

# Medical Options for Care of Gender Diverse and Transgender Youth



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## ABSTRACT

Increasing numbers of transgender and gender diverse (TGD) youth are presenting for medical care, including seeking more information and access to services from gynecologic and reproductive health experts. Such experts are well positioned to provide affirming, comprehensive services, including education, hormonal interventions, menstrual management, contraception, and various gynecological procedures. Early medical guidance and support for the TGD community has been associated with long-term positive emotional and physical health outcomes. In this article medical interventions that reproductive health experts can offer to their TGD patients are discussed.

**Key Words:** Gender minorities, Transgender, Gender identity, Health services for transgender persons, Gender affirmative care, Gender diverse, Gender affirming hormones, Transgender gynecology

## Case

A 13-year-old assigned female at birth has a new patient appointment in your gynecological clinic for dysmenorrhea. You walk into the exam room and introduce yourself. The patient starts off stating: "I am genderqueer and go by they/them, thank you. My periods make me really sad and I want them to stop." Parents report that Rachel, who now goes by Taylor, gets irritable every month around the time of their periods and they are wondering if it is "PMS."

You decide that in addition to taking a thorough puberty, menstrual, and gynecologic history, you should actively explore more about their gender identity. Toward the end of the interview you tell the family that there are many options that we can consider to help relieve some of the emotional and physical distress associated with the patient's menses. Looking at the family, you continue: "Thank you for being here with Taylor recognizing their distress. Your support is so important to their health and development."

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## Introduction

Human growth and development includes the exploration of gender identity, and patients across the lifespan who are exploring a diverse range of gender identities are presenting to pediatric, adolescent medicine, and gynecological clinics for care.<sup>1</sup> Transgender and gender diverse (TGD) people have gender identities that vary from their assigned sex at birth, as described in detail in Part 1 of this review.<sup>2</sup> TGD patients have historically experienced high rates of comorbid mental health concerns including anxiety, depression, self-harm, and suicide. However, these emotional concerns can be prevented or mitigated when TGD youth feel supported and understood by parents and medical providers, who support exploring options for social/emotional, legal, medical, and sometimes surgical affirmation of their gender identity.<sup>3-5</sup>

In this article we provide a detailed review of current, common interventions of interest to TGD youth with a focus on those most relevant to pediatric and adolescent gynecological (PAG) providers. Medical affirmation might include pubertal suppression, masculinizing or feminizing hormones, menstrual suppression, contraception, and fertility preservation. Surgical affirmation is briefly outlined in this article, with further discussion of the topic in the third part to this series.

The approach throughout this article comes from the conceptual framework of reproductive justice, which emphasizes the human right to bodily autonomy and integrity.

It also emphasizes the need for equal access to high-quality and affirming sexual and reproductive health to empower marginalized populations, rather than oppress them.<sup>6</sup> When applied to TGD populations, this framework emphasizes an individual's right to declare their gender identity, to be regarded as equal in clinical and social settings, and to have fair access to essential and preventative care.

## Medical Affirmation

### Pubertal Suppression

For youth who have gender identities at odds with their assigned sex, or for those who wish to further explore gender, delaying pubertal physiological changes incongruent with their gender identity can mitigate physical and emotional discomfort while creating time and space for exploration with the support of family and/or behavioral health providers.<sup>3,7</sup> Gonadotropin-releasing hormone (GnRH) analogues are used as a completely reversible intervention to temporarily halt puberty. GnRH analogues reduce the urgency to decide whether to return to endogenous puberty and adult development congruent with sex assigned at birth, or initiate treatment allowing for physical development more aligned with asserted gender identity.<sup>8,9</sup> GnRH analogues have been shown to significantly improve long-term health and well-being of TGD patients by decreasing gender dysphoria and preventing the irreversible phenotypic effects of endogenous puberty.<sup>3,10</sup>

