



Contraception and Menstrual Management in Transmasculine and Gender-Diverse Individuals

Adrian Chiem¹ · Maria Cristina Marcos¹ · Beth I. Schwartz^{1,2}

Accepted: 19 April 2024 / Published online: 6 May 2024
© The Author(s) 2024

Abstract

Purpose of Review This review outlines the current evidence on the contraceptive and menstrual management methods that are used for transmasculine or gender-diverse (TGD) individuals, as well as the gaps in the literature for this population.

Recent Findings Contraception and menstrual management continue to be an understudied area in the care of TGD individuals, with much of existing research extrapolated from cisgender populations. Emerging studies have looked at contraceptive and menstrual management choices and outcomes in adolescents and highlight the 52 mg LNG-IUD as an option that is efficacious for both indications, as well as high-dose progestin-only pills for menstrual suppression only.

Summary The best method for contraception and menstrual management is the one a patient feels most comfortable using. Clinicians should work to understand the nuances and interplay of pregnancy prevention, menstruation, and gender dysphoria in TGD patients to help them achieve their goals. Further research on these topics that focus on TGD populations is needed to better drive current recommendations and guidelines in supporting a vulnerable population.

Keywords Transgender · Transmasculine · Gender diverse · Hormonal contraception · Menstrual management · Menstrual suppression

Introduction

A 2022 study reported that 1.6 million adults and 0.6% of those 13 and older identify as transgender and gender-diverse in the United States [1]. However, this population has largely been excluded from healthcare research, despite experiencing significant stigma and healthcare disparities [2]. As the visibility of gender diverse individuals has increased, guidelines and recommendations have been published over the past several years detailing the importance of proper medical care for this population, which includes contraceptive counseling and menstrual management [3••, 4–6].

Menstrual equity was first coined in 2018 as a means of identifying the impact menstruation has on social and economic inequity, whether this is related to access to menstrual

products (“period poverty”) or menstruation in vulnerable populations [7]. However, research has focused primarily on barriers to care and inequity for cisgender populations. More recently, studies have looked more at the perspectives of transmasculine and gender-diverse individuals (TGD), who may also experience increased gender dysphoria associated with vaginal bleeding [8].

Contraception may be used for pregnancy prevention, with hormonal methods also used for management of menstrual symptoms and menstrual suppression in this population. Furthermore, unintended pregnancy in transmasculine individuals may be another source of gender dysphoria. Transmasculine adolescents may be at especially increased risk of unintended pregnancy due to ineffective use of contraception and increased incidence of abuse [9].

Providing comprehensive contraception counseling and offering menstrual suppression to TGD patients is a vital component of gender-inclusive care. This article will provide a review of contraceptive methods and their efficacy, effect on menses, and other special considerations for TGD patients.

The following definitions will be used throughout this article. Individuals who were assigned as females at birth

✉ Beth I. Schwartz
beth.schwartz@jefferson.edu

¹ Department of Obstetrics and Gynecology, Thomas Jefferson University, 833 Chestnut St., 1st Floor, Philadelphia, PA 19107, USA

² Division of Adolescent Medicine and Pediatric Gynecology, Nemours Children’s Health, 1600 Rockland Road, Wilmington, DE 19803, USA

and identify as male are defined as *transgender males*. *Transmasculine* refers to transgender individuals who were assigned female at birth, but whose gender is masculine and whose expression is generally masculine but may not identify as male. This umbrella may contain transgender men, non-binary, and gender-diverse individuals. Those who are *gender-diverse* are individuals whose gender identity and expression are not synonymous with typical representations of their assigned sex at birth. Transmasculine and gender diverse (TGD) will be used throughout this article as an inclusive term. *Gender dysphoria* refers to the distress caused by the discordance between one's assigned sex at birth and gender identity and is experienced by many but not all TGD individuals [10].

Contraception and Menstrual Management Methods

Providers should begin the visit by identifying the patient's preferred name and pronouns. Additionally, ensure that this information is reflected in the electronic medical record (EMR) if possible and the patient agrees to this. Information regarding sexual partners and practices should be elicited. Some patients may need current or future contraception, while others do not. Furthermore, patients may or may not have current or future pregnancy desires. Special considerations for TGD patients may include comfort with pelvic procedures for contraception placement, baseline menstrual history and symptoms, desire for amenorrhea vs. predictable bleeding, method amenorrhea rates, tolerance of breakthrough bleeding, concomitant use of testosterone, methods that contain "feminizing hormones" and concerns about side effects like chest growth or tenderness, association of contraception use with cisgender women, method concealability, and the ability to easily initiate or stop methods [11].

There are other considerations that are not unique to TGD patients but are equally important to identify and discuss in relation to contraception and menstrual management. Patients' medical and family history, other medications, and social history must be obtained to help guide appropriate method selection. Patients should be screened for intimate partner violence and safety. Some patients may have financial and insurance concerns that affect their choice of methods. Providers must also consider patients' ability to access medical care when selecting a method with avoidance of methods that require regular follow up in patients who cannot easily access medical care.

