

Take the T Out, Put the T In: Gender Affirming Hormones in Youth

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Abstract

An increasing number of transgender and gender expansive adolescents are seeking gender care at clinics and hospital programs and requesting gender affirming hormonal treatment. Many are approved for this form of care to enhance their gender health. The interventions can either include a suppression of testosterone and introduction of estrogen for transfeminine youth or suppression of estrogen and introduction of testosterone for transmasculine youth.

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This review article focuses on the psychosocial experiences of youth who have completed their endogenous puberty and are now requesting one of these two forms of gender affirming hormonal treatment. Calling on research data, established standards of care and practice guidelines, and clinical observations, an investigation is made of the comparative profiles of these two subgroups of transgender/gender expansive youth; their gender-related experiences prior to receiving hormonal treatment; the relationship between the physical changes and psychological experiences that accompany the introduction of testosterone or suppression of testosterone with replacement with estrogen; the intrapersonal and interpersonal implications of the treatment; considerations of fertility preservation for future family building; role of the family in the decision making process prior to starting a course of hormone therapy; and the capacity of youth to make informed decisions about these partially irreversible medical interventions. The review concludes with outlining the task for the medical provider who offers gender affirming hormonal care to a youth under the age of majority: to work with the family and allied professionals involved in the youth's care to assure that the youth's gender health is enhanced, barriers to care are removed, and mental health risks are reduced, whether the T is coming out or going in.

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Introduction:

From its Greek derivations, the word “andrology” literally translates to “the study of man.” Historically, that meant those individuals born with XY chromosomes. Presently, andrology refers to the branch of medicine concerned with the anatomy, functions, and disorders of the

male reproductive system. A key aspect of that reproductive system is testosterone, the hormone that shapes a particular form of secondary sex characteristics, among other things. A group of youth are now showing up in increasingly large numbers at pediatric gender clinics across the globe with specific focus on that exact hormone. Some are youth with testosterone running through their bodies asking that it be suppressed and replaced with the hormone associated with the field of gynecology, not andrology—that would be estrogen. The others are youth without testosterone pumping through their bodies but asking that it be introduced, and their estrogen put in hibernation. Both groups encompass our transgender or gender non-binary adolescents coming to our gender programs requesting gender-affirming hormonal interventions to consolidate their gender identities and presentations (Coleman et al, 2012; Hembree et al. 2017). Both groups are the focus of this review article on the psychosocial effects of post-pubertal youth asking either that the T be taken out, or the T be put in as they strive to actualize their authentic gender identity.

A Profile of the Youth Requesting Removal of T

These are youth, designated male at birth, who have gone through a puberty in which their voice has deepened, hair has appeared on their face and bodies, an Adam's apple has emerged, their testicles and penises have enlarged, their facial structure and muscle mass have shifted to an adult "male" presentation, an Adam's Apple may have appeared, and they are now able to produce mature sperm and ejaculate. Some of them may have had some realization since early childhood that the gender in which they were living felt discordant with their gender desires or preferences. Within that cohort, some may have had the opportunity prior to arriving at puberty to socially transition to the gender identity that felt more congruent with their internal understandings of who they were. Yet they may not have had the opportunity to benefit from the administration of puberty suppression that would have

blocked the advent of a puberty driven by testosterone. They may have missed this opportunity either because of lack of knowledge that such interventions existed, lack of access to resources, lack of financial means to cover the high cost of puberty suppression medications, lack of desire for puberty blockers (which would be unusual), or unwillingness of parents to consent to the procedure. A second cohort of youth desiring to remove testosterone may have come to the conscious realization only in adolescence, post-puberty, that the gender they were discovering themselves to be was discordant with the gender they had priorly lived in based on their sex designated at birth (Pullen Sansfacon et al, 2020).

All of the above-mentioned youth share in common the following: they would like to discontinue having testosterone being their adult sex hormone and request replacing the testosterone with estrogen, either to allow them to live full-time as a woman with a body more in accordance with that gender identity (transfeminine youth) or to create their own iteration of gender that is neither male nor female but their own unique gender mosaic. The youth asking to take the T out look forward to breast development, redistribution of body fat to create wider hips and a narrower torso, reduced muscle mass, and softer skin.