Currently, GnRH analogues are only Food and Drug Administration-approved for treatment of endometriosis, uterine leiomyomata, prostate cancer, and in pediatric populations, for central precocious puberty. Although off-label like many therapies in pediatrics, well established guidelines for GnRH analogues in TGD youth are available through the Endocrine Society and World Professional Association for Transgender Health.<sup>8,11</sup> GnRH analogue treatments are started after a child's endogenous puberty has begun (Tanner stage 2). In children with female anatomy this is indicated by breast bud development, and in children with male anatomy it is indicated by testicular enlargement

to greater than 4 mL. Available forms of GnRH analogues are detailed in Table 1. GnRH analogues might still be useful in later stages of puberty to allow youth and parents time to further explore gender identity, navigate care options, offer psychological relief, and halt visible secondary gender characteristic changes such as menses, breast development, and increasing hip size in those with female anatomy, or deepening voice and facial hair in those with male anatomy. This might allow TGD persons to obviate the need for future interventions such as top surgery to remove unwanted breast tissue or electrolysis to remove unwanted facial hair. Many physical changes that occur during puberty are permanent and might be very distressing to a TGD person. Caregivers who do not acknowledge their child's gender distress and refuse a therapeutic trial of GnRH analogues to halt pubertal progression can benefit from learning more about the sequelae of not affirming gender exploration and understanding that allowing puberty to continue is not a neutral decision.

When patients who have been treated with GnRH analogues are persistent in a gender identity that differs from their sex assigned at birth, exogenous estradiol or testosterone can be considered, ideally at an age comparable with that of typical endogenous puberty. When patients are ready to start treatment with gender affirming hormones (GAH), testosterone or 17 $\beta$  estradiol can be started in low doses and slowly increased over the course of 1–2 years to reflect the natural course of endogenous puberty.<sup>8</sup> A prolonged period (more than 4 years) of blocking puberty without any sex hormone treatment has the potential to negatively affect long-term bone health, as well as rebound after GAH treatment.<sup>1,8</sup> Prolonged periods of prepubertal phenotype might also have potential negative psychosocial effects if patients are less developed than their peers.<sup>1,8</sup>

Outside of the pubertal period, GnRH analogues can be used to counter physiological effects of endogenous hormones, for menstrual suppression, and to allow for lower hormone levels in nonbinary populations, although potential risks of long-term use are not yet known and close monitoring of bone health is necessary.<sup>8</sup> Starting GnRH

**Table 1**  
Gonadotropin Releasing Hormone Analogues for Puberty Blocking Effects in TGD Youth

Medication*	Route of Administration	Benefits	Risks
Leuprolide acetate (1-month or 3-month formulation) Triptorelin acetate (3-month or 6-month formulation)	Intramuscular or subcutaneous injection	<ul style="list-style-type: none"> <li>• Completely reversible</li> <li>• Temporarily prevents irreversible secondary gender characteristics</li> <li>• Titratable</li> <li>• Long acting, slow release over 3 months</li> <li>• Three-month follow-up visits encourage continued communication, support with medical provider</li> </ul>	<ul style="list-style-type: none"> <li>• Pain at injection site</li> <li>• Sterile abscess formation (rare)</li> <li>• Potential decreased bone health with long-term use<sup>12</sup></li> </ul>
Histrelin acetate	Subcutaneous implant	<ul style="list-style-type: none"> <li>• Completely reversible</li> <li>• Temporarily prevents irreversible secondary gender characteristics</li> <li>• FDA-approved for 1 year</li> <li>• Studies show effectiveness for 2 years<sup>13</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Requires insertion and removal procedures</li> <li>• Pain and bruising at implantation site</li> <li>• Potential decreased bone health with long-term use<sup>12</sup></li> </ul>

FDA, Food and Drug Administration; TGD, transgender and gender diverse.

\* Goserelin acetate is an additional intramuscular gonadotropin-releasing hormone analogue used less commonly in the United States.

analogue treatment without the additional use of exogenous sex hormones after puberty might lead to symptoms of fatigue and hot flashes because of the rapid decrease of sex hormone levels.