As this article's focus is on contraception and menstrual suppression in TGD patients, the methods discussed are predominantly hormonal methods. Other contraceptive methods not discussed in this article are fertility

awareness, withdrawal, spermicide, contraceptive sponge, diaphragm, and internal/external condoms. While these non-hormonal methods can be used for pregnancy prevention, they do not have any effect on menstruation. This article also includes a discussion of other menstrual suppression methods, including gender-affirming hormone therapy (GAHT) with testosterone as well as surgical management. We also present our personal experience and recommendations for providing contraceptive and menstrual management for this population.

Levonorgestrel Intrauterine Device (LNG-IUD)

Contraception

Four LNG-IUD options currently exist in the United States: two 52 mg systems (*Liletta*[®], *Mirena*[®]) that are effective up to 8 years, one 19.5 mg device (*Kyleena*[®]) effective up to 5 years, and one 13.5 mg device (*Skyla*[®]) effective up to 3 years. The main mechanism of action of LNG-IUDs is to thicken cervical mucus to prevent fertilization from sperm [12]. These devices require an office visit with pelvic exam for placement, but placement can be performed under sedation if desired. The rate of LNG-IUD uptake among transgender and non-binary patients is steadily increasing for both contraceptive and menstrual management purposes [13].

Menstrual Management

The localized administration of progestins through the IUD also results in decidualization of the endometrial stroma and atrophy of the surface epithelium, resulting in decreased menstrual blood loss and overall endometrial suppression [14]. Recent surveys showed that menstrual suppression was the most common reason for selecting a 52 mg LNG-IUD in TGD individuals, with low rates of discontinuation and improvement in menstrual distress [14, 15]. One study showed that the 52 mg LNG-IUD and oral norethindrone acetate were the most commonly-chosen methods for menstrual suppression among transgender adolescents [16•]. While that study showed no difference in bleeding, amenorrhea, or satisfaction between these methods at 1 year, the LNG-IUD has the benefit of being a "set it and forget it" method, removing the variable of user error and possibly decreasing the chances of withdrawal bleeding. Furthermore, LNG-IUDs have a 1-year amenorrhea rate of 50–89% (Table 1) [16•].

Table 1 Hormonal contraception and menstrual management options for transmasculine and gender diverse (TGD) individuals

Method	Frequency	Contraceptive Efficacy ^a	Amenorrhea Rate (1 Year)	Special Considerations in TGD Patients
Levonorgestrel Intrauterine Device	3–8 years	> 99%	50–89%	<ul style="list-style-type: none"> • Requires pelvic exam for placement
Copper Intrauterine Device	10 years	> 99%	No effect	<ul style="list-style-type: none"> • Requires pelvic exam for placement • May increase menstrual bleeding, spotting, and cramping
Subdermal Implant	3–5 years	> 99%	20–30%	<ul style="list-style-type: none"> • Associated with high rates of irregular bleeding
Injectable	3 months	> 99%	50%	<ul style="list-style-type: none"> • Associated with unpredictable bleeding that improves with time
Combined Oral Contraceptive Pills	Daily	94%	50–81% (when taken continuously)	<ul style="list-style-type: none"> • Can increase glandular breast tissue • Stereotypically associated with cisgender women • Daily pill administration
Transdermal Patch	Weely	94%	50–81% (when taken continuously)	<ul style="list-style-type: none"> • Can increase glandular breast tissue • Stereotypically associated with cisgender women • Difficulty concealing with darker complexions • Less effective with weight > 90 kg
Intravaginal Ring	Monthly	94%	50–81% (when taken continuously)	<ul style="list-style-type: none"> • Can increase glandular breast tissue • Stereotypically associated with cisgender women • May cause increased dysphoria due to route of administration • May improve vaginal atrophy from testosterone use
Progestin-only Pills	Daily	91%	10%	<ul style="list-style-type: none"> • Associated with high rates of irregular bleeding • Stereotypically associated with cisgender women • Daily pill administration
High-dose Progestin-only Pills	Daily	Has not been tested for contraceptive efficacy	75–97%	<ul style="list-style-type: none"> • Easily adjustable and reversible • Not approved for contraception
Testosterone	Varies	No known contraceptive efficacy	87%	<ul style="list-style-type: none"> • Not an option for contraception • Associated with ongoing and breakthrough bleeding with lower doses and longer duration of use
Danazol	Twice daily	No known contraceptive efficacy	> 99%	<ul style="list-style-type: none"> • Not an option for contraception • Can be used for treatment of endometriosis
GnRH Agonist	1–6 months	No known contraceptive efficacy	100%	<ul style="list-style-type: none"> • Not an option for contraception • High cost • Potentially irreversible decreased bone density in menarchal patients

Adapted from Schwartz BI, Bear B, Short VL, Kazak AE. Outcomes of menstrual management use in transgender and gender-diverse adolescents. *Obstet Gynecol.* 2023;141:748–55 [16•] (used with permission)

^aTypical use

Copper Intrauterine Device (Cu-IUD)

Contraception

The Cu-IUD is a copper and polyethylene T-shaped device that is currently FDA approved for use up to 10 years, with some studies showing maintained efficacy for 12 years [17].

