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Hormonal contraceptive choices in a clinic-based series of transgender adolescents and young adults

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ABSTRACT

Aims: To describe the use of hormonal contraceptives for menstrual management and/or pregnancy prevention in a clinic-based series of transgender adolescents and young adults who were assigned female at birth (transmasculine identity).

Methods: We performed a chart review of post-menarchal transgender assigned-female-at-birth (AFAB) patients, age 10–25 years, seen at CCHMC Transgender Health Clinic for at least 2 visits between July 1, 2013 and September 17, 2016, and who were not on a puberty suppression method. We collected data including choice of hormonal contraceptive and indication (menstrual suppression, pregnancy prevention, or both), duration of use, initiation of sexual activity, reported sexual partners, and use of gender-affirming hormone therapy (i.e., testosterone). We present simple descriptive statistics.

Results: A total of 231 patients met inclusion criteria, with ages from 11 to 25 years. Of those, 135 (59%) were using a hormonal contraceptive method. Most patients (67%) used hormonal contraception for the indication of menstrual suppression. Most commonly used method was depot medroxyprogesterone (DMPA) (49 patients), followed by combined oral contraceptives (COC) and norethindrone (progestin-only pill, POP) (34 patients each). Thirteen patients used 52 mg levonorgestrel IUD (LNG-IUD). Of the total sample ($n = 231$), 82 (36%) reported sexual activity, 35 of whom (43% of sexually active patients) reported sexual intercourse with assigned-male-at-birth (AMAB) partners and/or penile–vaginal intercourse. Among 35 patients at risk for pregnancy, only 21 (60%) were using hormonal contraception. Over half (54%) of sexually active patients taking testosterone discontinued their hormonal contraceptive method once they stopped having menses.

Discussion: Within a sample of transgender AFAB adolescents, half of whom were taking testosterone, a variety of contraceptives were used, including depot medroxyprogesterone, combined oral contraceptives, and levonorgestrel IUD. Among those taking testosterone, many patients discontinued contraception once they stopped having menses.

KEYWORDS
Transgender; contraception; menstrual suppression; transmasculine; adolescent; testosterone

Introduction

The term transgender describes individuals whose gender identity differs from their assigned sex at birth (Hembree et al., 2017) (Transgender individuals may also be referred to as gender non-conforming or gender-incongruent; we will use "transgender" as an umbrella term hereafter). Transgender individuals who are assigned-female-at-birth (AFAB) may identify as male (trans male), identify with masculinity more than femininity (transmasculine), or identify as gender non-binary. These individuals may present to health care providers for medical management for menstrual suppression, pregnancy prevention, or both. Menstrual periods may be associated with significant anxiety and/or worsened dysphoria in transgender AFAB individuals (Beemyn & Rankin, 2011; Feldman, 2008; Hewitt et al., 2012; Spack et al., 2012). Social barriers to menstrual hygiene, such as use of public restrooms, may lead to concerns about personal safety and encountering transphobia (Chrisler et al., 2016).

Transgender AFAB individuals who are sexually active with people assigned male at birth may be at risk of pregnancy. Both patients and their providers may not be aware of this

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continued risk, as therapy with testosterone often leads to cessation of menses (amenorrhea) within 6 to 12 months (Dahl et al., 2015; Pelusi et al., 2014). However, testosterone is not a contraceptive, and ovulation may occur even without regular menses (Franks, 2006; Gorry, White, & Franks, 2006; Miller, Bedard, Cooter, & Shaul, 1986; Steinle, 2011). Recent surveys of transgender AFAB patients have shown that few patients use highly effective contraception, and many use no contraception at all (Cipres et al., 2017; Gomez, Walters, & Dao, 2016). Pregnancies do occur during and after testosterone therapy (Light, Obedin-Maliver, Sevelius, & Kerns, 2014; More, 1998). Light et al. (2014) studied transmasculine individuals who experienced pregnancy and found that nearly half of these pregnancies were unplanned – similar to the general U.S. population (Finer & Zolna, 2016; Light et al., 2014). Transgender people with unplanned pregnancies, regardless of testosterone use, may have feelings of isolation and increased dysphoria, and are at risk of peripartum depression (Hoffkling, Obedin-Maliver, & Sevelius, 2017). In addition, these pregnancies may be at risk of congenital anomalies due to the effects of testosterone on the developing fetus (Coleman et al., 2012). Pregnancy prevention is an important strategy for both personal health and population health.