*Gender Affirming Hormones*

Exogenous administration of GAH is used to induce physiological changes that are more affirming of the individual's gender identity. The initiation of GAH depends on patient and parent readiness, congruence with peer puberty, and growth and height goals. The average age of pubertal onset in assigned females at birth is 10.5 years and in assigned males at birth is 11.5 years. The normal range for puberty to begin in assigned female patients is between 8 and 13 years, and for assigned male patients between 9 and 14 years of age. Puberty is a process that can take up to 2-4 years.

Early studies evaluated treatment starting GAH after age 16 years, the legal age of consent in the Netherlands.<sup>8</sup> Current practice and standards include earlier initiation of GAH so that youth may enter puberty concordant with their peer group. These youth might benefit from the combination of GnRH analogues to block endogenous puberty while slowly titrating GAH, mimicking endogenous hormone level increases. For patients who have already achieved adult level hormones, they might opt out of GnRH analogue treatment and start treatment with higher doses of GAH to suppress endogenous hormones, and simultaneously initiate gender affirming physical and social changes.

As with their cisgender peers, testosterone and estradiol are the hormones that produce masculinizing and feminizing changes, and are titrated to average cisgender physiologic serum levels. Patients have varying degrees of masculinizing or feminizing effects.<sup>14</sup> Exogenous administration of GAH provides negative feedback on endogenous sex hormone systems, although some endogenous hormone production might continue. In individuals with male anatomy, even low levels of androgens can lead to masculinizing effects, so “anti-androgens” are often used, such as spironolactone, finasteride, or GnRH analogues. Routes of administration, gender-affirming effects, and adverse effects of testosterone are detailed in Table 2 and estradiol in Table 3. Among TGD individuals with persistent TGD gender identity, the risk of regretting the decision to start GAH treatment is very low.<sup>18</sup>

There is limited research of the role of progesterone in feminizing hormone regimens, but many individuals and providers offer anecdotal support for its use for breast/areolar development, skin and body habitus changes, mood, and libido.<sup>19,20</sup> There is also limited research to indicate any harm to progesterone augmentation of estradiol aside from the theoretical risk of direct androgenizing effects.

*Menstrual Suppression*

Menstruation might be a source of significant dysphoria for TGD youth with female anatomy. A survey of TGD people with masculine identities showed mixed attitudes toward menstruation, with most reporting feeling unsafe and

**Table 2**  
Testosterone Treatment for TGD Patients

Testosterone formulations		
Subcutaneous injection (testosterone cypionate or enanthate)		
Intramuscular injection (testosterone cypionate or enanthate)		
Transdermal (gel, patch)		
Testosterone pellets		
Masculinizing effects <sup>8</sup>	Onset, months	Maximum change, years
Voice deepening	3-12	1-2
Increased body hair and facial hair	3-12	4-5
Increased muscularity	3-12	2-5
Masculine fat distribution	1-6	2-5
Clitoral enlargement	1-6	1-2
Varying rates of menstrual suppression	1-6	—
Affirmed sense of self	Varies	Varies
Other effects <sup>15-17</sup>		
Common		
Acne		
Erythrocytosis		
Emotional changes (might be positive or negative effects on mood, sensitivity, and affect)		
Increased libido		
Vaginal atrophy, dryness		
Potential for male pattern baldness (if genetically predisposed)		
Rare		
Hyperlipidemia		
Liver dysfunction		

TGD, transgender and gender diverse.

uncomfortable using men's restrooms during times of menstruation.<sup>21</sup> A baseline menstrual history, that includes the patient's socioemotional responses to menses, is important to obtain because amenorrhea might be a sign of pregnancy, underlying endocrine disorders, or a co-occurring eating disorder.<sup>22</sup> Testosterone has varying effects on menstruation, but most patients (55%-85%) had cessation of menses within 6 months of initiation of testosterone therapy, even at lower doses.<sup>23-25</sup>

**Table 3**  
Estradiol Treatment for TGD Patients

Estradiol formulations		
17-β estradiol pill (sublingual, oral administration)*		
Transdermal patch		
Intramuscular injection (estradiol cypionate or valerate)		
Feminizing effects <sup>8</sup>	Onset, months	Maximum change, years
Breast growth	3-6	2-3
Decreased terminal hair	6-12	>3
Decreased muscularity	3-6	1-2
Feminine fat distribution	3-6	2-3
Softening skin	3-6	Unknown
Affirmed sense of self	Varies	Varies
Other effects <sup>8</sup>		
Common		
Emotional changes (might be positive or negative effects on mood, sensitivity, and affect)		
Decreased libido		
Erectile dysfunction		
Rare		
Thromboembolic events		
Prolactinoma		

TGD, transgender and gender diverse.

