify as LGBTQ. 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. 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.

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.

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. Some experts believe that genital underdevelopment may limit some potential reconstructive options. Research on long-term risks, particularly in terms of bone metabolism and fertility, is currently limited and provides varied results. 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.
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.6,66

Supportive involvement of parents and family is associated with better mental and physical health outcomes.57,67 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.68 Most protocols for gender-affirming interventions incorporate World Professional Association of Transgender Health55 and Endocrine Society68 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

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**TABLE 2 The Process of Gender Affirmation May Include ≥1 of the Following Components**

<table>
<thead>
<tr>
<th>Component</th>
<th>Definition</th>
<th>General Age Rangea</th>
<th>Reversibilitya</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social affirmation</td>
<td>Adopting gender-affirming hairstyles, clothing, name, gender-pronouns, and restrooms and other facilities</td>
<td>Any</td>
<td>Reversible</td>
</tr>
<tr>
<td>Puberty blockers</td>
<td>Gonadotropin-releasing hormone analogues, such as leuprolide and histrelin</td>
<td>During puberty (Tanner stage 2–5)b</td>
<td>Reversiblec</td>
</tr>
<tr>
<td>Cross-sex hormone therapy</td>
<td>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)</td>
<td>Early adolescence onward</td>
<td>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)</td>
</tr>
<tr>
<td>Gender-affirming surgeries</td>
<td>“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</td>
<td>Typically adults (adolescents on case-by-case basisd)</td>
<td>Not reversible</td>
</tr>
<tr>
<td>Legal affirmation</td>
<td>Changing gender and name recorded on birth certificate, school records, and other documents</td>
<td>Any</td>
<td>Reversible</td>
</tr>
</tbody>
</table>

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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.48

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.48

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.69–71
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, 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.18,23,72

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, including rejection from their family and dropout of school at younger ages (often in the setting of rigid religious beliefs regarding gender). The experience of youth of color who identify as transgender, women of color who identify as transgender, and youth who identify as transgender and stigma. This process 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.

### 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. Families often find it hard to understand and accept their child’s gender-diverse traits because of personal beliefs, social pressure, and stigma. 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, which is essential for the child’s self-esteem, social involvement, and overall health as TGD. 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.

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. 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.

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. 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. 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.

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. 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 28000 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.

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* 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. 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.

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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We thank Isaac Albanese, MPA, and Jayeson Watts, LICSW, for their thoughtful reviews and contributions.

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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Ensuring Comprehensive Care and Support for Transgender and Gender-Diverse Children and Adolescents

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Ensuring Comprehensive Care and Support for Transgender and Gender-Diverse Children and Adolescents

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The online version of this article, along with updated information and services, is located on the World Wide Web at:

http://pediatrics.aappublications.org/content/early/2018/09/13/peds.2018-2162
Exhibit D
THE IMPACT OF MALE CHEST RECONSTRUCTION ON CHEST DYSPHORIA IN TRANSMASCULINE ADOLESCENTS AND YOUNG MEN; A PRELIMINARY STUDY

Johanna Olson-Kennedy, MD, Jonathon Warus, MD.
Children’s Hospital Los Angeles.

Purpose: As transgender visibility has increased over the past decade, growing numbers of transgender youth are presenting at specialized clinics seeking care related to phenotypic gender transition. Despite the fact that the average age of referral is dropping, the developmental stage that most patients are in at the time of entry into medical care necessitates future surgical intervention to change undesired secondary sex characteristics. For those assigned female at birth who identify on the transmasculine spectrum, gender confirmation procedures most commonly include male chest reconstruction. Chest dysphoria, the distress that arises from having a female chest contour, is a common clinical concern for transmasculine adolescents and young adults. While a decent body of literature exists examining the outcomes of transgender related surgeries in patients over the age of majority, no data has been published concerning the outcomes of these procedures among minors. Existing professional guidelines regarding surgical interventions lack clarity, and leave medical providers uncertain about referring minors for chest surgery. This pilot study aimed to quantify the impact of male chest reconstruction on chest dysphoria in this population included the development of a “chest dysphoria” measure.

Methods: The chest dysphoria scale was developed by experienced clinicians and includes 21 Likert scale questions that span domains commonly impacted by chest dysphoria. The domains include emotional well-being, physical well-being, recreational, occupational, social life and relationships was created and administered to 55 pre-surgical and 50 post-surgical transmasculine youth and young adults between the ages of 13 and 24 years. Higher composite scores on the scale correspond with greater chest dysphoria, with a range from 21 (lowest) to 84 (highest). Forty-four of the youth were minors (32% post-surgical). Pre-surgical participants were asked about their desire for surgery, and the post-surgical survey queried satisfaction with surgery, side effects and desire for future surgeries related to gender dysphoria.

Results: Of the minors who had undergone male chest reconstruction, 93% reported being satisfied with the surgery “all of the time.” No youth reported regret about the procedure. Comparisons between the pre and post surgical groups across all domains are significant, and highlight the impact of chest dysphoria on those youth who have not undergone surgery.

Conclusions: Results from the post-surgical cohort reflect the positive impact of male chest reconstruction witnessed in clinical settings, and might be useful for changing existing guidelines and recommendations for minors.

Sources of Support: Children’s Hospital Los Angeles, Department of Pediatrics.

UNDERSTANDING SOCIAL MEDIA AND ONLINE RESOURCE USE BY TRANSGENDER YOUTH AND CAREGIVERS

Yolanda N. Evans, MD, MPH1, Samantha Gridley, BA2, Julia Crouch, MPH1, Alisha Wang, BA1, Megan Moreno, MD1, Kym Ahrens, MD, MPH1, David Brelan, MD, MPH1.

1University of Washington and Seattle Children’s Hospital; 2Vanderbilt University School of Medicine; 3Seattle Children’s Hospital; 4University of Washington School of Medicine.

Purpose: The purpose of this study was to assess what resources transgender youth and their caregivers use to acquire information about transgender health.

Methods: This study was part of a larger research project on barriers to accessing care for transgender youth. We recruited caregivers of transgender youth aged 22 or younger including parents, foster parents, and legal guardians. We also recruited self-identified transgender youth ages 14-22 years. Participants were recruited through a variety of settings including clinical encounters in an adolescent medicine subspecialty clinic, local organizations supporting transgender youth, and via online solicitation using Technology101, a hospital sponsored blog. We used a mixed methods approach of conducting in-person focus groups, interviews in-person or via phone, and an online survey available via the Technology101 blog. This allowed us to increase flexibility for participants and to triangulate key themes from multiple data sources. Scripts were semi-structured, and prompts were focused on barriers to care faced by transgender youth and their caregivers. The survey contained free response and multiple-choice components.

Results: We had a total of 65 participants including 50 caregivers and 15 youth. Many families reported starting their journey of accessing transgender care not knowing very much about the topic. They reported difficulty finding a health care provider who was knowledgeable on the topic. Youth described a lack of terms or language to describe their feelings. Among both parents and youth, a variety of online resources were used including blogs, websites, search engines, and list serves. Four main themes emerged from participants on why they sought out information on the internet and how they found it in their online searches. These themes include: 1) Overcoming a lack of knowledge 2) Seeking Support Networks 3) Finding Trans-friendly providers 4) Encountering Misinformation.

Conclusions: Our findings demonstrate the need for reliable, trustworthy content online, the importance of the virtual community to support both youth and caregivers, and the challenge of navigating misinformation that is often faced by transgender youth as they navigate online resources. We propose creating a possible metric for determining reliability of a website, creating an online forum for dissemination of reliable information from respected institutions, and a tool for teaching health care providers how to equip families with the knowledge of how to determine if an online resource is reliable.

Sources of Support: This study was funded by The Center for Diversity and Health Equity at Seattle Children’s Hospital.
Exhibit E
Chest reconstructive surgeries in transmasculine youth: Experience from one pediatric center

Maja Marinkovic and Ron S. Newfield

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ABSTRACT

Background: For many trans males, having chest reconstruction is a very important part of the transitioning process. Guidelines from WPATH and the Endocrine Society suggest 16 to 18 years old as an acceptable age for this surgical intervention. In clinical practice, the decision depends on factors such as a person’s desires, insurance coverage, and availability of local surgical experts. We present data about chest reconstructive surgeries in transgender youth from a Pediatric Gender Management (GeM) clinic.

Methods: For this retrospective, observational study, data were collected from GeM clinic patients seen from 10/1/2011 to 1/31/2017. All subjects consented or assented to being included in an IRB-approved clinical database.

Results: Of 210 patients from our clinic, 167 consented to being added to an institutional review board-approved database and followed prospectively. The average age at the initial visit was 15.2 years (range, 4.7–20.9). Among consenting subjects, 55 were trans females, 108 were trans males, and four identified as nonbinary. Fourteen subjects had chest reconstruction with the mean age being 17.2 years (range, 13.4–19.7); three subjects were under age 16. For five subjects, including the youngest one, insurance paid for the procedure. All participants but one were receiving testosterone treatment. Per the surgeons’ preferences, testosterone was usually not temporarily stopped prior to the procedure. Six subjects had the procedure done locally; others sought surgical care out of the town, state, or country. All subjects were very satisfied with the aesthetics of the surgical outcome. The self-reported complication rate was low. Many more GeM clinic patients wish to have breast/chest surgery but lack of insurance coverage makes the surgery cost prohibitive.

Conclusion: For many trans males, chest reconstructive surgery is an integral part of the transition process. Patients’ age at the time of surgical procedure varies greatly; some have chest surgery before age 16. In the United States, chest reconstruction surgery is usually not covered by insurance. Therefore, many patients seeking surgical care are forced to pay out of pocket.