Its primary mechanism of action is the prevention of fertilization by inciting an inflammatory reaction inhibiting sperm function [18]. The Cu-IUD is preferred by some transmasculine patients as a non-hormonal but highly effective method, with > 99% efficacy for pregnancy prevention in cisgender women [19]. Its use requires an office visit with pelvic exam for placement, which can be uncomfortable and potentially

increase dysphoria. However, as with the LNG-IUD, placement can be performed under sedation.

Menstrual Management

The Cu-IUD is not used for menstrual management and can increase overall menstrual bleeding and cramping [20]. However, anecdotal reports note that if the patient is already amenorrheic on GAHT, they may only have spotting after initial placement [19]. Further studies are needed to evaluate this claim.

Subdermal Implant

Contraception

The subdermal implant available in the United States contains etonogestrel 68 mg (*Nexplanon*[®]) and is an excellent method for preventing pregnancy, with > 99% efficacy in cisgender women. It is currently FDA approved for 3 years, with evidence suggesting excellent contraceptive efficacy up to 5 years [21]. The implant primarily suppresses ovulation and secondarily thickens cervical mucus [22]. Though the implant does require a clinic visit for placement, a pelvic exam is not necessary.

Menstrual Management

The implant is not an ideal method for menstrual management, as it is only associated with a 20–30% amenorrhea rate and increased rates of irregular bleeding in cisgender women [23]. For patients desiring or already using the implant who experience persistent or irregular bleeding, clinicians can consider supplementing estrogen, progestins, or prostaglandin inhibitors for management [24].

Injectable

Contraception

The injectable is a progestin-only method containing depot medroxyprogesterone acetate (DMPA, *Depo-Provera*[®]) that works primarily by suppressing ovulation via inhibition of gonadotropin secretion and thickening cervical mucus [25]. The method typically requires an office visit for an intramuscular injection every 11–13 weeks but allows patients to avoid a pelvic exam. There is evidence that subcutaneous administration of DMPA has similar outcomes to intramuscular administration, which may allow for the possibility of self-administration [26, 27]. Efficacy with perfect use is > 99% in cisgender women and is 94% with typical use [4].

The injection may cause appetite stimulation that can lead to weight gain and changes in lipoprotein profiles in some patients [28], which may also be seen with gender-affirming testosterone therapy. One study reported DMPA as the most commonly used contraceptive method in transgender individuals, but another study had very low rates of DMPA use [16•, 24].

Menstrual Management

The WPATH Standards of Care highlights DMPA as a possible menstrual management option [3••]. Although DMPA is associated with amenorrhea rates of > 50% at 1 year and nearly 80% at 5 years for cisgender women, the unpredictability of bleeding or spotting that is common with method initiation may be distressing for gender diverse individuals. For breakthrough bleeding with DMPA, a course of NSAIDs or hormonal treatment with combined oral contraceptive pills or estrogen may be used, though the latter may not be desirable in this population [29, 30].

Combined Oral Contraceptive (COC) Pill, Transdermal Patch, and Ring

Contraception

Combined oral contraceptive pills, intravaginal rings, and transdermal patches are all combined estrogen-progestin medications. Progestin effects are potentiated by estrogen. These methods also suppress the follicle-stimulating hormone moderated selection of the dominant follicle [11]. Estrogen-containing contraceptives are 94% effective with typical use in cisgender women [4]. A possible consideration in this population is that patients may be worried about possible “feminizing effects” that estrogen can have, especially related to breast development. Estrogen-containing contraception can stimulate growth of glandular breast tissue [4]. In addition, habitual hormonal administration, such as taking pills daily, could worsen gender dysphoria. Transdermal patches typically are in lighter shades and may be difficult to conceal on patients with darker complexions. Also, the patch is less effective in patients with a weight greater than 90 kg [4]. Patients may feel uncomfortable placing and removing a ring from their vagina. However, the ring could be helpful for patients with vaginal atrophy from testosterone use, as a secondary side effect of the ring is improved vaginal moisture [4].

Menstrual Management

To achieve amenorrhea, estrogen-containing methods must be used continuously. Amenorrhea rates when taken in a

continuous fashion are 50–81% [16•]. Breakthrough bleeding is common initially with continuous use but generally decreases with increased duration of therapy and following continuous-use over cyclic-use regimens [31•]. Any non-self-limited breakthrough bleeding can be managed by a break from the method for 4–7 days to allow a full withdrawal bleed, [32] although this may be distressing to patients who have significant menstrual dysphoria.

Progestin Only Pill (POP)

Contraception

Progestin-only pills (POPs) are oral pills that contain one of several formulations of progestogens, most commonly norethindrone 0.35 mg, drospirenone 4 mg, or norgestrel 0.075 mg in the United States. The norgestrel pill was approved by the FDA as an over-the-counter medication in 2023, which will increase access. The main contraceptive mechanism of action is by increasing cervical mucus viscosity, with inconsistent ovulatory suppression [11]. The effectiveness of POPs in cisgender women with typical use is 91% [4]. POPs that contain norethindrone must be consistently taken at the same time daily, whereas there is a more forgiving administration window with drospirenone-containing POPs. As with COC pills, the habit of taking daily hormonal contraceptive pills may be distressing and worsen gender dysphoria, as it is stereotypically associated with cisgender women [4]. However, POPs may be of interest to some TGD individuals who wish to take pills but want to avoid estrogen use.