\* Continuous oral contraceptive containing ethinyl estradiol, or premarin are not recommended options at present.

**Table 4**  
Menstrual Suppression and Contraception

Method	Treatment	Menstrual suppression*	Effective Contraception	Additional Benefits	Potential Risks
Medical	Oral cyclic combined contraceptive pills	Yes	Yes		<ul style="list-style-type: none"> <li>• Contains estrogen which is not appealing to many TGD patients</li> <li>• Daily pill</li> <li>• Abnormal uterine bleeding if missed doses</li> </ul>
	Oral progestin pills (norethindrone, norethindrone acetate)	Yes	No	<ul style="list-style-type: none"> <li>• Does not contain estrogen</li> </ul>	<ul style="list-style-type: none"> <li>• Daily pill</li> <li>• Abnormal uterine bleeding if missed doses</li> </ul>
	Depo medroxyprogesterone acetate	Yes	Yes	<ul style="list-style-type: none"> <li>• Might provide additional desired physical changes (breasts, hips, skin)</li> <li>• Administered in 3-month intervals</li> </ul>	<ul style="list-style-type: none"> <li>• Weight gain due to appetite stimulation</li> <li>• Mood changes</li> </ul>
	Subdermal etonogestrel implant	No	Yes	<ul style="list-style-type: none"> <li>• Long-term (3-5 years)</li> </ul>	<ul style="list-style-type: none"> <li>• Requires insertion and removal</li> <li>• Higher rates of abnormal uterine bleeding</li> </ul>
	Levonorgestrel intrauterine device	Somewhat effective	Yes	<ul style="list-style-type: none"> <li>• Long-term (5-7 years)</li> </ul>	<ul style="list-style-type: none"> <li>• Requires gynecological exam and intrauterine insertion</li> </ul>
	Copper intrauterine device	No	Yes	<ul style="list-style-type: none"> <li>• Long-term (10-12 years)</li> </ul>	<ul style="list-style-type: none"> <li>• Requires gynecological exam and intrauterine insertion</li> <li>• Can cause increased menstrual bleeding and cramping</li> </ul>
	Testosterone	- Yes at physiologic levels - Low doses less effective <sup>23–25</sup>	No	<ul style="list-style-type: none"> <li>• Additional gender-affirming benefits by masculinizing</li> </ul>	<ul style="list-style-type: none"> <li>• Masculinizing effects might not be desired by nonbinary patients</li> </ul>
Surgical	Hysterectomy	Yes	Yes	<ul style="list-style-type: none"> <li>• Permanent</li> <li>• No need for future invasive Pap screening</li> </ul>	<ul style="list-style-type: none"> <li>• Irreversible</li> <li>• Eliminates fertility potential</li> <li>• Potential risks of surgery</li> </ul>
	Oophorectomy	Yes	Yes	<ul style="list-style-type: none"> <li>• Permanent</li> <li>• Removes source of estradiol</li> </ul>	<ul style="list-style-type: none"> <li>• Irreversible</li> <li>• Eliminates fertility potential</li> <li>• Potential risks of surgery</li> <li>• Requires exogenous administration of a gender hormone across the lifespan to avoid excessively prolonged menopause</li> </ul>

TGD, transgender and gender diverse.

\* Menstrual suppression effects listed are when used alone. Effects might be different when used in combination with testosterone.