As part of treatment for gender dysphoria, transgender patients receive counseling regarding hormonal contraception options that provide menstrual suppression and/or pregnancy prevention, as indicated for each patient. Formal, evidence-based guidelines for use of hormonal contraception in transgender AFAB patients are limited (Cipres et al., 2017; Gomez et al., 2016). It is generally accepted that progestin-only methods are preferred by patients who wish to avoid exogenous estrogen (Committee on Adolescent Health, 2017). However, hormonal contraceptive methods in general may have effects on mood, particularly depression (Skovlund, Morch, Kessing, & Lidegaard, 2016). There is minimal literature on the specific use of hormonal contraception in transgender AFAB patients, whether pertaining to choice of method, duration of use, or complications. Thus, the purpose of this study is to describe the use of and indications for hormonal contraception in adolescent and young adult transgender AFAB patients at a single academic institution.

Methods

We conducted a chart review of transgender assigned-female-at-birth (AFAB) patients who presented to the Transgender Health Clinic at Cincinnati Children's Hospital Medical Center (CCHMC) between July 1, 2013, and September 17, 2016. The Transgender Health Clinic is an interdisciplinary program that provides multiple services including general adolescent health care, gender-affirming hormone therapy, puberty suppression, menstrual suppression, referrals to mental health providers, and includes providers in Social Work and Pastoral Care ("Transgender Health Clinic - Health Services for Transgender Youth." https://www.cincinnatichildrens.org/service/a/adolescent-medicine/programs/transgender. Last accessed 03/19/2019," 2019). All currently approved contraceptive options are available to patients. Following a quality improvement effort to standardize the history intake, providers engage patients in discussion of relative risks, benefits, and alternatives to guide individual selection of contraceptive and menstrual suppression methods (Dehlendorf, Krajewski, & Borrero, 2014).

We performed chart review of all transgender patients seen during the study period to confirm assigned sex at birth. All AFAB patients between ages 10 and 25 years with a diagnosis of gender dysphoria according to DSM-V (American Psychiatric Association, 2013) and with documented post-menarchal status were considered for inclusion. Eligibility for the study required that patients had been seen in the Transgender Health Clinic for at least two visits with a medical provider. Eligibility did not require any type of medical or surgical transition or any specific gender identity. Patients were excluded if menarchal status was not documented, or if they were on gonadotropin-releasing hormone (GnRH) agonist for puberty suppression. The Institutional Review Board (IRB) at CCHMC approved this study. A request to waive consent was approved, as the protocol was designated as minimal risk,

no intervention was proposed, and data collected were from routine clinical care performed at the discretion of a medical provider.

Data elements abstracted included the following: choice of hormonal contraceptive, indication for hormonal contraception (menstrual suppression and/or pregnancy prevention), documented patient report of continuation or change in method, use of testosterone for gender-affirming therapy, initiation of sexual activity, and reported sexual partners (to determine whether patients were at potential risk of pregnancy). Sexual activity was defined as any report of sexual intercourse (oral, vaginal, anal) by patients. At risk for pregnancy was defined as report of sexual activity with persons assigned male at birth and/or specific report of receptive penile–vaginal intercourse. We collected data using a standardized form and recorded data in a secured spreadsheet. A second independent reviewer then reviewed data for accuracy for >75% of the charts. Any discrepancies were resolved by the senior author. We characterized the data with simple descriptive statistics using Microsoft Excel.

Results

We identified a total of 613 transgender patients using a diagnosis of gender dysphoria in the electronic medical record during the study period. Of these, 386 were patients assigned-female-at-birth, of which 231 met inclusion criteria, and were included in the final analysis. All the patients were post-menarchal, and none of the patients were on GnRH agonists or any other method of puberty suppression. Subject ages ranged from 11 to 25 years, with an average age of 17.2 years. Duration of documented follow-up was greater than 6 months for 60% of patients (Table 1).

Table 1. Patient characteristics ($n = 231$).

Variable	Mean (SD)	*n* (%)
Age	17.19 (2.81)	
Testosterone		
- Currently taking testosterone		121 (52)
- Never taking testosterone		110 (48)
Hormonal contraception		
- Currently using contraception		135 (58)
- No longer using contraception		50 (22)
- Never using contraception		46 (20)
Using contraception for pregnancy prevention		
- Yes		19 (8)
- No		138 (60)
- N/A or unknown		74 (32)
Time on current contraception		
- < 6 months		59 (26)
- >= 6 months		35 (15)
- >= 1 year		39 (17)
- N/A or unknown		98 (42)
Current contraception type		
- Depot medroxyprogesterone		49 (21)
- Combined oral contraceptive		34 (15)
- Norethindrone		34 (15)
- Levonorgestrel IUD		13 (6)
- Norethindrone acetate		3 (1)
- Etonogestrel implant		1 (0.43)
- Hysterectomy		1 (0.43)
- None		96 (41.4)

Table 2. Reason for change in contraceptive method.

