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## Fertility Preservation for Transgender Adolescents

Diane Chen, Ph.D.<sup>a,b,c,d,\*</sup>, Lisa Simons, M.D.<sup>a,d</sup>, Emilie K. Johnson, M.D., M.P.H.<sup>e,f</sup>, Barbara A. Lockart, D.N.P., A.P.N./C.N.P.-A.C., P.C., C.P.O.N.<sup>g,h</sup>, and Courtney Finlayson, M.D.<sup>d,i</sup>

<sup>a</sup>Division of Adolescent Medicine, Department of Pediatrics, Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, Illinois

<sup>b</sup>Department of Child and Adolescent Psychiatry, Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, Illinois

<sup>c</sup>Department of Psychiatry and Behavioral Sciences, Northwestern University Feinberg School of Medicine, Chicago, Illinois

<sup>d</sup>Department of Pediatrics, Northwestern University Feinberg School of Medicine, Chicago, Illinois

<sup>e</sup>Division of Urology, Department of Surgery, Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, Illinois

<sup>f</sup>Department of Urology & Center for Healthcare Studies, Northwestern University Feinberg School of Medicine, Chicago, Illinois

<sup>g</sup>Division of General Pediatric Surgery, Department of Surgery, Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, Illinois

<sup>h</sup>Division of Hematology, Oncology and Stem Cell Transplant, Department of Pediatrics, Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, Illinois

<sup>i</sup>Division of Endocrinology, Department of Pediatrics, Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, Illinois

### Abstract

**Purpose**—To describe fertility preservation (FP) utilization by transgender adolescents within a pediatric gender clinic between July 2013 and July 2016.

**Methods**—A retrospective chart review was conducted to abstract demographic and clinical information among adolescents initiating gender-affirming hormones, including patient age at initial FP consultation, birth-assigned sex, race/ethnicity, and outcome of FP consultation.

**Results**—In our sample of 105 transgender adolescents, a total of 13 (seven transgender men and six transgender women) between the age of 14.2 and 20.6 years were seen in formal consultation for FP before initiating hormones. Of these adolescents, four completed sperm cryopreservation and one completed oocyte cryopreservation.

\*Address correspondence to: Diane Chen, Ph.D., Division of Adolescent Medicine, Department of Child and Adolescent Psychiatry, 225 East Chicago Avenue, Box 10B, Chicago, IL 60611-2605. DiChen@luriechildrens.org (D. Chen).

#### Conflicts of Interest

The authors have no conflicts of interest to disclose.

**Conclusions**—Rates of FP utilization among transgender youth were low, which is consistent with a recently published report of FP utilization among transgender youth at another pediatric institution. Identified barriers to FP in our sample included cost, invasiveness of procedures, and desire not to delay medical transition.

### Keywords

Transgender adolescents; Fertility; Fertility preservation; Transgender medicine; Gamete cryopreservation

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As public awareness of gender diversity has increased over the last decade, more transgender youth are seeking health care services to support medical transition. While gender-affirming hormones (i.e., estrogen for birth-assigned males; testosterone for birth-assigned females) are indicated to alleviate gender dysphoria [1], side effects include impairments in gonadal histology that may cause infertility or biological sterility [2–4]. Estrogen use by transgender women results in impaired spermatogenesis and an absence of Leydig cells in the testis [3]. Testosterone use by transgender men causes ovarian stromal hyperplasia [2,4] and follicular atresia [2]. Gonadal effects of hormones are thought to be at least partially reversible, and pregnancy has been reported in transgender men who have previously used testosterone [5]. However, thresholds for amount and duration of exogenous hormone exposure causing permanent negative effects on fertility have not been established. Thus, the World Professional Association of Transgender Health [1] recommends counseling regarding fertility and reproductive options before initiating hormone treatment.

As fertility preservation (FP) and assisted reproductive technologies become more recognized as viable options to address the reproductive needs of the transgender community [6], an increasing number of transgender adults are being referred for FP [7]. Research on the reproductive desires of transgender adults, albeit limited, suggests that about half of adult transgender men [8] and transgender women [9] desire biological children, and over a third would have considered cryopreserving gametes had techniques been previously available [8]. However, little is known about the reproductive desires of a growing population of transgender youth initiating hormones during adolescence. To address this gap, we conducted a retrospective chart review to describe FP utilization among transgender adolescents initiating hormones within a pediatric gender clinic between July 2013 and July 2016.