There are many safe and effective interventions to suppress menses (shown in Table 4). Youth with female anatomy, regardless of their gender identity, might choose to suppress menses for a variety of reasons other than affirming their gender: dysmenorrhea, menorrhagia, hematologic conditions, difficulty with menstrual hygiene in patients with developmental disabilities, athletic demands, mood concerns, or patient choice.<sup>26,27</sup> Medications that stop menses can be an important first step in gender-affirming care and can be started at any point after menarche by primary care or PAG providers. These medications can be used on their own or in conjunction with GAH. Menstrual suppressive agents might be particularly helpful for nonbinary youth and those who do not have access to or parental support for masculinizing GAH therapy.

GnRH analogues are very effective in suppressing menses whether they are being used for pubertal suppression or in conjunction with GAH, although they are more expensive compared with other options for menstrual suppression.<sup>8</sup> Alternatively, hormonal contraceptives may be used.<sup>8,28</sup> Continuously cycled combined hormonal pills are among the most common and effective choices for menstrual suppression among cisgender women, or people assigned female at birth who continue to be affirmed in that identity. However, many TGD youth with female anatomy do not want methods that contain potent estradiols because it might stand in contrast to their asserted gender identity. Anecdotally, most TGD men do not select the vaginal ring, with its monthly vaginal insertion, or the contraceptive patch for menses suppression.

Progestin-only contraceptive methods might also be effective for menstrual suppression, and often TGD patients find them to be more acceptable.<sup>28</sup> Progestin-only hormones come in a variety of forms such as daily oral progestin pills, injectable depo medroxyprogesterone acetate, subdermal etonogestrel implants, and levonorgestrel intrauterine devices. In cisgender persons, these methods carry an increased incidence of abnormal uterine bleeding compared with cycled combined options.<sup>26,27</sup> Levonorgestrel-containing intrauterine devices are not believed to lead to significant systemic absorption of hormones. However, insertion can be very uncomfortable for patients with genital dysphoria, and as with their cisgender peers, patients with severe dysphoria, anxiety, or who have not experienced receptive vaginal sex might benefit from insertion under sedation.

### Contraception

Taking a thorough sexual history for TGD youth is important in your clinical setting. Although some TGD youth might have no menses after treatment with testosterone for a period of time, amenorrhea should not be confused with contraception. Patients receiving testosterone can still ovulate and become pregnant if sexual activity involves potential sperm exposure.<sup>29,30</sup> Similar to their cisgender peers, a sizeable portion of TGD youth with female anatomy experience unintended pregnancies.<sup>29,30</sup> For some TGD youth, pregnancy would be a traumatic denial of their masculine identity, whereas other TGD youth might desire imminent or future pregnancy.

For TGD youth with female anatomy who do not wish to become pregnant, prevention strategies, in addition to abstinence, would include the contraceptive options described previously and in [Table 4](#). In particular, the etonogestrel implant might be a useful long-acting reversible contraceptive method because it offers high efficacy and does not require access to gender-sensitive anatomy for insertion.<sup>31</sup> However, the incidence of abnormal uterine bleeding in TGD persons receiving testosterone is yet not known.

Although pregnancy might occur while taking exogenous testosterone, fertility potential might be decreased and infertility is possible. A thorough discussion of fertility and contraception issues are a standard component of consent when initiating GAH treatment. There have been cases of pregnancy after stopping testosterone treatment in patients who wish to carry their own biological children, and also unintentional pregnancy during testosterone treatment.<sup>29,30</sup> There is insufficient research to determine the reliability and rate of successful pregnancy in this setting. If a patient taking testosterone desires pregnancy, preconceptual care would additionally include discontinuation of testosterone to increase the potential for ovulation as well as to avoid its teratogenic effects on the fetus.