KEYWORDS

Adolescent; barriers; mastectomy; transgender; transition

For many trans males, chest-contour appearance is a defining factor of their male physique. A majority of transgender males use various methods of binding breasts prior to having male chest reconstructive surgery. The methods for binding include layering of sport bras and using commercial binders, ace wraps, and even tape. Binders often restrict normal physical activity and can cause respiratory dysfunction (difficulties breathing, shortness of breath), reflux, dermatosis, and skin infections.

For many trans males, having chest reconstruction, referred to in lay terms as “top surgery,” is an important surgical procedure in the transitioning process. However, this and other surgical treatments are often not covered by insurance plans in the United States, especially for youth. There are various surgical options available for chest reconstruction, as previously described by many surgical experts (Monstrey et al., 2008; Cregten-Escobar, Bouman, Buncamper, & Mullender, 2012; Walter, Diedrichson, Scholz, Arens-Landwehr, & Liebau, 2015; Kääriäinen, Salonen, Helminen, & Karhunen-Enckell, 2017) and details of these procedures are outside the scope of this manuscript. The type of surgical procedure employed depends on the size of the breast and adipose tissue that has to be removed. The techniques may vary slightly among surgical experts.
across different centers. For smaller breast size, keyhole (semicircular incision), transareolar or peri-areolar (concentric circular) approaches are common. For larger breast size, procedures include double (transverse) incision with or without free nipple graft when a larger amount of tissue is removed and nipple reposition is required. Current guidelines from the World Professional Association for Transgender Health (WPATH) (Coleman et al., 2012) and the Endocrine Society (Hambree et al., 2009) suggest 16 to 18 years as a suitable age for this surgical intervention, after the person has had an appropriate assessment by a mental health professional. In clinical practice, however, the decision depends on factors such as insurance coverage, patients’ desires, and availability of local surgical experts. We present data about chest reconstructive surgeries in transgender youth from the Gender Management (GeM) clinic at Rady Children’s Hospital. Unlike some European countries that have one or two large centers that have endocrinologists, mental health providers, and surgeons all working together in the same multidisciplinary clinic, many clinics in the United States are similar to our institution, where we rely on outside mental health providers and surgeons who are often out of town or out of state. This type of set-up can pose challenges, and it is therefore relevant to present this experience.

Methods

This is a retrospective, observational study. Data for this study were collected from patients who attended the GeM clinic from 10/1/2011 to 1/31/2017. All subjects gave consent when appropriate (ages 7–17 years) into an IRB approved clinical database. The male chest reconstructive surgeries were performed between June 2013 and January 2017 in 14 transgender adolescents and young adults from the GeM clinic at Rady Children’s Hospital. Consent to publish photographs was obtained.

Surgical outcome satisfaction was assessed by asking study subjects to rate the aesthetic outcome of the procedure on a Likert-type linear scale from 1 to 5, with 1 being the lowest satisfaction and 5 being the highest. A similar scale has been used by other authors to demonstrate simple outcomes (Kaariainen et al., 2017).

Results

Out of 210 patients seen at the GeM clinic since October 2011, 167 consented to be added to an institutional-review-board–approved endocrine database and are followed prospectively. The average age at the initial clinic visit was 15.2 years (age range, 4.7–20.9 years). Among consenting subjects, 55 are trans females (33%), 108 trans males (65%), and four are (natal females) identified as nonbinary (2%). The predominance of trans males is consistent with recent data published from other large centers (Aitken et al., 2015).

Prior to 2013 our clinic volume was low. Since 2013 our patient population has dramatically increased, with more than 30 new referrals in 2013 and more than double that in each of the subsequent years. With the increase in our volume, we started to encounter more patients who requested and were able to get chest surgeries done. Only one subject from this cohort had his initial visit before 2013.

Fourteen subjects (12 Caucasian, 1 Hispanic, and 1 African American) out of 108 trans males had chest reconstructive surgery done between June 2013 and January 2017 at an average age of 17.2 years (range 13.4–19.7 years), with three subjects being under 16 years of age (Table 1). Two additional patients from our clinic had chest reconstruction; however, due to a lack of surgical data from one and a recent surgery date without long-term follow up for the other, they were not included in the study. We have two patients who had breast reduction only, as their parents were not supportive of a complete mastectomy, social transition, or gender affirming hormone treatment. To better assess how many additional patients from our clinic wished to have chest reconstruction, we reviewed charts and the letters provided by patients when starting hormone treatment. Out of the remaining 90 trans males from the cohort, 13 did not require surgery due to an early pubertal suppression; one died; 10 were seen only once because their parents/guardians did not approve any form of treatment or transition and, therefore, their surgical plans were not assessed. Fifty-six (85%) out of 66 remaining subjects expressed a desire to undergo chest reconstructive surgery. In addition, among the four nonbinary subjects, two reported a desire for chest reconstruction.

Even though parents of five of the 14 study subjects (36%) reported childhood onset of gender dysphoria, the average age of presenting to the GeM clinic was 16 years (range 12.3 to 19) and all 14 were in advanced puberty (Tanner stage 5). All subjects had support for the surgery from their parents/guardians. In most cases, a supporting letter from the treating pediatric endocrinologist was not requested. Although testosterone use prior to surgery is suggested (but not
required) per current guidelines (Coleman et al., 2012; Hembree et al., 2009), only seven subjects had been taking testosterone for 1 year or longer prior to surgical intervention and the youngest subject in the study was being administered only injectable gonadotropin-releasing hormone (GnRH) agonist. The average time of testosterone treatment prior to the surgical intervention was 9.6 months (range, 1–24 months). Apart from one adolescent (subject #1), all had a history of depression, anxiety, or both; 10 subjects had a prior history of self-harm (cutting). Additional subjects’ data are presented in Table 1.

Insurance coverage for the procedure was not available for most of the subjects. As depicted in Table 2, insurance had paid for only 5 of the 14 subjects services. Interestingly, for the youngest subject who had had the procedure performed without our referral at 13.4 years old, his insurance covered the procedure. Generally, testosterone was not temporarily stopped prior to the procedure as per the surgeons’ decision. Only six subjects (43%) had the procedure done locally; others sought care out of town (4/14), state (3/14), or country (1/14), as shown in Table 2. The cost of the procedure ranged from $5,000 to $10,175 for those who paid out of pocket. Only four subjects qualified for a keyhole procedure, while the other 10 subjects did not qualify due to larger breast size. This is not surprising, given that these subjects presented themselves to the clinic at an advanced pubertal stage.

Table 1. Data on 14 subjects from our cohort who had male chest reconstructive surgery (mean age 17.2 years).

<table>
<thead>
<tr>
<th>Patient</th>
<th>Initial visit age (years)</th>
<th>Onset of GD</th>
<th>T start age (years)</th>
<th>Surgery age (years)</th>
<th>Medications at the time of surgery</th>
<th>Other medical conditions</th>
<th>Additional medications (at last visit)</th>
</tr>
</thead>
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<tr>
<td>1</td>
<td>17.9</td>
<td>A</td>
<td>18.0</td>
<td>18.2</td>
<td>T</td>
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<td>None</td>
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<tr>
<td>2</td>
<td>16.4</td>
<td>C</td>
<td>17.7</td>
<td>19.7</td>
<td>T</td>
<td>Anxiety, acne</td>
<td>Multivitamin, off T</td>
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<tr>
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<td>C</td>
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<td>16.4</td>
<td>T</td>
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<td>Adapalene cream</td>
</tr>
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<td>4</td>
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<td>C</td>
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<tr>
<td>5</td>
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<td>A</td>
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<td>17.7</td>
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</tr>
<tr>
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<td>A</td>
<td>13.9</td>
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<td>Marked obesity, bipolar d/o</td>
<td>Lurasidone T</td>
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<td>9</td>
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<td>C</td>
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<td>18.3</td>
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<td>15.7</td>
<td>15.8</td>
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<td>18.0</td>
<td>T</td>
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<tr>
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<td>A</td>
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<td>16.4</td>
<td>17.2</td>
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</tr>
</tbody>
</table>

Abbreviations: A = adolescent presentation; C = childhood presentation; T = testosterone; GD = gender dysphoria; GnRHa = gonadotropin releasing hormone agonist; d/o = disorder

Table 2. Types of surgical interventions, related complications, and patient satisfaction rating. Complications were uncommon and satisfaction rate was high. For most subjects, insurance did not cover the procedure. Satisfaction rate: 1 = lowest; 5 = highest.