### Method

Study approval was obtained from the Ann and Robert H. Lurie Children’s Hospital of Chicago Institutional Review Board. Charts of all patients initiating hormones within our Gender & Sex Development Program (GSDP) between July 2013 and July 2016 were identified and reviewed. During this period, 28 birth-assigned males were started on estrogen and 77 birth-assigned females were started on testosterone for medical transition. All patients and their parents (if minors) were provided with counseling regarding the potential impact of hormones on fertility and availability of options for FP by GSDP medical and mental health providers and subsequently offered the opportunity for further consultation with a fertility specialist.

Before January 2015, patients and families expressing interest in a formal FP consultation were referred directly to adult fertility specialists at Northwestern Medicine (NM). Starting from January 2015, interested patients and families were first referred for consultation with Lurie Children's in-house FP advanced practice nurse (APN; who primarily works with the oncofertility population) with subsequent referral to adult fertility specialists at NM for those interested in pursuing FP. Chart abstraction included patient age at initial FP consultation, birth-assigned sex, race/ethnicity, and outcome of FP consultation, including reasons for not preserving fertility if documented.

## Results

In our sample of 105 transgender adolescents initiating hormones, a total of 13 (12.4%) were seen in formal consultation for FP by a fertility specialist. Seven patients identified as transgender women (birth-assigned males affirming a female identity) and six patients identified as transgender men (birth-assigned females affirming a male identity). Average age at initial FP consultation was 16.5 years (range 14.2–20.6 years) and did not differ significantly between transgender men (mean = 15.9 years, standard deviation = 1.6) and transgender women (mean = 17.2 years, standard deviation = 1.8). Two patients expressed interest in FP before January 2015 and were referred directly to NM, whereas 11 patients had an initial consultation with Lurie Children's FP APN. Of these 11 patients, five proceeded to meet with specialists at NM. Thus, a total of seven patients (five transgender women and two transgender men) met with adult fertility specialists, with four patients completing sperm cryopreservation and one patient completing oocyte cryopreservation successfully. Among those meeting with adult fertility specialists, one patient elected not to pursue sperm cryopreservation following a negative experience with a sperm bank technician misgendering her and reportedly treating her disrespectfully, and one patient elected not to proceed with oocyte cryopreservation owing to cost. See Table 1 for a detailed description of demographics, FP utilization, and reasons for declining FP among each adolescent in our sample.

## Discussion

There is growing recognition that fertility and FP are important considerations among transgender adults when seeking hormonal/surgical interventions [6–9]. However, limited research addresses the reproductive desires of a growing and increasingly visible population of transgender youth who are initiating hormones in adolescence. This study, together with the paper by Nahata et al. [10], begins to address this gap by documenting utilization of fertility-related care and highlighting barriers to FP in this population. Consistent with the findings by Nahata et al. of low FP utilization among transgender adolescents, a smaller proportion of our adolescent transgender population pursued fertility-related specialty care than would be expected based on the adult literature [8,9], with 12.4% pursuing a formal FP consultation and just under 5% cryopreserving gametes. Across both samples, more transgender women than transgender men completed FP [10]. This common finding is not surprising given that the two major barriers to gamete cryopreservation identified in our sample were cost and invasiveness of procedures, identified by two and three of the six transgender men who declined FP following formal consultation, respectively. Cost and

discomfort with FP procedures also were cited in the sample by Nahata's et al. [10] as barriers to FP. Notably, while invasiveness of oocyte cryopreservation is an oft-cited barrier to FP among other patient populations, we would assert that it poses unique challenges among transgender men, who often experience significant body dysphoria related to their genitals and reproductive organs. FP for transgender men requires 10–14 days of daily hormone injections to stimulate follicular development, monitoring via transvaginal ultrasounds, and oocyte retrieval using ultrasound-guided transvaginal aspiration of follicular fluid [11]. In contrast, none of the transgender women in our sample cited physical discomfort related to producing a sperm sample as a barrier to FP.

Nahata et al. [10] also hypothesized that some youth presenting to gender clinics may feel a sense of urgency to move forward with medical transition, and initiating hormones may be prioritized over other considerations, including fertility and FP. We agree that this possibility warrants further research. Anecdotally, our team has documented several interactions with youth who noted that after medical transition with hormones and exploration of romantic relationships when more comfortable in their bodies, they felt more emotionally capable of considering future parenting desires. Thus, exploring decisional regret associated with declining FP and quality of life in adulthood should be prioritized in future research.