Reason for change	*n*	%
Stopped bleeding on testosterone	36	15.58
Irregular or breakthrough bleeding	22	9.52
Allergic reaction	2	0.87
Contraindication to estrogen	3	1.30
Desired fertility preservation	1	0.43
Desired LARC	5	2.16
Did not want daily pill	4	1.73
Did not want estrogen	1	0.43
Did not want injection	1	0.43
Insurance coverage	1	0.43
Mood changes	2	0.87
No need for contraception	3	1.30
No reason given	4	1.73
Weight gain	3	1.30
N/A (never on contraception)	143	61.90
Total	**231**	**100.00**

Use of hormonal contraception

Overall use

Among 231 included patients, 185 (80%) were either currently using hormonal contraception or had used a contraceptive method within the previous year; the remaining 46 (20%) had never used hormonal contraception. Of the 185 patients who were currently or recently using hormonal contraception, 124 (67%) had presented for menstrual management only, without a known need for pregnancy prevention. The most common methods used for menstrual management among both past and present users were depot medroxyprogesterone (DMPA) (61 patients ever using method) and norethindrone (38 patients ever using method). The most common reasons for a change in method on any agent were irregular or breakthrough bleeding (30 patients), followed by patients' perception of no present need for contraception based on their current sexual behaviors (16 patients) (Table 2).

Among 231 included patients, 50 (21.6%) had previously used a hormonal contraceptive method

and were not currently using any method. This included both sexually active and non-sexually active patients. The most common reason for discontinuation of contraception was cessation of menstrual bleeding due to testosterone therapy (36 patients) followed by irregular bleeding (22 patients). Few patients reported mood changes (2) or weight gain (3) as reason for discontinuation of contraception. Among all patients currently or ever using hormonal contraception, there were no reported severe adverse events (including venous thromboembolism or cerebrovascular accidents).

Current use

At the time of data collection, 135 of the 231 (59%) patients were currently using a hormonal contraceptive method for menstrual management, pregnancy prevention, or both. Figure 1 outlines the number of patients using each method. Most patients were managed on depot medroxyprogesterone (DMPA), with an equal number of patients (34 each) choosing combined oral contraceptive pill (COC) or norethindrone (progestin-only pill, POP). Seventy-three patients (54%) had been on their method for at least 6 months, and 38 (28%) had been on their method for at least 1 year. Thirty-eight patients (28%) had previously used 1 or more different hormonal contraceptives before their current method. The most common reason for change of method was irregular or breakthrough bleeding.

Fourteen patients (10.4%) had insertion of 52 mg levonorgestrel-releasing intrauterine system (LNG-IUD, Mirena®), with 11 of the 14 insertions occurring over the last year of the study period. Of the 14 patients, 5 had successful insertion in clinic, and 9 had insertion under sedation in the operating room (OR). The indications for IUD insertion in the OR were as follows: declined clinic examination (five patients), attempted clinic examination but could not tolerate (two), clinic insertion unsuccessful due to cervical stenosis (one), coordination with other surgery (one). At time of data collection, thirteen of the 14 patients who had LNG-IUD insertion continued to have their IUD in place, as one of the 14 patients had undergone a hysterectomy.

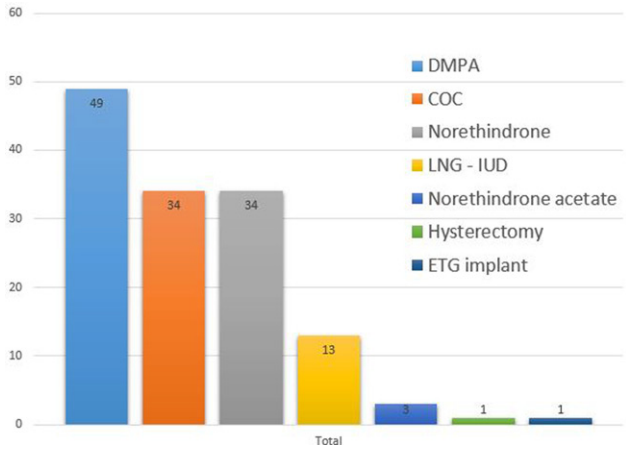

Figure 1. Current hormonal contraceptive method.