<table>
<thead>
<tr>
<th>Patient</th>
<th>Procedure type</th>
<th>Surgical complications</th>
<th>Location of surgery</th>
<th>Insurance coverage</th>
<th>Satisfaction rate (1–5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Double incision</td>
<td>Keloid</td>
<td>Davie, FL</td>
<td>Self-pay</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Double incision</td>
<td>Small fluid collection</td>
<td>Tijuana, Mexico</td>
<td>Self-pay</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>Keyhole</td>
<td>Fluid collection, required a second drain</td>
<td>San Diego, CA</td>
<td>Covered</td>
<td>4.5</td>
</tr>
<tr>
<td>4</td>
<td>Double incision</td>
<td>Keloid</td>
<td>San Francisco, CA</td>
<td>Self-pay</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>Double incision</td>
<td>None</td>
<td>San Francisco, CA</td>
<td>Covered</td>
<td>“very happy”</td>
</tr>
<tr>
<td>6</td>
<td>Double incision</td>
<td>Keloid, hematoma due to drain blockage</td>
<td>Philadelphia, PA</td>
<td>Self-pay</td>
<td>4.5</td>
</tr>
<tr>
<td>7</td>
<td>Double incision</td>
<td>None</td>
<td>San Diego, CA</td>
<td>Covered</td>
<td>5</td>
</tr>
<tr>
<td>8</td>
<td>Double incision</td>
<td>None</td>
<td>San Diego, CA</td>
<td>Self-pay</td>
<td>5</td>
</tr>
<tr>
<td>9</td>
<td>Double incision</td>
<td>None</td>
<td>San Diego, CA</td>
<td>Covered</td>
<td>4.5</td>
</tr>
<tr>
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<td>Thousand Oaks, CA</td>
<td>Self-pay</td>
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<tr>
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<td>Self-pay</td>
<td>5</td>
</tr>
<tr>
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<td>5</td>
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<td>Covered</td>
<td>5</td>
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<tr>
<td>14</td>
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<td>None</td>
<td>Annapolis, MD</td>
<td>Self-pay</td>
<td>5</td>
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All subjects reported high personal satisfaction with the surgical outcomes in terms of aesthetics and comfort. All subjects were pleased that postoperatively they no longer needed a binder. The average satisfaction score was 4.9/5 (Table 2). Though we were unable to capture detailed qualitative data, the subjects and their families reported improvement in depression and anxiety after the procedure in almost all cases. Out of 10 subjects whose depression-screening scores are available, assessed through Patient Health Questionnaire-9 or PHQ-9 screen (Kroenke, Spitzer, & Williams, 2001) in the postsurgical period, only one (subject #11) continued to have high depression scores. This data was not available on all subjects, as our institution only added PHQ-9 to our electronic medical record system 2 years ago. The complication rate (self-reported by the subjects and their families) was relatively low, with 5/14 having hypertrophied scar tissue (keloid) and/or a small and temporary fluid or blood collections (Table 2). None of the subjects experienced serious adverse effects such as nipple necrosis or infection. Most subjects had decreased or complete loss of sensation in the surgical and nipple area. Figures 1–3 show postoperative images of surgical outcomes in three of our subjects and their satisfaction rating. All depicted cases were lean, as were the majority of subjects in this group. Subjects with a higher body-mass index (BMI) declined to be photographed.

All subjects in this study were available for a prospective, though relatively short-term, follow-up (average 1.6 years; range 0.1–3.6 years). The clinical course for most subjects has been uneventful. Although reportedly not regretting having the procedure done, subject #2 stopped testosterone treatment about two months after the surgery (at age 19.8 years). Following the surgery, the subject did not feel as elated as other trans males described. About 7 months after the surgical procedure, the subject requested assistance with the gender mark and name change back to female. This study subject was lost for follow-up and unfortunately, additional data are not available. Subjects #4 and #6 underwent bilateral ovariectomy and hysterectomy at ages 18.6 years and 18.7 years, respectively, (for subject #4 the surgery was not covered by his insurance) and both subjects declined fertility preservation. Subject #7 continued on GnRH agonist until he was started on testosterone treatment at age 13.9 years. GnRH agonist was stopped at the family’s request due to a concern that the medication was contributing to his rapid weight gain. All other subjects continued on testosterone treatment and had no significant events in the follow-up period.

Discussion and conclusion

A chest reconstructive surgery is an essential part of transitioning for many trans males. Information about these types of procedures being done in young adolescents and the psychological or surgical outcomes of the procedure have not been previously published. In our pediatric group, the patient’s age at the time of the surgical procedure varied greatly, with some subjects seeking and receiving surgical treatment at an age younger than suggested by the current guidelines (Coleman et al., 2012; Hambree et al., 2009). Those youngest patients and their parents strongly believe that the early surgery was advantageous and they pursued surgical care. In our study, most surgeons did not request a referral letter from the treating physician. For that reason, for some of the cases reported, we found out about the surgery only after the procedure had been completed. In all cases, a letter from the mental health provider was required by the surgeons in order to perform the procedure, as per WPATH recommendation (Coleman et al., 2012).

Adult data show good surgical outcomes in terms of satisfaction with the procedure, positive impact on patients’ lives, self-confidence, and social interactions (Nelson, Whallett, & McGregor, 2009; Berry, Curtis, &

Figure 1. Photographs of the surgical outcome. Subject #2, double incision, satisfaction rated 5/5.
Davies, 2012; van de Griff et al., 2016), but data from the adolescent population is lacking. In our cohort, all 14 subjects were very satisfied with the appearance of the chest after the procedure as they reported on a subjective, linear scale. Parents and subjects self-reported improvement in psychosocial functioning after the surgery, and this is consistent with the limited data from PHQ9 scores available on 10/14 subjects. In nine out of 10 subjects who had undergone depression screening in the postsurgical period, depression had improved or was resolved. Many subjects described the surgical procedure as a “life-changing event.” Even the 19-year old patient (Subject #2), who later on stopped testosterone treatment and decided to “detransition,” reported contentment with the surgical outcome and had not requested breast implants by the time of the last follow-up. We were unable to get a psychological assessment or continue follow-up as the subject stopped attending our clinic. This subject presented with gender dysphoria in childhood and had full support from family and peers. Per clinical records, the subject was attracted to females prior to the “detransitioning,” while after “detransitioning” became more attracted to males and had a boyfriend. It is unclear whether this contributed to the subject’s wish to “detransition,” as change in sexual orientation has also been described in transgender individuals who do not “detransition” (Auer, Fuss, Höhne, Stalla, & Sievers, 2014). Data about “detransitioning” after surgical treatment is particularly sparse and it is very important to report and learn from this and similar cases. We did not find a difference in surgical complication rates or patient satisfaction among subjects who had receiving testosterone treatments for a year or longer prior to surgery compared to those who had not, but this is based on a rather small sample size.

Insurance coverage for our study subjects was most often not available and many patients are unable to get necessary treatment unless they pay out of pocket. The decision to seek surgical care out of town, out of state, or even out of the country was based on the subjects’ (and their families’) personal preference. The cost of the treatment, convenience in regard to postoperative follow-up care and peer recommendations were the key factors that influenced their choices. In our experience, the decision to undergo male chest reconstructive surgery and the timing of it is driven by the patients’ and parents’ preferences, parental approval of the surgery, socioeconomic status (ability to pay out of pocket), availability of insurance coverage, and availability of experienced surgeons. Many more (85% of those eligible) adolescents and young adults in our GeM clinic wish to have male chest contouring surgery, but the lack of insurance coverage makes it cost prohibitive. Some of the local surgeons accept commercial but not federally funded insurance. Therefore, many of our patients are unable to get the necessary treatment unless they are able to finance it themselves.

Another noteworthy finding from our data is the predominance of trans males in our GeM clinic, which is contrary to 20th-century data but similar to what
has been recently observed in large clinics in Amsterdam and Toronto (Aitken et al., 2015).

To our knowledge this is the first published study reporting data on chest reconstructive surgeries in transmasculine adolescents. The limitations of our study are the small number of subjects, the relatively short follow-up period, and the lack of an objective, comprehensive measure of the subjects’ satisfaction and/or change in psychological status before and after the procedure. Nevertheless, the value of our study is in reporting that in this geographic area, patients (with their parents’ support) are requesting and receiving surgical interventions at a younger age than is written in the current guidelines (Coleman et al., 2012; Hembree et al., 2009), sometimes without a referral letter from the treating endocrinologist. The satisfaction with the aesthetics of the surgical treatment in our study group was high and the surgeries appear to have a positive impact on patients’ lives. For some transmasculine youth with a high level of chest dysphoria, having a chest reconstructive surgery, we speculate, may reduce their dysphoria and the risk of suicide, and therefore, having an earlier surgery may be beneficial. Having a decentralized delivery of care and variable insurance coverage, as it is in the United States, may result, in some cases, in a discrepancy between what the medical doctor prescribing hormonal therapy may recommend and what patients are able or wish to do. Readiness for surgical treatment was not dependent on having been on testosterone treatment for any specific amount of time but rather on the patient’s maturity and strong desire for having the surgery. Surgical interventions in adolescents should not be taken lightly and should take into account their maturity level and ability to consent or assent to such a significant surgery. Some institutions involve an ethicist in these decisions. Larger, multicenter studies with long-term follow up and international collaboration are necessary to gather data about surgical practices and outcomes in youth. Additionally, continued advocacy is vital for securing improved insurance coverage for this and other fundamental procedures that are medically necessary for transgender individuals.

References


Exhibit F
Gender-affirming Chest Surgery in Transgender Adolescents and Young Adults: Technical and Ethical Considerations

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¹University of Pittsburgh, Pittsburgh, PA, USA, ²Children's Hospital of Pittsburgh of UPMC, Pittsburgh, PA, USA.

PURPOSE:
While the overall practice of transgender surgery is increasing, many surgeons are reluctant to perform gender-affirming chest surgery in adolescents, despite performing gynecomastia or congenital breast surgery in similar aged patients. We aimed to describe our experience in transgender female-to-male chest surgery in adolescents and young adults.

METHODS:
All patients who underwent gender-affirming bilateral mastectomy at our children's hospital were identified. Patients had at least one referral letter in accordance with WPATH Standards of Care guidelines. Medical history, testosterone treatment, referral pattern, age, surgical approach, resection weight, BMI, and complications were reviewed.