### Fertility Preservation

Discussing future fertility with TGD youth who are considering medical affirmation is important because

pubertal suppression when followed by GAH treatment, and GAH alone, might affect fertility potential. Unfortunately, the research available in this area is limited.<sup>8</sup> Although many TGD people desire to have children, fertility options are not always discussed or made available at the time of starting pubertal suppression or GAH.<sup>32</sup> There are multiple barriers to initiating fertility preservation, including: cost, lack of coverage by insurers, and delayed or discontinued treatment with advancement or return of endogenous secondary sex characteristics. It is important that TGD youth also understand that the procedures necessary for fertility preservation might be particularly uncomfortable and even intolerable.<sup>33</sup> Oocyte cryopreservation involves ovarian hyperstimulation using low-dose GnRH agonists, then extracting oocytes to freeze and store. This procedure has been successfully performed in postpubertal TGD persons with female anatomy before initiating GAH, with use of the preserved oocytes at a later time for reproduction.<sup>34</sup>

As increased numbers of patients undergo pubertal suppression in the earliest stages of puberty before gamete maturation, and for individuals who then continue on to GAH treatment, this might decrease the options available for future fertility preservation and lead to irreversible infertility. There is increasing research on fertility preservation in prepuberty with ovarian tissue cryopreservation, but this is largely experimental with very limited availability.<sup>35</sup>

### Considerations for Nonbinary Populations

Medical affirmation of gender identity can include any or all of the medical treatments previously detailed. Many TGD individuals do not identify within the binary constructs of “male” or “female,” but instead identify as nonbinary in their gender. This can include identities with a combination of male and female gender identity, and identities outside of the male-female spectrum altogether. Medical affirmation for nonbinary individuals can be tailored to their areas of dysphoria, and sometimes include lower levels of GAH treatment, temporary courses of GAH treatment, or surgical affirmation alone to attain desired effects. In patients who receive lower doses of GAH or prolonged use of GnRH analogues, close monitoring of bone mineral density should be considered because of the importance of estrogen and testosterone in bone mass accrual.

### Surgical Affirmation

#### *Chest Dysphoria and “Top Surgery”*

Chest, or breast, dysphoria is the emotional discomfort that arises specifically due to breast development, which can be difficult to conceal and limits affirming gender expression. For many TGD persons, alleviating chest dysphoria is an essential goal of seeking gender care. For TGD youth assigned female at birth who begin pubertal suppression in early Tanner stage 2, breasts will likely never develop thereby avoiding this discomfort and future surgeries. However, in patients who begin medical affirmation

at later stages or after completion of puberty, existing breast tissue does not decrease significantly with GnRH analogues, contraceptive agents, or masculinizing GAH treatment.

Binding methods are often used to minimize the presence of breasts and decrease such dysphoria. Despite the myriad psychological benefits, these binding methods can have negative outcomes including pain, skin issues, musculoskeletal issues, and respiratory and gastrointestinal complications.<sup>36</sup>

Masculinizing top surgery, or male chest reconstruction, is a form of surgical affirmation that is highly effective, well tolerated, and improves quality of life for many patients. Some TGD persons with breast development will opt for male chest reconstruction surgery as a sole therapeutic treatment and will not desire masculinizing GAH treatment. Male chest reconstruction differs from a female mastectomy procedure for patients with breast cancer because the former includes chest contouring, nipple positioning, and scar minimization—all of which are all crucial aspects of assuring a masculine chest presentation.<sup>37</sup>

Chest reconstruction surgery might be indicated before the age of 18 years to alleviate significant chest dysphoria and decrease complications related to binding. A recent study of youth and young adults who had chest surgery at ages 13–24 years old showed significant improvement in chest dysphoria.<sup>38</sup> Most guidelines suggest that surgical affirmation be considered on a case-by-case basis considering the risks and benefits within the individual context with interdisciplinary input that might include: primary care, gender specialists, surgeons, behavioral health, the youth, and their guardians.

#### “Bottom Surgery”

“Bottom surgery” includes a variety of procedures on a person's genital region to remove existing anatomy or construct more affirming anatomy. Such surgery is very rarely considered in youth younger than 18 years old. Further discussion of “bottom surgery” options for genital reconstruction is available in Part 3 of this review series.