Use of testosterone therapy and contraception

Among 231 included patients, 121 (52%) were taking testosterone for gender-affirming hormone therapy. Of the 121 taking testosterone, 56 (46%) continued using hormonal contraception for menstrual management, pregnancy prevention, or both. Forty-three (36%) were previously using hormonal contraception and had discontinued. The most common reason for discontinuation was cessation of menstrual bleeding due to testosterone therapy. The remaining 22 patients (18%) had never used a contraceptive method.

Among the 56 patients currently taking both testosterone and hormonal contraception, 11 patients (19.6%) were using combined oral contraceptive (COC) with a 30 mcg ethinyl estradiol formulation. The longest duration of concurrent use of testosterone and COC was 21 months. Eight of the 11 patients were using extended cycle COC (levonorgestrel/ethinyl estradiol, Seasonale®); the remaining three were using monthly cycle COC. Two of the eight patients using extended cycle COC were using this medication for >2 years at the time of data collection.

Among the 56 patients currently taking both testosterone and hormonal contraception who were not on combined oral contraceptives, the most commonly used contraceptive method was DMPA. Twenty-nine patients (52%) were currently using DMPA, with longest duration of concurrent use of testosterone and DMPA being 3 years.

Sexual activity and risk of pregnancy

Among 231 included patients, 82 (36%) reported ever being sexually active. Of those patients, 35/82 (43%) reported sexual activity that placed them at potential risk for pregnancy, and 24/82 (29%) of these patients were also taking testosterone. Among 35 patients at risk for pregnancy, 21 (60%) were using a hormonal contraceptive method. Their most commonly chosen method was DMPA (eight patients) followed by norethindrone (six patients).

Discussion

We found that a variety of hormonal contraceptive methods may be useful for transgender assigned-female-at-birth adolescents and young adults. The most commonly used hormonal contraceptive method in our clinic-based series of transgender AFAB patients was DMPA. Although COCs tend to be considered less optimal due to estrogen effects (Coleman et al., 2012), they were the second most commonly used method in our sample, along with the progestin-only mini-pill. The LNG-IUD was more highly accepted among our patients during the later time period of data collection. Our most notable finding in this sample of patients was that 54% of sexually active patients taking testosterone discontinued their contraceptive method once they stopped having menses. This underscores the importance of contraceptive counseling, as most patients will have amenorrhea within one year of testosterone therapy, but may continue to ovulate and be at risk of unintended pregnancy (Light et al., 2014; More, 1998).

General guidelines exist for the use of menstrual suppression and contraception in transmasculine adolescents, but there is minimal literature on the actual use of hormonal management among these patients (Coleman et al., 2012; Hembree et al., 2017). The WPATH Standards of Care note that progestins, most commonly depot medroxyprogesterone, or continuous oral contraceptives may be used for menstrual cessation, especially early on in gender-affirming hormone therapy (Coleman et al., 2012). ACOG Committee Opinion #685 addresses the recommendations for care of transgender adolescents that apply to obstetrician–gynecologists. The Committee Opinion comments on the concern that exogenous estrogen may be less desirable to transgender assigned-female-at-birth patients and favors the use of progestin-only options for menstrual suppression (Committee on Adolescent Health, 2017). However, combined oral contraceptives were the second most commonly used method in our study. Although many patients and providers may wish to avoid exogenous estrogens, the use of estrogen and progestin combination pills is known to be a highly effective method for menstrual suppression and is a viable option for some patients.

There is also concern for theoretical increased risk of VTE with concomitant use of testosterone and COCs. In our study, we reported on 11 patients with concurrent use of testosterone and COC, without reported adverse effects at the time of data collection. According to the Endocrine Society Clinical Practice Guideline, while testosterone therapy does result in "a more atherogenic lipid profile," there is insufficient evidence to assess whether patients are at higher risk of venous thromboembolism or stroke (Hembree et al., 2017). Thus, there is no absolute contraindication to concomitant use of these therapies. We do note that each patient's individual risk and comorbidities should be considered when initiating or continuing COCs.