RESULTS:
25 patients underwent bilateral mastectomy by a single surgeon over a 17-month period. 22 patients identified as transgender male and 3 as agender/genderqueer. 22 patients had a history of anxiety and/or depression. 21 patients were on testosterone. 20 patients were referred by adolescent medicine or pediatric endocrinology. Average age at surgery was 20.4 years (range 15.1-34.3); 6 patients were under 18 years. Patients who underwent a periareolar approach (n=13) had smaller resection weights (average 204 grams, range 49-476) and lower BMI (average 24, range 19-29) compared to those who required double incision mastectomy with free nipple grafts (n=12), who had an average resection weight of 797 grams (367-1848) and BMI 31 (22-39) (p<0.01). There were 2 seromas and 1 hematoma. All patients expressed satisfaction at postoperative visits.

CONCLUSION:
The combination of team care and an algorithmic approach to surgical technique produces satisfied patients and excellent outcomes in adolescents and young adults seeking gender-affirming chest surgery.
Exhibit G
Sex Reassignment of Adolescent Transsexuals: A Follow-up Study

PEGGY T. COHEN-KETTENIS, PH.D., AND STEPHANIE H.M. VAN GOOZEN, PH.D.

ABSTRACT

Objective: To investigate postoperative functioning of the first 22 consecutive adolescent transsexual patients of our gender clinic who underwent sex reassignment surgery. Method: The subjects were interviewed by an independent psychologist and filled out a test battery containing questionnaires on their psychological, social, and sexual functioning. All subjects had undergone surgery no less than 1 year before the study took place. Twelve subjects had started hormone treatment between 16 and 18 years of age. The posttreatment data of each patient were compared with his or her own pretreatment data. Results: Postoperatively the group was no longer gender-dysphoric; they scored in the normal range with respect to a number of different psychological measures and they were socially functioning quite well. Not a single subject expressed feelings of regret concerning the decision to undergo sex reassignment. Conclusions: Starting the sex reassignment procedure before adulthood results in favorable postoperative functioning, provided that careful diagnosis takes place in a specialized gender team and that the criteria for starting the procedure early are stringent. J. Am. Acad. Child Adolesc. Psychiatry, 1997, 36(2):263–271. Key Words: gender identity disorder, transsexualism, sex reassignment surgery, adolescents.

Strong feelings of belonging to the opposite sex and corresponding behavioral manifestations have been reported as beginning as early as 2 to 3 years of age (Zucker and Green, 1992). Prospective studies have shown that most children with gender identity disorder will not grow up to become transsexuals (Green, 1987; Zuger, 1984). In a few, however, the cross-gender feelings will remain. These individuals become adolescents who will attend gender identity clinics to obtain sex reassignment surgery (SRS). Despite the early onset of the disorder, in most countries it is common practice not to start the actual SRS procedure earlier than 18 or even 21 years of age. There are several reasons for this long delay.

In prepubertal children medical treatment is never considered because of the previously mentioned discontinuity between gender identity disorder of childhood and adult transsexualism. However, there is a general reluctance to commence rather invasive procedures such as hormone treatment even in postpubertal children. Adolescence is a phase in which many identities, e.g., political or religious, are developed. Professionals fear that experimenting with certain aspects of gender, such as gender role behavior, will lead adolescents to conclude that they have a gender identity problem and that they will as a result wrongly seek a medical means of resolving their confusion. The chance of making the wrong diagnosis and the consequent risk of postoperative regret is therefore felt to be higher in adolescents than in adults, as a consequence of the developmental phase itself. A more practical reason for delaying the start of sex reassignment is that adolescents in many countries are still legally dependent on the consent of their parents when deciding on medical treatment. Even when the diagnostican and patient agree that the SRS procedure should be started, parents may not give their consent. Resistance from parents thus forms an extra complicating factor in the treatment process and the clinician runs an increased risk of litigation.

There are, however, arguments in favor of commencing the administration of hormones (and therefore the SRS procedure) earlier than adulthood. Some adoles-

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cents, who have shown an extreme pattern of crossgender identification from their earliest years, suffer deeply from the fact that they cannot be open about their gender feelings. As a consequence of their gender identity disorder, they sometimes develop other problems, which around the time of puberty increase and/or become aggravated. Knowing that they will have to await treatment for many years engenders feelings of hopelessness and slows down their social, psychological, and intellectual development. They have to cope with adverse consequences of living with a self-concept that is never socially acknowledged or reinforced. In such cases, early treatment would prevent much unnecessary suffering.

Another argument for starting the sex reassignment procedure in adolescents concerns their appearance. The physical outcome of an early treatment can be expected to be more satisfactory by comparison with starting later, especially in male-to-female patients. This is obviously an enormous and lifelong advantage; instead of having to live with a deep voice and facial scarring due to electrical epilation, one can easily pass as a female. Ross and Need (1989) found that postoperative psychopathology was primarily associated with factors that made it difficult for postoperative transsexuals to pass as their new gender or that continued to remind them of their transsexualism.

Finally, on the basis of numerous follow-up studies, one can conclude that unfavorable postoperative outcome seems to be related to a late rather than an early start of the SRS procedure (for reviews see Green and Fleming, 1990; Pfafflin and Junge, 1992). Age at assessment also emerged as a factor differentiating two small groups of male-to-female transsexuals with and without postoperative regrets (Lindemalm et al., 1987).

With some rare exceptions (e.g., Dulcan and Lee, 1984), clinicians have been hesitant to use forms of treatment other than psychotherapy or environmental therapy for adolescent SRS applicants. As mentioned earlier, a major problem is that it is not yet known for certain who will and will not profit from early SRS. The ultimate answer to the question of who would benefit from which treatment would come from research in which adolescent applicants (with either more “fixed” or more “fluid” gender identities) are randomly assigned to sex reassignment or non-sex-reassignment treatment conditions, with adequate operationalizations of gender identity and a long-term follow-up. For ethical reasons such studies are obviously not possible.

Naturally, if a complete reversal of extreme and lifelong cross-gender identity were possible by treatment methods other than SRS, clinicians should refrain from SRS in adolescents, and indeed in older patients. However, the few published case studies of transsexuals (only some of them adolescents) who were “cured” after psychotherapy (Barlow et al., 1973, 1979; Davenport and Harrison, 1977; Dellaert and Kunke, 1969; Kronberg et al., 1981; for a review see Cohen-Kettenis and Kuiper, 1984) do not permit us to draw such conclusions, for several reasons. First, operationalizations of gender identity differ considerably from report to report. Consequently, treatment success has been evaluated on the basis of diverse and sometimes questionable criteria. Second, few reports mention a long-term follow-up. Clinicians working with transsexuals know that some applicants refrain from SRS, even without psychotherapy, but, many years later, return to continue the procedure. So even the claimed cures might in fact have been postponements of SRS. Finally, the case studies usually describe patients who were highly motivated to “change” their gender identity, a characteristic rarely encountered in most of our applicants.

We believe that non-SRS treatment may be helpful in cases of gender confusion or certain—mild—forms of gender dysphoria. However, we doubt that the reported cases reflect a complete and stable (re)establishment of a gender identity corresponding with genital sex in persons with a lifelong and extreme cross-gender identity. Moreover, despite many years of intensive psychotherapy, permanent gender identity change is, even in the “milder” cases, not always achieved (Dulcan and Lee, 1984; Lothstein, 1980). These considerations have led us and many others to favor SRS as a treatment option for transsexuals. On the basis of the above arguments we also try to explore carefully the treatment boundaries for younger age groups.

In our hospital, children and adolescents with gender identity disorder are seen at an outpatient gender identity clinic. The recommended procedure in the Standards of Care of the Harry Benjamin International Gender Dysphoria Association (Walker et al., 1985), a professional organization in the field of transsexualism, is to arrive at a diagnosis in two phases. In the first phase one gathers information necessary for
differentiating between the extreme gender identity disorder, called transsexualism, and other types of gender disorders. Also, possible risk factors for serious problems during the reassignment period and for negative postoperative outcome are estimated.

At our clinic, in the first phase the child and family are interviewed on the general and gender development of the child, the way the parents have dealt with their child’s gender deviancy, and the family backgrounds of the parents themselves. By means of a semistructured interview with the adolescent, a list of topics is discussed (e.g., identification figures, relationship with same-sex and opposite-sex parent, first conscious cross-gender feelings, emotional reaction of the child to the maturation of the body). Many aspects of sexuality are included in the discussion (such as sexual fantasies, sexual orientation, anxieties, the meaning of cross-dressing, deviant sexual behavior). Current issues such as school/career choice or school problems, relationship problems at home or with peers, and romantic involvements are also addressed. During these sessions several general aspects of the child’s functioning (problem-solving abilities, interpersonal functioning, reality testing, stability of the SRS wish, etc.) can be observed, along with his or her gender role behavior. Psychodiagnostic assessment is another element of the first phase. The adolescent undergoes intelligence and personality testing and, if necessary, neuropsychological testing. Our standard test battery also contains some specific instruments, such as a body image scale (Lindgren and Pauly, 1975) and a self-developed gender dysphoria scale (see below). The first phase may take several weeks, months, or even years (Cohen-Kettenis, 1992, 1994).

Nontranssexual patients are not allowed to start the second diagnostic phase or “real-life diagnostic test” (Money and Ambinder, 1978). Instead, in cases of transvestitism, ego-dystonic homosexuality, forms of gender confusion, etc., psychotherapy, family therapy, or other forms of treatment are offered. In transsexual patients the second diagnostic phase is started, if the risks of unfavorable postoperative outcome are considered to be low. Because we are still in a pioneering phase for adolescents, additional criteria are used for referral to the second diagnostic phase. First, they must have shown a lifelong extreme and complete cross-gender identity/role. Around puberty these feelings and behaviors must have become more rather than less pronounced. Second, they must be psychologically stable (with the exception of depressed feelings, which often are a consequence of their living in the unwanted gender role) and function socially without problems (e.g., have a supportive family, do well at school). If applicants meet the above requirements, they are allowed to proceed to the second diagnostic phase, even if they are younger than 18 years of age (but they must be older than 16). If they are diagnosed transsexuals but do not meet the additional criteria, the second diagnostic phase is postponed.