Menstrual Management

POPs containing norethindrone have had reported amenorrhea rates of only 10% [33]. Drospirenone-containing POPs reportedly have a better bleeding profile with higher amenorrhea rates and less breakthrough bleeding than norethindrone [34]. Another consideration is that drospirenone is an analog of spironolactone and thus could interfere with the effects of testosterone use [4].

Of note, high-dose POPs that contain 5 mg of norethindrone acetate (NETA, *Aygestin*[®]) are associated with amenorrhea rates of 75–97% with consistent use [16•]. NETA can be easily adjusted to achieve high rates of amenorrhea and are easily reversible. However, high-dose POPs are not an approved form of contraception, as they have not been tested for this purpose. This may be a good option for patients who are not sexually active [16•]. One study showed that NETA was one of the most common methods chosen by TGD adolescents for menstrual management [35].

Other Options

Testosterone

Contraception

GAHT with testosterone is used to achieve physical changes for improved alignment of the body with a person's gender identity. This often results in decreased gender dysphoria and psychological symptoms [36]. Testosterone is most commonly injected subcutaneously or intramuscularly or administered via a transdermal gel. Unplanned pregnancy in TGD patients on testosterone has been reported, with both patients and clinicians lacking knowledge about the contraceptive needs for these patients [37]. In response, recent clinical guidelines and opinions have recommended that testosterone should not be used as contraception and that clinicians should counsel their patients appropriately regarding both the risk of unplanned pregnancy and the potential teratogenic effects of testosterone if taken while pregnant [3••, 4, 11].

Menstrual Management

The goal of GAHT is to promote development of masculinizing characteristics while also suppressing feminizing characteristics, which includes menstruation. One study reported that initiation of low-to-moderate doses of testosterone led to amenorrhea by 6 months in 55% of patients, with 87% achieving amenorrhea by 12 months [38]. However, multiple studies report on the possibility of either ongoing bleeding or breakthrough bleeding despite early amenorrhea, with rates as high as nearly 25% [39, 40]. One study found that breakthrough bleeding was associated with a higher BMI, as well as lower levels of testosterone and free androgen index [41].

Continued menstrual bleeding despite GAHT can be bothersome for TGD individuals and may lead to ongoing or worsened gender dysphoria. However, it may be due to other etiologies and thus should lead to further evaluation of both typical and atypical causes of abnormal uterine bleeding. A study looking at endometrial pathology at time of hysterectomy in TGD patients taking GAHT showed that 40% of patients had proliferative and 50% had atrophic endometrium, with no cases of endometrial hyperplasia or malignancy [42]. Abnormal uterine bleeding can be managed in a similar manner as for cisgender females. One article proposes modifications to this evaluation to help decrease levels of dysphoria [43].

Ongoing menses or breakthrough bleeding on GAHT may be improved by increasing the dose of testosterone,

as able [39]. The previously-described progestin therapies can also be used either prior to GAHT initiation as primary menstrual management or as an adjunct after 3–6 months of GAHT without desired amenorrhea [44]. It can similarly be used as treatment for breakthrough bleeding.

Danazol

Danazol is a steroid with similar chemical structure to testosterone that has androgenic and anti-estrogenic effects [45]. It is FDA approved as a treatment for endometriosis by menstrual suppression. A 2007 Cochrane Review examined its efficacy in the treatment of pain associated with endometriosis and showed that it was effective at reducing pain symptoms, but its use was limited by androgenic side effects [46]. Due to this, its use has been mostly supplanted by GnRH agonists. Some studies have shown that the amenorrhea rate with Danazol approaches 100% [39]. A different 2007 Cochrane Review that evaluated its use for heavy menstrual bleeding showed that while Danazol appeared to be as effective as other hormonal methods in reducing bleeding, there were no clear recommendations for its use, especially in the setting of an adverse side effect profile that includes hepatotoxicity and androgenic effects [47]. A recent study described Danazol use in a transmasculine patient with endometriosis, which may represent another possible indication for its utility in this population [48].

Gonadotropin-Releasing Hormone (GnRH) Agonist

There are multiple formulations of GnRH agonists, with the most common being leuprolide acetate (*Lupron*[®]). This is typically administered intramuscularly every 3 months. GnRH agonists bind to receptors in the pituitary gland, leading to desensitization and decreased follicle-stimulating hormone and luteinizing hormone production and downstream suppression of gonadal hormones [49]. They are commonly used in the treatment of endometriosis, fibroids, adenomyosis and for fertility preservation, as well as for precocious puberty [50]. They are frequently used in gender-affirming care for pubertal suppression in peripubertal patients to prevent irreversible changes that cause or exacerbate gender dysphoria [3••]. In menarchal patients, GnRH agonists suppress menstruation but also have deleterious effects on bone mineral density due to the induction of a hypoestrogenic state [50]. Although bone loss may recover, it does not always in the setting of long-term use. Estrogen add-back therapy is frequently utilized [50], which may be less desirable in this population. This side effect, in addition to their very high cost, makes GnRH agonists less ideal for

menstrual suppression alone considering the many other options described above. However, it may be appropriate for short-term use, especially as a bridge to initiation of GAHT [16•].