The CDC Medical Eligibility Criteria for Contraceptive Use notes that patients "using teratogenic drugs are at increased risk for poor pregnancy outcomes" and that "long-acting, highly effective contraceptive methods" may be the best option for these patients (Curtis et al., 2016). We have shown that patients were able to successfully have the LNG-IUD placed in both the office setting and under anesthesia. While the hormonal contraceptive implant (subdermal etonogestrel) has a less desirable bleeding profile, this method provides highly effective reversible contraception and may be considered for patients who are not amenable to a pelvic exam and are at risk of unintended pregnancy (American College of Obstetricians and Gynecologists, 2012).

In our sample, patients accepted various contraceptive methods, but their satisfaction with and

continuation of these methods could not be fully assessed. The most frequently documented reason for a change or discontinuation of any specific method was irregular bleeding. This underscores the importance of counseling and setting appropriate expectations prior to initiating any contraceptive method. This is particularly important when initiating menstrual suppression. Patients should be counseled that the primary goal of menstrual management is to reduce the duration, frequency, and/of amount or menses, as amenorrhea (complete lack of menses) may be difficult to obtain. In addition, although progestin-only options may be deemed more appropriate given the lack of estrogen, these options are often associated with irregular bleeding initially, which may improve over time (Zigler & McNicholas, 2017).

Although not specifically addressed in our study, another possible side effect of hormonal contraception that should be considered is its effect on mood, particularly depression, in adolescent patients. There is conflicting evidence regarding whether hormonal contraceptive methods have negative effects on mood and whether this applies to specific methods only. While some studies show that adolescents using progestin-only contraceptive methods are more likely to use antidepressant medications than those using combined oral contraceptives (Lindberg, Foldemo, Josefsson, & Wirehn, 2012; Wirehn, Foldemo, Josefsson, & Lindberg, 2010), others have found that hormonal contraceptive use in general is associated with improved mood (Keyes et al., 2013; Toffol, Heikinheimo, Koponen, Luoto, & Partonen, 2012). In a recent prospective cohort study, Skovlund et al. found that adolescents using different types of hormonal contraception were at increased risk of subsequent diagnosis of depression and use of antidepressant medications (Skovlund et al., 2016). Further evaluation of this possible adverse effect is needed, especially in transgender adolescents, who represent a population vulnerable to mood disorders in general (Connolly, Zervos, Barone, Johnson, & Joseph, 2016; Khobzi Rotondi, 2012; Rosenthal, 2014).

In this study, we were able to report on a relatively large sample of transgender adolescents compared to other series (Lynch, Khandheria, & Meyer, 2015). Patients were using a variety of hormonal contraceptive methods, and there was follow-up data on symptoms and continuation for most patients who continued to have care. In addition, patients had a thorough social and sexual history obtained and documented. This enabled us to assess patients' perceived and actual risk of pregnancy. Almost half of sexually active patients disclosed encounters with assigned-male-at-birth partners; thus, they may be at risk for pregnancy. Of note, health care providers should not assume patients' sexual behaviors based on reported sexual orientation or partners (Klein, Arnold, & Reese, 2015; Unger, 2014). Counseling transgender adolescent patients regarding barrier and hormonal methods of contraception, regardless of menses, would be prudent.

As this was a chart review, our study was limited to data documented by providers and accurate patient disclosure, including indications for use of hormonal contraceptive methods (i.e., menstrual management, pregnancy prevention, or both). As a single institution study, our patient population may not be reflective of the patients seen in other transgender health care centers. The number of patients using each method was small; however, this may reflect our patient referral base. The duration of follow-up was also limited. About 40% of included patients had not yet had their 6-month follow-up visit. This is reflective of recent clinic uptake, with nearly 300 new patients seen in the last 1 year of the study period. In addition, we could not consistently assess patient satisfaction, as there was not a discrete measure in existing documentation to capture patient report. As a result, we were limited to continuation data, which is an imperfect proxy for assessment of satisfaction, as there are other factors (e.g., access to care, patient knowledge about options) that influence continuation rates. We recognize that satisfaction with menstrual suppression and contraceptive methods is an important domain for further study. Future prospective studies could include standardized clinical documentation as well as patient surveys to understand their experiences.

We found that a variety of hormonal contraceptive methods are available and accepted by transgender adolescent patients for menstrual

management and contraception. As many patients will discontinue hormonal contraception once testosterone is initiated, transmasculine adolescent patients at risk for pregnancy should be counseled on continued use of barrier methods and hormonal contraception.

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. For this type of study, formal consent is not required.

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