The second phase implies the start of the real-life test, supported by a (partial) hormone treatment (Cohen-Kettenis, 1994). In Holland adolescents are referred for hormonal treatment (and surgery) to members of the Free University Hospital Gender Team, which is responsible for the treatment of 95% of the Dutch adult patients. Partial hormone treatment blocks the action of sex steroids in a reversible way: the male-to-female bodies do not masculinize any further, and the female-to-male patients stop menstruating and sometimes experience a weakening of breast tissue (Gooren and Delemarre-van de Waal, 1996). Full hormone treatment is not reversible and masculinizes the female body or feminizes the male body. It is given before the age of 18 only when the patient has responded favorably to the partial hormone treatment.

During the real-life test applicants have to live full-time in the desired gender role. Thus they can discover whether they are able to pass as someone of the opposite sex and experience all advantages and disadvantages of the new situation. Depending on the situation, the role change may occur gradually or at once. If the real-life test is successfully passed, the patient is referred for surgery. Counting from the start of the full cross-hormone treatment, the minimal duration of the real-life test is 1 year for the FMs and ½ year for MFs. This difference is due to the fact that the gender role change seems to have more impact on the life of male-to-females (MFs) than on that of female-to-males (FMs), and MFs therefore need more time to adjust to the new situation.

Because the very first patients going through this procedure have experienced life in the desired gender situation for quite some time, we decided to conduct a follow-up study. To our knowledge no follow-up studies have ever been conducted on transsexuals treated so early in life. We expected that the outcome of this young group would be relatively favorable compared
with the outcome among older groups. In the first follow-up study among adult Dutch transsexuals (N = 141) who had undergone SRS (Cohen-Kettenis and Kuiper, 1988; Kuiper and Cohen-Kettenis, 1988), SRS was found to solve gender problems but had not necessarily alleviated other problems. Similar results have been found in non-Dutch samples (for a review of 79 follow-up studies, see Pfafflin and Junge, 1992). The less positive results among adults may, in our view, be due to the fact that they have had to live under adverse circumstances for a longer period than individuals who are treated in adolescence.

The current study focused primarily on postoperative gender feelings (regrets), gender functioning, and an evaluation of the treatment. An alleviation of gender dysphoria can be expected to be closely associated with improvement in other areas of life, such as psychological, social, and sexual functioning. Although not considered a primary outcome criterion, we also included these domains in our study.

METHOD

Subjects

For the follow-up study the first 22 patients (15 FMUs and 7 MFUs) who had undergone their last surgery at least 1 year before the start of the study were invited to participate. During the period that these subjects applied for SRS, eight other applicants did not receive the diagnosis of transsexualism and hence did not start the real-life test. Three others were diagnosed as transsexuals, but their real-life test was postponed because of severe coexisting psychopathology and/or adverse social circumstances. Two of the invited patients (1 FM and 1 MF) refused to be interviewed. One patient (an MF) did not respond to our letters. This resulted in a posttreatment sample of 14 FMUs and 5 MFUs.

Instruments

IQ Tests. IQ tests used were the WISC-R (van Haesen et al., 1986), WAIS (Steenissen et al., 1970), and Groninger Intelligenie Test (Luteyn and van der Ploeg, 1983).

Gender Dysphoria Scale. The Utrecht Gender Dysphoria Scale is a specially developed scale to measure gender dysphoria. In the initial factor analyses of responses to this measure, 12 of 32 items appeared to form a homogeneous scale; Cronbach’s α values were .80 for FMUs (n = 50); .80 for MFUs (n = 87), .81 for female controls (n = 65), and .66 for male controls (n = 58). In a new sample of 202 SRS applicants who were either diagnosed transsexuals or gender-dysphoric but not transsexual and who were participating in a 5-year prospective study, the α values were .92 for male applicants and .78 for female applicants (n = 82). The scale showed excellent discriminant validity between the transsexual and nontranssexual subjects in the first study (P < .001) and between SRS applicants who were and were not referred for SRS (P < .001) (Doorn et al., 1990). Examples of items are “I feel a

continuous desire to be treated as a man/woman” and “Every time someone treats me as a woman/man I feel hurt.”

Body Image Scale. A body image scale (Lindgren and Pauly, 1975) that had been adapted for a Dutch population (Kuiper, 1991) was used.

Personality Inventories. The NVM is an 83-item shortened Dutch version of the Minnesota Multiphasic Personality Inventory measuring the concepts of negativism, somatization, shyness, psychopathology, and extraversion (Cronbach’s α values in a group of 894 psychiatric patients and 294 nonpatients ranged from .71 to .86; validation studies are reported by Luteyn et al., 1980).

The Dutch Personality Questionnaire or NPV is a widely used 135-item personality questionnaire measuring feelings of inadequacy, social inadequacy, rigidity, hostility, complacency, dominance, and self-esteem (the median of the Cronbach’s α values in 10 normative groups ranged from .70 to .86; validation studies are reported by Luteyn et al., 1985).

Treatment Evaluation: Subjects completed a semistructured oral interview with 27 questions about their treatment outcome, their experiences during and after sex reassignment (e.g., “In what ways do you feel hindered in your daily functioning as a man/woman?”), their evaluation of the treatment (e.g., “If you would have to start treatment with the knowledge you have now, which aspects of the treatment should be different from what has happened to you?”), feelings of regret (e.g., “How often do you contemplate living as a man/woman again?”), and confidence in the possibility of “passing” in the new gender role (e.g., “How often do you feel insecure about your masculinity/femininity?”). In the interview 46 questions were asked about the subjects’ current life situation (e.g., work/education, financial situation, living circumstances, contacts with family and friends, partnership, sexuality, feelings of loneliness, alcohol and drug abuse, and sleeping problems) (Doorn et al., 1996).

Subjects completed a questionnaire concerning functionality of the vagina or penis and satisfaction with surgical results (for FMUs: 3 items on breast enlargement, 10 on vaginoplasty; for MFUs: 5 items on breast removal, 4 on the neoscrotum, 7 on phalloplasty) (Doorn et al., 1996).

Social Reactions Questionnaire. A 20-item questionnaire assessed reactions of the social environment to the transsexual (e.g., “People still call me ‘sir’; even if I feel I look good”) (Doorn et al., 1996).

The IQ tests were administered before treatment; the Utrecht Gender Dysphoria Scale, the body image scale, and the personality questionnaires were completed before as well as after treatment because within-subject changes were expected in these domains; and the other instruments were used after treatment because they contain questions regarding only the postoperative situation.

Procedure

Subjects were invited to come to the Utrecht University Hospital or to combine a hormonal checkup at the Free University of Amsterdam Hospital with the interview and testing. Each session took 2 to 3 hours. To avoid socially desirable responses, the subjects were seen by the second author, who is not involved in the diagnosis or treatment of transsexuals.

RESULTS

The mean age of the group was 17.5 years (range 15 to 20) at the time of the pretest and 22.0 (range 19 to 27) at the follow-up. Nine of the patients had
started the "real-life test" or second diagnostic phase, supported by hormone treatment, before the age of 18. The mean elapsed time between the last operation and the time of the follow-up interview was 2.6 years (range 1 to 5 years). The group's pretreatment mean IQ score was 106 (SD = 14; range 71 to 127).

The group did not differ significantly from a group of 23 diagnosed transsexuals in our clinic, who applied for SRS at a later date and who were therefore not yet 1 year postoperative at the time of our study, with respect to the following variables: age at application, gender dysphoria score, intelligence, and scores on the personality tests (NVM and NPV).

**Gender Dysphoria**

The difference between pre- and posttest score in gender dysphoria was highly significant ($p < .001$) (Table 1). The mean posttest scores of the MF transsexuals were completely in the range of the mean score of the aforementioned 87 female controls (mean = 15.7; SD = 5.4); likewise, the mean posttest score of the FM did not differ significantly from the mean score of the aforementioned 88 male controls (mean = 14.2; SD = 2.9). In addition, the MF group reported feeling highly feminine and hardly masculine at all in response to questions on masculinity and femininity, while almost exactly the reverse pattern was found in the FM group (Fig. 1). None of the subjects expressed feelings of regret about their decision to undergo SRS in response to any of several questions regarding the topic, such as the following: "Do you now have any regrets with regard to your decision to live as someone of the opposite sex?" "Did you ever have any regrets during or after the sex reassignment procedure?" "Would you make the same decision again, knowing what you now know about your sex reassignment?" "Did you ever consider living in your original gender role again?" "Do you sometimes live in your original gender role?" "Did you ever think, during (after) the sex reassignment: I wish I had never started this?"

**Body Satisfaction**

With respect to their general appearance, the majority of the group reported satisfaction: 100% of the MFs and 60% of the FMs were satisfied, while 40% of the FMs were neutral. This is in line with the interviewer's observation that it was difficult to discern any signs of the biological sex. Satisfaction with primary and secondary sexual characteristics after treatment increased significantly. Not included in this analysis was an item on the (neo-) phallus (see below). For MFs, but not for FMs, there was a slight increase in satisfaction with other physical characteristics (Table 2).