Surgical Management

Hysterectomy

TGD individuals may seek a hysterectomy for gender-affirming purposes, as it serves as permanent contraception and definitive menstrual suppression. A hysterectomy with cancer-reducing bilateral salpingectomy is recommended, but the decision about whether to perform a concurrent oophorectomy should be individualized [39]. There are no significant differences in postoperative complications between hysterectomies for gender-affirming purposes or other benign indications [51]. Further information regarding the route of hysterectomy, possible concurrent mastectomy and other surgeries, and other considerations are beyond the scope of this review.

Endometrial Ablation

Endometrial ablation may be considered for menstrual management, particularly as an alternative to hysterectomy. A study that compared the procedure with hysterectomy for dysfunctional uterine bleeding in cisgender women showed that both methods were effective treatments. Hysterectomy was more effective at relieving symptoms but was associated with greater complications. Ablation was associated with high rates of reoperation.

There is limited research comparing these surgical approaches in the TGD population. Furthermore, ablation is not recommended in younger patients due to the higher rate of failure to achieve amenorrhea in those younger than 45 [52, 53]. Patients should be counseled that ablation is not contraception and that pregnancies following ablation are associated with higher rates of poor outcomes, including preterm labor and abnormal placentation [54].

Special Considerations and Recommended Best Practices

In our experience, the best way to approach the topic of contraception and menstrual management with TGD patients is to first assess their goals and preferences (Table 2). In terms of menstrual management, while many TGD individuals have increased dysphoria related to menses and strongly desire menstrual suppression, some have no menstrual

Table 2 Special considerations and best practices for transmasculine and gender diverse (TGD) individuals

Special considerations	Best practices
Name and pronouns	<ul style="list-style-type: none"> • Identify preferred name and pronouns • Document preferred name and pronouns in EMR
General considerations	<ul style="list-style-type: none"> • Assess preferred terms for anatomy and menses • Start by asking about prior contraceptive and menstrual management experiences, goals, preferences, and concerns • Obtain medical, family, and social history and current medication use • Screen for intimate partner violence and safety • Identify financial concerns and ability to access medical care
Contraception	<ul style="list-style-type: none"> • Ask open-ended questions about current and possible future sexual partners and practices • Inquire about current or future pregnancy desire • Provide a visual aid about options to help guide discussion and decision making • Discuss alternative options if not satisfied with initial method choice
Menstrual management	<ul style="list-style-type: none"> • Investigate whether menses cause or worsen gender dysphoria • Identify desire for amenorrhea vs. improved vs. predictable menses • Discuss comfort with breakthrough bleeding • Obtain baseline menstrual history, including frequency, duration, flow, dysmenorrhea, mood changes, and other associated symptoms • Include bleeding patterns and amenorrhea rates in method counseling • Address strategies for menstrual product and bathroom use
Specific concerns	
Testosterone use	<ul style="list-style-type: none"> • Counsel that testosterone is not contraception • Educate that all methods can be used in conjunction with gender-affirming testosterone
Estrogen concerns	<ul style="list-style-type: none"> • Understand that patients may desire avoidance of estrogen-containing medications • Reassure that estrogen-containing methods do not typically cause “feminizing” effects • Provide progestin-only or non-hormonal methods, if desired
Pelvic exams	<ul style="list-style-type: none"> • Practice trauma-informed care when conducting all pelvic exams • If a pelvic exam is necessary for the selected method (i.e. IUD insertion), offer techniques to minimal physical and psychological discomfort • Offer pelvic procedures under sedation or anesthesia

distress and are thus not interested in menstrual management. Others may require menstrual management for medical reasons, include irregular or heavy menstrual bleeding, dysmenorrhea, or other menstrual symptoms. Although the desire for amenorrhea is the goal for the majority of our patients, some simply desire improvement in menstrual bleeding and symptoms and prefer predictability to the possibility of unplanned breakthrough bleeding.

We created a handout similar to Table 1 that includes advantages and disadvantages of different about contraception and menstrual management methods, which we use as a visual tool for counseling patients. This likely improves retention of information and is helpful in discussing alternative methods if patients are not happy with their initial method choice. We have anecdotally found that method hormonal composition and route of administration are major considerations for our patients. The majority of our patients explicitly express a desire to avoid estrogen-containing medications due to concern about side effects, interaction with GAHT, or association of estrogen with femaleness. While

some of these concerns can be allayed with counseling, this desire for avoidance of estrogen for either method choice or supplemental management should also be respected. Given this, NETA is the most popular choice for our patients. Although it has not been tested or approved for contraception, we do not limit its use to patients who do not require contraception. We offer to individuals who are sexually active after adequate counseling.

Some patients desire oral medications due to the ability to start and stop medication quickly, especially if they experience any side effects. While many individuals like the idea of an IUD because of its long-term effects, ease of use, and minimal side effects, some have increase dysphoria with the insertion process or just the idea of the device itself. If pelvic exams are distressing to patients, limit them unless medically necessary and assist in selecting a method that does not require a pelvic exam for initiation. If an IUD is chosen, special consideration should be given for techniques to minimize both the physical and psychological discomfort with the insertion procedure and the pelvic exam in general.