The most common “bottom surgery” procedures in adult TGD individuals with female anatomy are hysterectomy and salpingectomy, the removal of the uterus and fallopian tubes. Indications for these procedures are menstrual suppression, irreversible contraception, and significant discomfort with having female internal organs at odds with their TGD identity. For some patients who are unable to achieve amenorrhea and menses relief with GAH treatment, this is an important option. Although there is a theoretical increased risk of endometrial and ovarian cancers after testosterone treatment, there are currently no clinical data or timeline recommendations for removal of these organs for cancer prevention, even in high-risk patients.<sup>39</sup> Removing the fallopian tubes eliminates much of the future risk for ovarian cancers. If patients elect to remove the ovaries, this commits patients to the lifelong use of exogenously administered sex hormone to maintain bone and overall health. These patients must be absolutely certain they do not wish to bear children. Although all surgeries carry risk, removal of female reproductive gender

organs can be an important step for applicable adult TGD persons.

#### Malignancy Screening

Despite a theoretical risk for endometrial adenocarcinoma with the use of exogenous testosterone in TGD people with female anatomy, there are only a handful of case reports detailing gynecological malignancies in TGD persons receiving testosterone.<sup>40</sup> It is unknown if there are any cancer prevention benefits related to lack of long-term estrogen exposure with GAH. At present, routine screening for endometrial cancer in older persons receiving testosterone is not recommended unless there is a significant change from amenorrhea to new abnormal uterine bleeding patterns.<sup>41</sup>

Although most mammary glandular tissue is removed during male chest construction surgery, some amounts of glandular tissue might remain. Regardless of whether a TGD person has had male chest reconstructive surgery, breast cancer screening should still be conducted on the basis of existing guidelines and risk stratification for a person who has breast anatomy. The risk of breast cancer is thought to be low, but cases have been reported.<sup>42,43</sup> After male chest construction has been completed, mammograms might not be feasible, and self- or provider-initiated chest exams might be used for screening purposes.<sup>42,43</sup> Cancer rates and monitoring in TGD persons incorporates preexisting endogenous hormone exposures and anatomy.

TGD persons who have a cervix are recommended to undergo the same cervical cancer screening pathways as cisgender women. Per American College of Obstetricians and Gynecologists guidelines, adolescents and persons younger than 21 years should not be subjected to cervical cancer exams and Papanicolaou smears unless they have HIV or a compromised immune system.<sup>44</sup> For some TGD persons, genital exams are very traumatic and cannot be tolerated. Because of this and other barriers to health care, TGD patients are less likely to have routine Papanicolaou smears for cervical cancer screening.<sup>36,45</sup> Clinicians should approach these exams cautiously and with consideration of associated sensitivity regarding the involved anatomy. A recently introduced self-collected human papilloma virus swab can be a useful tool for cervical cancer screening without having to subject TGD patients with female anatomy to vaginal exams.<sup>46</sup> Additionally, TGD patients with female anatomy have a higher rate of unsatisfactory pathology results than matched cisgender women, and it is more likely with increased duration of testosterone therapy.<sup>47</sup>

Similar to their cisgender peers, TGD persons who have had their uterus and cervix removed for benign reasons do not require future and ongoing Papanicolaou smears. However, other vulvar and or vaginal cancers might still occur. There are few data on the incidence and prevalence of these malignancies.

#### Conclusion

With increasing numbers of youth and adults identifying as TGD, all medical providers will need to have some facility

in caring for TGD patients in their general or specialty practice. Providers with expertise in gynecologic and reproductive health are ideally positioned to offer patient-centered education and guidance related to gender-affirming care. Furthermore, such providers must have important expertise and skills related to reproductive health care, which is essential in expanding access to medical and surgical affirmation. With regard to TGD youth, their reproductive health needs might include menstrual regulation, contraception, and pubertal suppression. GAH treatments have been shown to be safe and effective in affirming one's identity according to a growing body of evidence.<sup>18</sup>

Future directions will include more accessible fertility preservation therapies, alternative options for contraception and menstrual suppression, and a growing base of evidence that can help direct medical and surgical affirmation. When a TGD patient presents for care, it is essential that PAG providers are ready, knowledgeable, and aware of gender-affirming treatments and resources. Not addressing gender in the context of the reproductive and sexual health needs of TGD patients is not a "neutral" stance because it might lead to significant emotional distress.<sup>1</sup> PAG providers can play a critical role as advocates for TGD populations in medicine and society.

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