**Satisfaction With Surgery**

For this group of FMs, breast removal is emotionally the most relevant type of surgery. This is because young FMs are advised to postpone metadioidoplasty (transformation of the hypertrophic clitoris into a micropenis) or phalloplasty (with or without construction of a neoscrotum) because surgical techniques are steadily improving. Therefore, only one FM had, shortly before the interview, undergone a phalloplasty and only two FMs had a neoscrotum. For the MFs, vaginoplasty is the most important surgical intervention.

Forty percent of the FMs reported satisfaction with their breast removal, 50% were moderately satisfied, and 10% were dissatisfied with the result. Disappoint-

---

**TABLE 1**

Gender Dysphoria Scale

<table>
<thead>
<tr>
<th></th>
<th>Pretest</th>
<th></th>
<th>Posttest</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>All</td>
<td>19</td>
<td>51.7</td>
<td>6.3</td>
<td>14.8</td>
</tr>
<tr>
<td>FM</td>
<td>14</td>
<td>52.9</td>
<td>3.4</td>
<td>14.5</td>
</tr>
<tr>
<td>MF</td>
<td>5</td>
<td>48.4</td>
<td>7.5</td>
<td>15.8</td>
</tr>
</tbody>
</table>

* $p < .001$.

---

**Fig. 1** Masculinity and femininity of female-to-male (solid bar) and male-to-female (striped bar) transsexuals.
TABLE 2
Satisfaction With Primary, Secondary, and Other Physical Characteristics (Body Image Scale)

<table>
<thead>
<tr>
<th></th>
<th>Mean (Pre)</th>
<th>Mean (Post)</th>
<th>F (Type)</th>
<th>F (Time)</th>
<th>F (T x T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary sex characteristics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FM</td>
<td>4.6</td>
<td>3.1</td>
<td>1.54</td>
<td>102.6*</td>
<td>0.58</td>
</tr>
<tr>
<td>MF</td>
<td>4.5</td>
<td>2.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary sex characteristics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FM</td>
<td>3.3</td>
<td>2.5</td>
<td>1.19</td>
<td>41.21*</td>
<td>0.08</td>
</tr>
<tr>
<td>MF</td>
<td>3.0</td>
<td>2.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other body characteristics*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FM</td>
<td>2.3</td>
<td>2.3</td>
<td>0.01</td>
<td>2.41</td>
<td>4.32**</td>
</tr>
<tr>
<td>MF</td>
<td>2.6</td>
<td>2.0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Values in the table represent means and results of analyses of variance with "type" as between-subjects factor and "time" as within-subjects factor. Mean values range from 1 to 5, with 1 = very satisfied and 5 = very dissatisfied.

FM = female-to-male; MF = male-to-female; T x T = type x time.

* Nose, feet, chin, shoulders, arms, weight.

*p < .05; ** p < .001.

ment about the visibility of the scars was the main reason for not being satisfied with breast removal. Nevertheless, 80% did not have any problems with baring their chest when swimming. Of the MFs, 60% expressed satisfaction with their vaginoplasty. They felt their vaginas looked natural. Three MFs had experienced sexual intercourse, without problems.

Occupational Status

Slightly fewer than half of the group (43%) were studying (at a school for business administration or at university). Thirty-six percent of the subjects had a job and 21% were unemployed. Of the unemployed, two were not looking for a job.

Living Situation

Most subjects (79%) lived independently or in student dormitories, 14% of the subjects lived with their partner, and 7% were living with their parents.

Relationships and Sexuality

The majority of the group (57%) had no partner at the time of the interview or had never had one; 36% had a stable relationship with a partner. One FM (7%) was having casual relationships with several girlfriends. Of the subjects who at the time of the interview had a sexual partner, 71% expressed satisfaction with their sex life, 14% expressed a neutral view, and 14% were dissatisfied. Several FMs mentioned that they found it difficult to live without a penis, especially at moments when they did not know their potential sexual partner very well. Autosexual behavior was not very frequent. Fifty percent of the subjects masturbated less than once a month or never, 43% more than once a month. MFs generally reported a decrease in frequency, while FMs reported no change or an increase in frequency. Of the 13 subjects who were sexually active, 77% regularly achieved orgasm.

Social Life and Social Contacts

The majority (89%) felt accepted and supported in their new gender role by everyone they knew, while the remainder (11%) felt accepted by several people. As a consequence of the sex reassignment, 68% reported not having lost their relationship with any family member or friend, while 21% had lost a relationship with just one person. One MF had, before treatment, felt so isolated that she had "little to lose." All except one subject had developed new friendships since the beginning of the treatment. Parents and friends were mentioned as the most important people to rely on in hard times (mother 71%, father 43%, friends 50%). More superficial contacts such as with neighbors or shopkeepers were either nonexistent/neutral (21%) or positive (79%). None of the subjects had had experiences of being harassed. Most of the subjects had been approached in a flirtatious manner, 58% regularly and 37% sometimes. Not a single subject had been, since treatment, approached by strangers as if they were someone of the biological sex.

Psychological Functioning

After treatment, a significant increase in extroversion (NVM) (Table 3) was found, indicating a tendency
TABLE 3
Psychological Functioning Before and After Sex Reassignment Surgery (NVM)

<table>
<thead>
<tr>
<th></th>
<th>Pretest Mean</th>
<th>Pretest SD</th>
<th>Posttest Mean</th>
<th>Posttest SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negativism</td>
<td>21.8</td>
<td>9.3</td>
<td>19.0</td>
<td>6.7</td>
</tr>
<tr>
<td>Somatization</td>
<td>7.9</td>
<td>7.3</td>
<td>6.0</td>
<td>5.7</td>
</tr>
<tr>
<td>Shyness</td>
<td>11.0</td>
<td>8.8</td>
<td>10.0</td>
<td>7.7</td>
</tr>
<tr>
<td>Psychopathology</td>
<td>3.6</td>
<td>4.3</td>
<td>3.1</td>
<td>2.3</td>
</tr>
<tr>
<td>Extroversion</td>
<td>15.9</td>
<td>5.6</td>
<td>19.5</td>
<td>4.1</td>
</tr>
</tbody>
</table>

*Note: Results were analyzed by means of paired t tests. The NVM is a shortened Dutch version of the Minnesota Multiphasic Personality Inventory.

*p = .002.

to be more active toward social contacts. When both pre- and posttest group means were compared with Dutch normative data, all scores turned out to be within the average range. We also found a significant increase in dominance and self-esteem and a significant decrease in inadequacy (NPV) (Table 4). Again, pre- and posttest group means were all in the below average to average range, when compared with Dutch norms.

General Functioning

Three patients seemed to have problems to the point that they expressed only moderate satisfaction with their lives and feelings of moderate happiness, in contrast to the rest of the group, who felt satisfied or very satisfied and happy. The problems of two of these three patients seemed to be primarily related to their unemployment. One FM had dropped out of school and could not find a steady job. His girlfriend had to support him financially, and he found this difficult to bear. The other, a bright MF, had many diplomas, but poor social skills. She had expected her diploma to guarantee her a job in the world of business, but she did not succeed in getting one. For this reason she had started a social skills training and had hopes this would help her in her career. The third, an FM, had rather low self-esteem. Despite an absence of negative pre- and posttreatment social experiences, good looks, and a steady girlfriend, he had trouble overcoming his uncertainties.

Some information, albeit not very systematically gathered, is available concerning the three patients who declined to participate in this study. All three patients still visit the Free University Hospital Department of Andrology for their hormonal checkups. Here we were informed that one FM had a partner with children from a previous marriage and that he was unemployed. One MF had a job and was involved in a steady relationship. The other FM was studying and had just broken up with her boyfriend. On their visits to the hospital for hormonal checkups, none of them had ever expressed regrets with regard to their SRS. All three easily pass in their new gender role. Neither the endocrinologists nor other Gender Team staff members believed these patients' nonparticipation in the study was due to an unfavorable postoperative outcome.

DISCUSSION

In this adolescent group, 1 to 5 years after surgery, sex reassignment seems to have been therapeutic and beneficial. SRS has resolved the patients' gender identity problem and enabled them to live in the new gender role in quite an inconspicuous way. Socially and psychologically these adolescents do not seem to function very differently from nontranssexual peers, perhaps with the exception of a greater reluctance among those in the FM group to get involved in short-term or incidental sexual encounters. Relief of gender dysphoria, however, does not necessarily mean relief of unhappiness in general. In some cases, after SRS, certain non-transsexualism-related problems had disappeared, such as shyness or bad school grades. But in other cases such changes had not occurred, or the new situation had created new problems, such as (in the majority of the FMs) living as a man without a penis. This condition may cause practical problems, e.g., showering in a group setting after sports activities, and

TABLE 4
Psychological Functioning Before and After Sex Reassignment Surgery (NPV)

<table>
<thead>
<tr>
<th></th>
<th>Pretest Mean</th>
<th>Pretest SD</th>
<th>Posttest Mean</th>
<th>Posttest SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inadequacy</td>
<td>16.2</td>
<td>10.2</td>
<td>12.0</td>
<td>6.7**</td>
</tr>
<tr>
<td>Social inadequacy</td>
<td>9.9</td>
<td>8.7</td>
<td>8.2</td>
<td>5.5</td>
</tr>
<tr>
<td>Rigidity</td>
<td>18.2</td>
<td>7.8</td>
<td>19.9</td>
<td>6.7</td>
</tr>
<tr>
<td>Hostility</td>
<td>18.2</td>
<td>5.4</td>
<td>17.1</td>
<td>5.6</td>
</tr>
<tr>
<td>Compacency</td>
<td>14.8</td>
<td>5.4</td>
<td>12.5</td>
<td>3.9</td>
</tr>
<tr>
<td>Dominance</td>
<td>13.9</td>
<td>7.0</td>
<td>18.6</td>
<td>6.8***</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>24.3</td>
<td>6.8</td>
<td>27.9</td>
<td>7.1*</td>
</tr>
</tbody>
</table>

*Note: Results were analyzed by means of paired t tests. NPV = Dutch Personality Questionnaire.