We discuss the presence of a support person, use of music or other distraction aids, prescription of a pre-procedure anxiolytic medication such as lorazepam 1 mg, use of a small well-lubricated speculum, and placement of a paracervical block. We also offer all our TGD patients IUD insertion under sedation or anesthesia if desired.

Conclusion

A recent updated review on contraception in transgender, non-binary, and gender expansive individuals highlights the importance of patient-centered care and shared decision-making models [55•]. The authors make recommendations on how providers can foster a trusting environment and compassionately discuss and address both contraception and menstrual management. This approach will help to engage patients and support them in feeling heard.

Menstrual management is still an understudied area in the treatment of TGD patients, though new research is emerging. While this review highlights TGD-specific research where it exists, much of the existing guidance is extrapolated from research with cisgender populations. This review demonstrates that most contraceptive and menstrual management options are one and the same. Overall, the method that offers the highest efficacy for contraception and a high amenorrhea rate is the 52 mg LNG-IUD. High-dose POPs induce high rates of amenorrhea, but they are not an approved form of contraception. Breakthrough bleeding on any method can be managed first with a course of NSAIDs before consideration of the addition of hormonal treatment with either estrogen or progestins. Special consideration for the provision of menstrual management should be given for adolescents who may not yet be able to initiate GAHT or for non-binary patients who are not interested in GAHT [16•].

The best method for contraception and menstrual management is the one a patient feels most comfortable using. In appreciating and appropriately managing the nuances of menstruation and dysphoria in TGD individuals, clinicians will be able to focus on aligning their counseling with patient goals. Whether that goal is simply to prevent pregnancy or to achieve amenorrhea, these interventions have the potential to significantly impact and engage a historically vulnerable population in their own healthcare and wellness.

Author Contributions A.C. wrote the main manuscript text. M.M. prepared the tables. B.I.S. critically revised the manuscript for important intellectual content. All authors reviewed and revised the manuscript and approve of the final version.

Data Availability No datasets were generated or analysed during the current study.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflicts of interest.

Human and Animal Rights All reported studies/experiments involving human or animal subjects performed by the authors were in accordance with the ethical standards of institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

References

Papers of particular interest, published recently, have been highlighted as:

- Of importance
 - Of major importance
1. Herman JL, Flores AR, O'Neill KK. How many adults and youth identify as transgender in the United States? [Internet]. UCLA School of Law Williams Institute; 2022 Jun. Available from: <https://williamsinstitute.law.ucla.edu/publications/trans-adults-united-states/>.
 2. Downing JM, Przedworski JM. Health of transgender adults in the U.S., 2014–2016. *Am J Prev Med.* 2018;55:336–44.
 - 3.●● Coleman E, Radix AE, Bouman WP, Brown GR, de Vries ALC, Deutsch MB, et al. Standards of care for the health of transgender and gender diverse people, version 8. *Int J Transgend Health.* 2022;23:S1–259. **The WPATH Standards of Care are international guidelines for the care of transgender and gender diverse individuals and are based on available research and expert consensus.**
 4. Bonnington A, Dianat S, Kerns J, Hastings J, Hawkins M, De Haan G, et al. Society of family planning clinical recommendations: contraceptive counseling for transgender and gender diverse people who were female sex assigned at birth. *Contraception.* 2020;102:70–82.
 5. Health Care for Transgender and Gender Diverse Individuals. ACOG Committee Opinion, Number 823. *Obstet Gynecol.* 2021;137:e75–88.
 6. Ferrando CA. Gynecologic care of transgender and gender-diverse people. *Obstet Gynecol.* 2024;143:243–55.
 7. Lane B, Perez-Brumer A, Parker R, Sprong A, Sommer M. Improving menstrual equity in the USA: perspectives from trans and non-binary people assigned female at birth and health care providers. *Cult Health Sex.* 2022;24:1408–22.
 8. Frank SE. Queering menstruation: trans and non-binary identity and body politics. *Social Inq.* 2020;90:371–404.