A Profile of the Youth Requesting Infusion of T

In recent times, the number of youth presenting to gender clinics or engaging in research studies who were designated female at birth and are requesting gender affirming hormonal intervention, i.e., testosterone, far outnumber the youth in the profile above—those who wish to remove the testosterone from their bodies and replace it with estrogen (Aitken, et al, 2015; Roder et al. 2018; Kuper et al, 2020; Chen et al, 2020). The particular youth in question here are those who have already undergone pubertal changes in which they have

grown breasts, menstruate, and have taken on the shape and fat distribution associated with an estrogen-driven puberty. Like the youth wanting to remove the T from their bodies, they may have been aware of a gender identity that did not match the sex designated to them at birth from early childhood, or, alternatively, only come to that realization later in their growing years. Some may be clear and stable in an affirmed male identity. Others may identify beyond the gender binary, either as non-binary or as some individualized iteration of gender. Some may be in search of a full dose of testosterone that will generate the secondary sex characteristics associated with post-pubertal males in our culture—facial and body hair, deepened voice, enhanced muscle mass, squared off facial structure, Adam's Apple, redistribution of body fat to create smaller hips, broader torsos. Regarding primary sex characteristics, they might also be in search of a medical intervention that will result in their clitoris enlarging enough to approximate a micro-penis, which they learn can occur with the introduction of testosterone. Others, more likely of the non-binary cohort, may simply desire a “touch” of testosterone—just enough to create a slight deepening of the voice, or light peach fuzz above the lip, for example.

-T or + T: Body changes and Presentation to the World

As a medical condition, the ICD-11 defines gender incongruence (GI) as “a marked and persistent incongruence between the gender felt or experienced and the gender assigned at birth” (WHO, 2018). This incongruity manifests itself in at least two of the following criteria: 1) strong dislike or disagreement with primary or secondary sexual characteristics due to incongruence with the experienced gender; 2) strong desire to get rid of some of those sexual characteristics due to the incongruence with the experienced gender; 3) strong desire

to have the primary or secondary sexual characteristics of the experienced gender; 4) strong desire to be treated and accepted as a person of the felt gender.

Youth arriving at gender clinics asking to either take the T out or put the T in are definitely focused on the second of those two experiences—the desire to get rid of secondary sex characteristics associated with their chromosomal sex, but this is typically accompanied by a more positive request, to replace those undesired characteristics with desired ones more consistent with their affirmed gender identity, in line with criterion #3. The motivation to request these medical interventions is driven by the experience in the first criterion for Gender Incongruence—a dissatisfaction with the sex characteristics as a result of their discordance with the gender they know themselves to be, and also with the last criterion—the strong desire to be treated and accepted in accordance with their authentic gender self. Again, because of medical advances that allow for tweaking our secondary sex characteristics through androgen suppression and hormone replacement therapy, the first GI criterion of dislike or disagreement is morphed into a positive experience to overcome that dis-ease with one's endogenously-driven sex characteristics—"I can overcome that strong dislike or disagreement by doing a switch of those hormones," either taking the T out or putting T in, depending on whether one is leaning toward the feminine or toward the masculine, respectively.

With that said, it is common knowledge that testosterone has proven to be a stronger hormone in comparison to estrogen. One might imagine the comparison as Godzilla (testosterone) meeting up with Bambi (estrogen). Gender affirming hormones are considered partially reversible interventions, or put conversely, partially irreversible interventions. Yet, there is more irreversibility with suppressing estrogen and adding testosterone than with suppressing testosterone and replacing it with estrogen. The deepened voice that

accompanies replacing estrogen with testosterone will remain permanent, even if an individual decides to discontinue testosterone. So will the facial and body hair, albeit in less abundance. So will the enlarged clitoris. With the replacement of testosterone with estrogen, the only primary permanent effect will be breast development, albeit with some shrinkage if estrogen is discontinued.

Continuing with the analogy of Godzilla meeting up with Bambi, if a young person designated female at birth who has already experienced puberty comes to the realization that they are not a woman but rather a man, the course of gender affirming hormonal treatment can within a few years create a physical presentation to the world of a man like any other man—deepened voice, facial hair, broad muscle mass, ultimate changes in facial bone structure toward a more masculine presentation. Sitting with a group of people, one is often hard pressed to distinguish a transman from a cisman if the former has completed a course and remains at a full dose of testosterone. Breasts can either be minimized with use of a binder or removed through chest reconstruction surgery. Often small stature or diminutive hand or shoe size might be social indicators of an XX chromosomal structure, but for the most part transgender men on testosterone have the potential to fully actualize the outward physical male appearance for which they may be striving. In contrast, a youth designated male at birth who has completed puberty and then comes to realize that they are not a man but rather a woman has a more challenging road to travel. Absent vocal cord surgery, which has many risks, a low voice will remain a low voice. Voice training to learn to speak at higher ranges is helpful, but for many still does not eliminate a voice that simply sounds “male.” Without facial feminization surgery, the protrusion of the forehead and square structure of the jaw often negate a feminine presentation. If this is accompanied by tall stature, large hands and feet, and/or an especially broad skeletal frame, the full course of