*p = .05; ** p = .04; *** p = .0003.
emotional problems, e.g., being frustrated because of the impossibility of having "real sex" with one's girlfriend. The extent to which such unfavorable factors hamper postsurgical functioning depends largely on the individual's psychological strength. That the group functioned quite well from a psychological point of view suggests that they were capable of handling their problems adequately.

In the previously mentioned study of adult Dutch transsexuals who had undergone SRS (Kuiper and Cohen-Kettenis, 1988). SRS was also found to be an effective treatment for transsexuals. Several similar instruments were used in the two studies and all subjects were treated in the same country. Therefore, data from our study are easier to compare with data from this adult group than with data from non-Dutch samples. Compared with the adult group, the adolescents function better psychologically (Kuiper, 1991). In addition, they appear to have far fewer social problems and they receive much more support from their families and friends (Cohen-Kettenis and Kuiper, 1988). A comparison of the adults and adolescents with respect to sexuality was difficult to make because the majority of the data from the adult transsexuals concern sexuality with a partner, and this is not true of the adolescents.

Part of the adolescents' better functioning might be due to the fact that they more easily pass in the desired gender role, because of their convincing appearance. With the exception of one MF, the voices of the MFs were not noticeably male-sounding, and all MFs had only sparse beard growth at the time of hormonal treatment. The early antiandrogen treatment apparently had acted in a timely way to block the facial hair growth and the lowering of the voice.

Another aspect of this relatively positive outcome may be attributable to the criteria for treatment eligibility. As explained in the introduction, additional criteria are applied for applicants who want to start the real-life test before the age of 18. This implies that those patients selected for early treatment not only are among the best-functioning applicants, but probably they also belong to the subtype of so-called "homosexual transsexuals" (that is, individuals who are, before SRS, sexually attracted to same-sex partners) (Blanchard, 1985). They are also referred to as "primary" or "early-onset" transsexuals (Doorn et al., 1994; Person and Ovesey, 1974a,b). "Homosexual transsexuals" have been found, among other things, to present earlier for treatment, to report more childhood cross-gender identification, and to show less postoperative regrets than "nonhomosexual transsexuals" (Blanchard, 1985, 1988; Blanchard et al., 1989; Doorn et al., 1994). It is also possible that the biological factors recently found to be associated with transsexualism are of greater etiological significance in the early-onset than in the late-onset group (Zhou et al., 1995). Postoperative regrets in the nonhomosexual group (which probably largely coincide with the late-onset group) are more likely because they usually have a much longer and more inconsistent history of untreated gender dysphoria, have for a longer period tried unsuccessfully to live in the original gender role, and, as a consequence, have stronger ties to their original role (as a partner, a father, or a colleague). Finally, most of the transsexuals in our study were FMs. From other studies we know that FMs in many respects fare better than MFs postoperatively (Pfafflin and Junge, 1992).

Sex reassignment of adolescent transsexuals is a matter of considerable debate (Cohen-Kettenis, 1994, 1995; Meyenburg, 1994). On the basis of the findings of this study, it seems reasonable to conclude that transsexuals treated during or shortly after adolescence will not function worse postoperatively than transsexuals treated later. It is true that they will have to confront difficulties during a vulnerable phase of their lives. Not every transsexual adolescent will be capable of handling these adequately. When diagnosing adolescent transsexuals one should therefore be even more careful and when referring for hormone treatment one should be more strict than one would be with adults. Thus, in psychologically unstable applicants or applicants living in unfortunate social/family circumstances, it seems sensible to address these factors before proceeding to the real-life test.

Even adolescent applicants who are functioning well will need a lot of guidance through the process of sex reassignment. However, provided they manage to pass SRS without problems, they have a lot to gain. They can catch up with their peers and devote their attention to friendships, partnership, and career.

In the Netherlands medical health care and legislation are relatively favorable for transsexuals: the treatment is paid for by insurance companies or by national health insurance and a change of birth certificate is legally possible. Both the general public and general practitioners are well aware of the phenomenon of
transsexualism and the existence of specialized gender clinics. It is likely that in societies with more negative attitudes toward the phenomenon, transsexuals will try to hide their condition for a longer period or will psychologically be more damaged at the moment of application. It is also likely that in such societies it is harder to conduct studies similar to ours, because of a scarcity of suitable candidates and a hesitance of clinicians to engage in nonestablished treatment methods. But before arriving at definitive conclusions regarding sex reassignment for adolescents, solid prospective studies should be carried out with special attention for necessary and sufficient criteria for SRS eligibility.

REFERENCES

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Lindgren T, Pauly I (1975), A body image scale for evaluating transsexuals. *Arch Sex Behav* 4:639–650


Lutten F, Kok AR, van der Ploog FAE (1980), NVM. Nederlandse Vereniging MMPI. Handhaling: Lisse: Swepts en Zeelteiger


Exhibit H
March 16, 2018

RE: IMR: [redacted]
State ID#: [redacted]
Case #: [redacted]
Health Plan: Oxford Health Plan
Denied Health Service or Treatment: Mastectomy and nipple/areola reconstruction (Pre-service)
Denial Reason: Medical Necessity
Dear [redacted]:

Attached please find the expert reviewer report for your requested external appeal review pursuant to the New York Public Health Law, Article 49.

IMEDECS attests that no prohibited material affiliation existed with respect to the clinical peer reviewer(s).

The reviewer has decided to overturn the health plan's decision.

Summary of Expert's Qualifications

Reviewer #W044
Is a medical doctor (MD) board certified in plastic surgery, and hand surgery. Completed craniofacial, hand and upper extremity fellowship. Has additional expertise in gender reassignment surgery and hyperbaric medicine. Currently serves as attending plastic surgeon, treating children and adults at university affiliated medical centers and pediatric hospitals. Active in professional societies and published in peer reviewed literature.

If you have any questions, please contact your health plan, Oxford Health Plan. A copy of this information has also been sent to them.

Sincerely,

Theresa Strassner, RN, BSN, MHA
Senior Case Review Manager

JEB

Cc: Margaret Williams/Oxford Health Plan
    Kimberly Day/Oxford Health Plan
    Amelia Butler/NYSDFS
    Noah Lewis/Transcend Legal (phone: 347-612-4312, fax: 347-990-1781)
Summary:

The patient is a 17-year-old female to male transgender. He has been on hormones since 2016 and transitioned in 2016. His surgeon and mental health provider recommend mastectomies. This was denied by the health plan and is being appealed.

Question(s):

1. Has the health plan, in its determination of medical necessity, acted reasonably, with sound medical judgment and in the best interest of the patient?

No. The health plan, in its determination of medical necessity, has not acted reasonably, with sound medical judgment and in the best interest of the patient.

2. Is the requested health service/treatment of Mastectomy and nipple/areola reconstruction medically necessary for this patient?

Yes, the procedure is medically necessary. Per the World Professional Association for Transgender Health (WPATH) “Standards of Care for the Health of Transsexual, Transgender, and Gender-Nonconforming People” 7th Edition guidelines:

Criteria for Breast/Chest Surgery (One Referral)

Criteria for mastectomy and creation of a male chest in female-to-male (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 standards of health care (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 prerequisite.

Regarding chest surgery for adolescents, WPATH guidelines are as follows: “Chest surgery in FtM patients could be carried out earlier, preferably after an 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.”

The patient meets these guidelines. He has well documented gender dysphoria and has the capacity to make an informed decision. He has been on hormone therapy for more than 12
months. Mental health concerns are managed by his therapist. His mental health provider has recommended the mastectomies. The standard of care for adolescent top surgery is met.

3. Do you uphold or overturn, in whole or in part, the health plan’s determination of medical necessity?

The health plan’s determination is overturned.

Reference(s):


Exhibit I
March 6, 2018 – CONFIDENTIAL – via Fax 347-990-1781*—page 1 of 5

Transcend Legal
ATTN: Noah Lewis
291 Crown St
#D8
Brooklyn, NY 11225

Dear Transcend Legal:

Re: New York State Mandate External Appeal review; for enrollee of Oxford Health Plans,
Reference #: [Redacted] (MCOP ID: [Redacted]):

Medical Care Ombudsman Program was requested to provide an independent, external appeal review of the subject case pursuant to the New York State Public Health Law, Article 49. This law gives patients the right to an independent external review (referred to as a NY Appeal) to appeal adverse determinations from their health plans. The State of New York has certified Medical Care Ombudsman Program as an authorized external review agent to conduct such reviews.

Our Medical Care Ombudsman Program reviewed the subject case. The determination of the majority of the members of the external review panel (if more than one expert reviewed the case) is binding on the health plan and enrollee. We have enclosed the following results of the independent external review:

- Appeal determination (including conflict of interest attestation) – please read this document carefully. It states whether or not the health plan must pay for the proposed treatment.
- Blinded biographical sketch describing each expert reviewer’s qualifications and experience
- Copy/copies of the expert review(s)

MCMC has over 300 corporate clients, including some of the nation’s largest health insurers and managed care organizations. The company’s over 500 expert reviewers are affiliated with over 100 academic medical centers. If you have any questions about coverage, please direct them to the health plan. If you have any questions about the reviews or review procedures, please fax them to MCMC at 301-652-1250 or toll free at 888-313-MCOP (6267).

Patients are encouraged to discuss external review results with their health care provider.