9. Charlton BM, Reynolds CA, Tabaac AR, Godwin EG, Porsch LM, Agénor M, et al. Unintended and teen pregnancy experiences of trans masculine people living in the United States. *Int J Transgend Health*. 2021;22:65–76.
10. Schwartz BI, Effron A, Bear B, Short VL, Eisenberg J, Felleman S, et al. Experiences with menses in transgender and gender non-binary adolescents. *J Pediatr Adolesc Gynecol*. 2022;35:450–6.
11. Krempasky C, Harris M, Abern L, Grimstad F. Contraception across the transmasculine spectrum. *Am J Obstet Gynecol*. 2020;222:134–43.
12. Gemzell-Danielsson K, Berger C, Lalitkumar PG. Emergency contraception – mechanisms of action. *Contraception*. 2013;87:300–8.
13. Berglin M, Stram D, Stenquist A, Dessi S, Ritterman Weintraub M, Zaritsky E. Intrauterine device, subdermal contraceptive, and depot medroxyprogesterone use among transmasculine and cisgender patients over a 10-year period. *Contraception*. 2022;108:56–60.
14. Mittermeier T, Farrant C, Wise MR. Levonorgestrel-releasing intrauterine system for endometrial hyperplasia. *Cochrane Database Syst Rev*. 2020;2020:CD012658.
15. Akgul S, Bonny AE, Ford N, Holland-Hall C, Chelvakumar G. Experiences of gender minority youth with the intrauterine system. *J Adolesc Health*. 2019;65:32–8.
16. ● Schwartz BI, Bear B, Short VL, Kazak AE. Outcomes of menstrual management use in transgender and gender-diverse adolescents. *Obstet Gynecol*. 2023;141:748–55. **This recent paper reports on gynecologic outcomes of different menstrual management methods in TGD patients, including continuation, amenorrhea, bleeding changes, side effects, and method satisfaction.**
17. United Nations Development Programme, United Nations Population Fund, World Health Organization, World Bank SP of R Development and Research Training in Human Reproduction. World Health Organization, World Bank SP of R Development and Research Training in Human Reproduction, Long-term reversible contraception: Twelve years of experience with the TCu380A and TCu220C. *Contraception*. 1997;56:341–52.
18. Ortiz ME, Croxatto HB. Copper-T intrauterine device and levonorgestrel intrauterine system: biological bases of their mechanism of action. *Contraception*. 2007;75:S16–30.
19. Abern L, Krempasky C, Diego D, De Guzman G, Kiely K, Cook J, et al. The Intrauterine Device Experience Among Transgender and Gender-Diverse Individuals Assigned Female at Birth. *J Midwifery Womens Health*. 2021;66:772–7.
20. Diedrich JT, Desai S, Zhao Q, Secura G, Madden T, Peipert JF. Association of Short-term Bleeding and Cramping Patterns with Long-Acting Reversible Contraceptive Method Satisfaction. *Am J Obstet Gynecol*. 2015;212:50.e1–50.e8.
21. McNicholas C, Swor E, Wan L, Peipert JF. Prolonged use of the etonogestrel implant and levonorgestrel intrauterine device: 2 years beyond Food and Drug Administration-approved duration. *Am J Obstet Gynecol*. 2017;216:586.e1–586.e6.
22. Committee on Practice Bulletins-Gynecology, Long-Acting Reversible Contraception Work Group. Practice Bulletin No. 186: Long-Acting Reversible Contraception: Implants and Intrauterine Devices. *Obstet Gynecol*. 2021;130:e251–69.
23. Darney P, Patel A, Rosen K, Shapiro LS, Kaunitz AM. Safety and efficacy of a single-rod etonogestrel implant (Implanon): results from 11 international clinical trials. *Fertil Steril*. 2009;91:1646–53.
24. Hatcher RA. *Contraceptive Technology*. 21st ed. New York, NY: Ayer Company Publishers, Inc; 2018.
25. Kaunitz AM. Long-acting injectable contraception with depot medroxyprogesterone acetate. *Am J Obstet Gynecol*. 1994;170:1543–9.
26. Kennedy CE, Yeh PT, Gaffield ML, Brady M, Narasimhan M. Self-administration of injectable contraception: a systematic review and meta-analysis. *BMJ Glob Health*. 2019;4:e001350.
27. Curtis KM, Nguyen A, Reeves JA, Clark EA, Folger SG, White-man MK. Update to U.S. selected practice recommendations for contraceptive use: self-administration of subcutaneous depot medroxyprogesterone acetate. *MMWR Morb Mortal Wkly Rep*. 2021;70:739–43.
28. Berenson AB, Rahman M. Changes in weight, total fat, percent body fat, and central-to-peripheral fat ratio associated with injectable and oral contraceptive use. *Am J Obstet Gynecol*. 2009;200:329.e1–329.e8.
29. Curtis KM, Jatlaoui TC, Tepper NK, Zapata LB, Horton LG, Jamieson DJ, et al. U.S. Selected practice recommendations for contraceptive use, 2016. *MMWR Recomm Rep*. 2016;65:1–66.
30. Said S, Sadek W, Rocca M, Koetsawang S, Kirwat O, Piya-Anant M, et al. Clinical evaluation of the therapeutic effectiveness of ethinyl oestradiol and oestrone sulphate on prolonged bleeding in women using depot medroxyprogesterone acetate for contraception. World Health Organization, Special Programme of Research, Development and Research Training in Human Reproduction, Task Force on Long-acting Systemic Agents for Fertility Regulation. *Hum Reprod*. 1996;11(Suppl 2):1–13.
31. ● American College of Obstetricians and Gynecologists' Committee on Clinical Consensus–Gynecology. General approaches to medical management of menstrual suppression: ACOG Clinical Consensus No. 3. *Obstet Gynecol*. 2022;140:528–41. **This statement by ACOG details indications and options for menstrual suppression in special populations, including TGD individuals.**
32. Sulak PJ, Smith V, Coffee A, Witt I, Kuehl AL, Kuehl TJ. Frequency and management of breakthrough bleeding with continuous use of the transvaginal contraceptive ring: a randomized controlled trial. *Obstet Gynecol*. 2008;112:563–71.
33. Rager TL, Compton SD, Winfrey OK, Rosen MW. Norethindrone dosing for adequate menstrual suppression in adolescents. *J Pediatr Endocrinol Metab*. 2023;36:732–9.
34. Palacios S, Colli E, Regidor PA. Bleeding profile of women using a drospirenone-only pill 4 mg over nine cycles in comparison with desogestrel 0.075 mg. *PLoS One*. 2020;15:e0231856.
35. Schwartz BI, Bear B, Kazak AE. Menstrual management choices in transgender and gender diverse adolescents. *J Adolesc Health*. 2023;72:207–13.
36. Nolan BJ, Zwickl S, Locke P, Zajac JD, Cheung AS. Early Access to Testosterone Therapy in Transgender and Gender-Diverse Adults Seeking Masculinization. *JAMA Netw Open*. 2023;6:e2331919.
37. Abern L, Maguire K. Contraception knowledge in transgender individuals: are we doing enough? [9F]. *Obstet Gynecol*. 2018;131:65S.
38. Ahmad S, Leinung M. The response of the menstrual cycle to initiation of hormonal therapy in transgender men. *Transgend Health*. 2017;2:176–9.
39. Grimstad F, Kremen J, Shim J, Charlton BM, Boskey ER. Breakthrough bleeding in transgender and gender diverse adolescents and young adults on long-term testosterone. *J Pediatr Adolesc Gynecol*. 2021;34:706–16.
40. Grimstad FW, Boskey ER, Clark RS, Ferrando CA. Incidence of breakthrough bleeding in transgender and gender-diverse individuals on long-term testosterone. *Am J Obstet Gynecol*. 2024;S0002–9378(24):00002–4.
41. da Silva ED, Spritzer PM, Figuera TM. Persistent vaginal bleeding during gender-affirming hormone therapy in transgender men. *J Endocrinol Invest*. 2024. <https://doi.org/10.1007/s40618-023-02296-w>. Epub ahead of print. PMID: 38300501.
42. Hawkins M, Deutsch MB, Obedin-Maliver J, Stark B, Grubman J, Jacoby A, et al. Endometrial findings among transgender