Of note, reasons patients opted to decline FP in our sample were abstracted from chart documentation; thus, it is impossible to determine whether and to what degree these barriers (or others) played a role in youth's and families' decision-making around FP. Moreover, our study focused specifically on youth who received a formal FP consultation; thus, it is possible that the documented barriers (or others) impacted youth/families' initial decision to pursue consultation with a fertility specialist. For instance, Nahata et al. [10] reported that 45% of their sample expressed a desire to adopt children and 22% stated that they did not want to have children—it is possible that youth in our sample shared similar sentiments; however, given the limitations of a retrospective chart review, we were not able to capture these data.

It is notable that Lurie Children's protocol for FP counseling for transgender youth is different from the protocol implemented by Nahata et al. Specifically, Lurie Children's protocol has a dedicated FP APN whose role in transition-related care is exclusive to counseling on fertility, whereas the protocol by Nahata et al. [10] utilizes the pediatric endocrinologist prescribing hormones, in conjunction with a social worker, to provide FP counseling in the context of informed consent for hormone therapy after a child psychiatrist already has evaluated and diagnosed an adolescent with gender dysphoria. Within Lurie Children's model, youth and families expressing interest in options for medical transition with hormones are introduced to the impact of hormones on fertility and availability of FP counseling during their initial visit with our medical and mental health team. Discussions about fertility and FP occur over multiple sessions both during GSDP medical visits and in the context of a psychological assessment of readiness for hormones. Referrals to our FP APN are made as soon as youth or families express interest in FP consultation or procedures—this may be immediately after an initial GSDP meeting or after a subsequent medical or mental health visit. It is unclear whether different protocols for fertility counseling impact youth's and families' decision to pursue FP; however, further exploration is warranted to

determine optimal timing for introducing the topic of fertility and FP to youth and families and whether a dedicated fertility specialist may be recommended for gender programs in the future. In addition, future studies are needed to better understand transgender adolescents' (1) fertility desires and potential regret, particularly in the context of low FP utilization rates; (2) knowledge, attitudes, and beliefs about FP and reproductive health; and (3) barriers to successful gamete banking. Understanding these factors will improve access to reproductive technologies for this population.

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### Disclaimer

The study sponsors had no role in the (1) study design; (2) the collection, analysis, and interpretation of data; (3) the writing of the report; and (4) the decision to submit the manuscript for publication.

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### **IMPLICATIONS AND CONTRIBUTION**

This is one of the first descriptive studies of transgender adolescents referred for fertility preservation (FP) consultation and highlights major barriers to FP for this population, including cost, invasiveness of procedures, and desire not to delay medical transition. By identifying barriers to FP, access to reproductive technologies will be improved.

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**Table 1**  
Demographic characteristics and FP utilization among adolescents pursuing formal FP consultation

Number	Age in years	Race/ethnicity	Lurie Children's FP consultation	NM adult fertility consultation	Cryopreservation of gametes	Reasons for declining FP
Birth-assigned females						
1	18.2	White	No <sup>a</sup>	Yes	Yes	–
2	16.9	African-American	Yes	No	No	Concern about delaying hormone initiation to complete FP procedures
3	17.2	African-American	Yes	Yes	No	Cost
4	14.2	Hispanic	Yes	No	No	Invasiveness of FP procedures
5	15.7	White	Yes	No	No	Invasiveness of FP procedures
6	14.2	Hispanic	Yes	No	No	Cost; invasiveness of FP procedures; anxiety about hormone injections required for ovarian stimulation
7	14.6	White	Yes	No	No	No specific reason noted
Birth-assigned males						
1	17.7	White	No <sup>a</sup>	Yes	Yes	–
2	16.3	White	Yes	Yes	Yes	–
3	15.6	African-American	Yes	Yes	Yes	–
4	16.7	White	Yes	Yes	Yes	–
5	20.6	White	Yes	Yes	No	Reported mistreatment and misgendering by sperm bank technician
6	16.5	White	Yes	No	No	Not interested in having children and agreed to consult due to mother's concern that patient would regret not pursuing FP

FP = fertility preservation; NM = Northwestern Medicine.

<sup>a</sup>Patient was directly referred to adult fertility specialists at Northwestern Medicine before Lurie Children's implementation of FP protocol in January 2015.