Sincerely,

[Signature]

Paul Gilleece, RN
VP, Peer Review

*Note: Fax number is redacted for privacy.
Confidential
New York State Appeal Determination – Medical Necessity

Case information:
- Date: 03/06/2018
- Patient Name: [Redacted]
- Patient Age: 15
- Patient Gender: M
- MCMC ID: [Redacted]
- Diagnosis: Gender Dysphoria
- Treatment: CPT 19303-50 and CPT 19350-50
- Provider: [Redacted]
- Health Plan: Oxford Health Plans

Majority panel determination:
Approved (Health plan denial of coverage over-ruled; health plan must pay for the proposed treatment.)

Individual expert determinations:
<table>
<thead>
<tr>
<th>Reviewer</th>
<th>Determination</th>
<th>Main conclusions</th>
</tr>
</thead>
</table>
| R-2559   | Approve      | - "Yes, the proposed treatment is medically necessary."
- "He has well documented gender dysphoria and has the capacity to make an informed decision. He has been on hormone therapy for several months. Mental health concerns are managed by his therapist. His psychologist has recommended the mastectomies. The standard of care for adolescent top surgery is met."
- "The WPATH guidelines are a standard of care, and the denial is not consistent with the standard of care."

Notes:
1. Individual expert determination responses are based upon expert reviewers’ responses to the following New York State approved review question:
   "Is the proposed treatment medically necessary?" Answer is yes, if the health plan did not act reasonably, with sound medical judgment, and in the best interest of the patient.
2. If there is any inconsistency between this case summary and the individual expert review, the expert review is determinant.
3. Documents were received/reviewed from:
   - Health plan
   - Patient’s provider
   - Patient (excluding any submitted directly to the state)

Conflict of interest:
MCMC certifies that we have received signed Declaration of Interest Forms from each reviewer of the subject case. Each reviewer has confirmed that he or she has no material familial, professional, or financial conflict of interest with any of the following: patient, health plan (including its officers, directors, or management employees), treating provider, treating institution, external review organization, manufacturer or inventor of any principal drug, device, procedure, etc to be used in the proposed treatment based on the information provided by the health plan.

MCMC Representative’s Signature: [Signature]
Date: 03/06/2018
Identification #: 2559

I am board certified in Plastic Surgery and Surgery of the Hand. I began practicing in 1991 and am currently Chief of Plastic Surgery at a hospital located on the West coast. My areas of expertise include breast reduction, panniculectomy, thigh lift, belt lipectomy, mastopexy, brachioplasty, brow lift, gynecomastia, hyperbaric oxygen, otoplasty, rhinoplasty/septoplasty, breast cancer reconstruction, breast implant replacement, capsulotomy, hand surgery including carpal tunnel, hyperhidrosis treatment, blepharoplasty, and keloid treatment.
Date:  March 6, 2018
Patient Name:  
Health Plan:  Oxford Health Plans
Reviewer ID:  2559
MCOP ID:  

To Whom It May Concern:

As requested by MCOP, I have reviewed the subject case.

Clinical summary:
This is a 15 year old female to male (FtM) transgender. He has been living as a male for 2.5 years. He has been taking testosterone and Lupron for several months. He wears a chest binder. Mastectomies are planned.

Issue under review:
19303-50 - Simple complete mastectomy
19350-50 - Nipple reconstruction

Records reviewed:
Physician notes and letters and health plan correspondence.

Review questions:
1. Are the medical records and accompanying information sufficient to answer the following questions?

   Yes, the medical records and accompanying information are sufficient.

2. Is the proposed treatment "medically necessary"?

   Yes, the proposed treatment, 19303-50 and 19350-50, is medically necessary.

Per the World Professional Association for Transgender Health (WPATH) “Standards of Care for the Health of Transsexual, Transgender, and Gender-Nonconforming People” Seventh Edition guidelines:
Criteria for Breast/Chest Surgery (One Referral)
Criteria for mastectomy and creation of a male chest in FtM patients:
A. Persistent, well-documented gender dysphoria;
B. Capacity to make a fully informed decision and to consent for treatment;
C. Age of majority in a given country (if younger, follow the standard of care for children and adolescents);
Date: March 6, 2018
Patient Name: [Redacted]
Health Plan: Oxford Health Plans
Reviewer ID: 2559
MCOP ID: 2129-7693

D. If significant medical or mental health concerns are present, they must be reasonably well controlled.
   * Hormone therapy is not a prerequisite.

Regarding chest surgery for adolescents, WPATH guidelines are as follows:

"Chest surgery in FioM 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."

The patient meets these guidelines. He has well documented gender dysphoria and has the capacity to make an informed decision. He has been on hormone therapy for several months. Mental health concerns are managed by his therapist. His psychologist has recommended the mastectomies. The standard of care for adolescent top surgery is met.

3. Did the health plan act reasonably, with sound medical judgment and in the best interest of the patient?

No, the health plan did not act reasonably, with sound medical judgment and in the best interest of the patient.

The WPATH guidelines are a standard of care, and the denial is not consistent with the standard of care.

References:
1. Female-to-male transgender chest reconstruction: a large consecutive, single-surgeon experience.
   Berry MG, Curtis R, Davies D.

   Namba Y, Watanabe T, Kimata Y.

   De Cuypere G.
Exhibit J
March 28, 2017

Reference Number: 
Member Name: 
ID Number: 
Plan: NJ Direct 
Doctor: Bluebond-langner, R 
Place Of Service: Ambulatory Surgical Center 
Service: Surgical 
Procedure(s): 19303, mast simple complete 
19350, breast reconstruction 
14000, tis tmfr trunk 10 sq cm/< 
15200, skin full graft trunk 
15201, skin full graft trunk add-on 
14001, tis tmfr trunk 10.1-30sqcm 
Dates of Service: April 25, 2017 - April 26, 2017 

Subject: The request for the service(s) listed above has not been approved.

Dear [Name],

Why you are receiving this letter
Horizon Blue Cross Blue Shield of New Jersey has reviewed the request for service(s) listed above and we are writing to tell you that the service(s) have not been approved.

Reason(s) the request for approval was denied

Criteria Applied for Determination: 
Horizon BCBS Uniform Medical Policy - Ump 115: Gender Reassignment Surgery

(See next page)
Your adolescent has not reached the age of 18 years of age as per policy criteria.

**What you can do if you do not agree with the denial**
You have the right to appeal this denial. Your appeal rights and form have been attached to this letter.

You or your doctor can request a copy of the document used to make this decision by calling 1-800-664-2583.

Your doctor can ask to speak with the Horizon BCBSNJ medical director that reviewed this request by calling 1-973-466-6313.

**What you can do if you cannot wait for the appeal to be reviewed**
You or your doctor has the right to ask for an expedited review of your appeal by calling the phone number in the appeal rights document included with this letter.

**If you have questions**
Please call the Member Services number on your member ID card.

Sincerely,

*Tania Mason-eastmond*
Pediatrics
Medical Director

cc: R Bluebond-langner, Nyu Hospitals Center Tisch

Enclosure: Brochure UM SHBP SEHBP Medical Appeals Procedure_Utilization Management Brochure, Appeal_Attachment

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LHUM0088 (0816)
CMCO00008399 (0816)
September 11, 2017

RE: Member:
ID: [redacted]
Plan: NJ Direct
Service: Ambulatory Surgical Center, Surgical, 19303, mast simple complete
Service: Ambulatory Surgical Center, Surgical, 19350, breast reconstruction
Service: Ambulatory Surgical Center, Surgical, 14000, tis tmfr trunk 10 sq
cm/<
Service: Ambulatory Surgical Center, Surgical, 15200, skin full graft trunk
Service: Ambulatory Surgical Center, Surgical, 15201, skin full graft trunk
add-on
Service: Ambulatory Surgical Center, Surgical, 14001, tis tmfr trunk
10.1-30sqcm

Dear [redacted]:

The Member Appeal Committee reviewed your appeal that was received on 08/29/2017. The Medical Appeals Committee is comprised of the Chairperson, an Horizon employed Medical Director who is a board certified MD, other non-Horizon employed participating physicians who are board certified with valid unrestricted licenses to practice in New Jersey and/or other licensed healthcare professionals and, non-Horizon employed consumer advocates.

We would like to inform you that the Committee's decision is to approve the services originally denied because:

After review of the submitted clinical information, medical necessity has been established for mastectomy, simple, complete(19303), breast reconstruction(19350),adjacent tissue transfer or rearrangement, trunk; defect 10 sq cm or less(14000),skin full graft trunk(15200),skin full graft

(See next page)
trunk add-on (15201) and adjacent tissue transfer or rearrangement, trunk; defect 10.1 sq cm to 30.0 sq cm (14001). Therefore, the denial is overturned and approved.

Authorization 0003722274 has been entered as approval for Ambulatory Surgical Center, Surgical, 19303, mast simple complete Ambulatory Surgical Center, Surgical, 19350, breast reconstruction Ambulatory Surgical Center, Surgical, 14000, tis tnrfr trunk 10 sq cm/ < Ambulatory Surgical Center, Surgical, 15200, skin full graft trunk Ambulatory Surgical Center, Surgical, 15201, skin full graft trunk add-on Ambulatory Surgical Center, Surgical, 14001, tis tnrfr trunk 10.1-30 sq cm. This approval is based on medical necessity and is not a guarantee of payment. It is subject to contract limitations and the member being covered at the time services are provided.

Sincerely,
William Fineman MD
Internal Medicine - Pulmonologist
Chairperson, Member Appeal Committee

CC: NOAH E. LEWIS, ESQ., NYU HOSPITALS CENTER TISCH