- and gender nonbinary people using testosterone at the time of gender-affirming hysterectomy. *Fertil Steril*. 2021;115:1312–7.
43. Schwartz AR, Russell K, Gray BA. Approaches to vaginal bleeding and contraceptive counseling in transgender and gender non-binary patients. *Obstet Gynecol*. 2019;134:81–90.
 44. Defreyne J, Vanwonderghem Y, Collet S, Iwamoto SJ, Wiepjes CM, Fisher AD, et al. Vaginal bleeding and spotting in transgender men after initiation of testosterone therapy: A prospective cohort study (ENIGI). *Int J Transgend Health*. 2020;21:163–75.
 45. Barbieri RL, Ryan KJ. Danazol: endocrine pharmacology and therapeutic applications. *Am J Obstet Gynecol*. 1981;141: 453–63.
 46. Farquhar C, Prentice A, Singla AA, Selak V. Danazol for pelvic pain associated with endometriosis. *Cochrane Database Syst Rev* [Internet]. 2007 [cited 2024 Feb 26]. Available from: <https://doi.org/10.1002/14651858.CD000068.pub2/full?cookiesEnabled>.
 47. Beaumont HH, Augood C, Duckitt K, Lethaby A. Danazol for heavy menstrual bleeding. *Cochrane Database Syst Rev*. 2007;2007:CD001017.
 48. Shim JY, Laufer MR, Grimstad FW. Dysmenorrhea and endometriosis in transgender adolescents. *J Pediatr Adolesc Gynecol*. 2020;33:524–8.
 49. Kumar P, Sharma A. Gonadotropin-releasing hormone analogs: understanding advantages and limitations. *J Hum Reprod Sci*. 2014;7:170–4.
 50. Sauerbrun-Cutler M-T, Alvero R. Short- and long-term impact of gonadotropin-releasing hormone analogue treatment on bone loss and fracture. *Fertil Steril*. 2019;112:799–803.
 51. Bretschneider CE, Sheyn D, Pollard R, Ferrando CA. Complication rates and outcomes after hysterectomy in transgender men. *Obstet Gynecol*. 2018;132:1265–73.
 52. Beelen P, Reinders IMA, Scheepers WFW, Herman MC, Geomini PMAJ, van Kuijk SMJ, et al. Prognostic factors for the failure of endometrial ablation: a systematic review and meta-analysis. *Obstet Gynecol*. 2019;134:1269–81.
 53. Committee Opinion No. 668: Menstrual Manipulation for Adolescents With Physical and Developmental Disabilities. *Obstet Gynecol*. 2016;128:e20.
 54. Kohn JR, Shamshirsaz AA, Popek E, Guan X, Belfort MA, Fox KA. Pregnancy after endometrial ablation: a systematic review. *BJOG*. 2018;125:43–53.
 55. • Mumford K, Light A. An update on contraception for transgender, non-binary, and gender-expansive individuals. *Curr Obstet Gynecol Rep*. 2023;12:76–82. **This is a recent comprehensive review of contraception use in TGD individuals.**
- Publisher's Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.