estrogen may still fall short of providing the person seeking to take the T out with the achievement of the feminine presentation they desire, if that is one of their goals. These young people, sitting around the table with a group of other women, given a particular culture's iconic sensibilities of how a woman should look, will not as easily blend in as just another woman in the crowd.

All of the above-mentioned challenges related to taking the T out or putting the T in are potentially minimized for those youth who do not set out striving for a binary gender identity, but rather their own gender creative sense of self, or, alternatively, do not abide by the stringent social norms of male/female presentation (Ehrensaft, 2016). For them, their body is their canvas, and the alteration of their presentation with the aid of gender affirming hormones could be considered more like paint strokes, rather than creating a sex-reverse mold of the body. This is in contrast to the young person who seeks out gender affirming hormones within a gender-binary sensibility—once thought to be a man, but actually a woman (take the T out); once thought to be a woman, but actually a man (out the T in). T

The presentation of non-binary young people might create greater confusion to the world—in a binary world, how do I locate your gender if you are neither a man or a woman? But in their own jouissance of gender, gender affirming hormones may simply be a palette from which non-binary youth paint their own unique rendition of gender that represents their most authentic self, leaving it to the world to figure out where to place them.

- T or +T: Anticipating Body Changes and Associated Internal Feelings

To understand the internal psychological experience of putting T in or removing T from one's body is to first explore what is occurring before that request comes to fruition in a medical provider's office. Data from a recent study conducted in Canada indicated that only

a small proportion of trans youth are fully aware and socially out before puberty and even this group may experience pauses and retreats (Pullen Sansfacon et al., 2020). Yet feelings about gender may well be brewing prior to that time. In Western culture, the child who was designated female at birth but does not feel aligned with the expectations for the gender all believe her to be has a lot more leeway to overtly explore her gender than the child designated male at birth who also does not feel aligned with the expectation for the gender all believe him to be. This is a result of privileging male over female expressions of self in the culture at large. A girl running to the park in a boy scout uniform is going to draw far less social attention than the boy skipping to the park in a pink tutu. Therefore, a young girl may have years of being able to explore the edges of gender without formulating an understanding of her own gender identity. For the little boy in the pink tutu, he is often pushed earlier into a state of disequilibrium, typically as a result of gender minority stress—the stigma and rejecting attitudes within a culture that pathologizes any male with “effeminate” features.

By the time this second child arrives at puberty, he may have already engaged in an internal negotiation in which the more authentic female gender expressions are suppressed or alternatively, are now consciously embraced as the only pathway that feels viable: becoming the girl not the boy in the pink tutu. If that is so, going through an endogenous puberty can be a total disruption to that youth’s female sense of self, and the cacophony of a body with facial hair and a voice that speaks “male” can generate symptoms of anxiety and depression and a sense of urgency to expel the substance from the body that has betrayed the prepubertal female self. Prior to the onset of pubertal changes, clothes indeed do make the gender—a trip to the clothing store, with a stop at the hair salon or barber shop can allow a child to shape their external body presentation to their own gender specifications. Thus, the transgender

teen girl coming to the gender clinic requesting the suppression of testosterone and replacement with estrogen may be presenting with an urgent request (Ehrensaft, 2012, 2016).

The child designated female at birth with perhaps more years to play at the margins of gender but with an eventual realization that the authentic gender is male will have the identical experience of pre-pubertal life as a time of “clothes make the gender.” For these youth, even after the advent of puberty, they will be able to continue with a male gender presentation absent the advent of hormones—rather than looking like a man presenting as a woman, these youth will be able to camouflage indefinitely as a prepubescent boy (Ehrensaft, 2012, 2016). For them, the greatest post-pubertal visible sex signifier, breast development, can be hidden with a sports bra or binder and baggy clothes, reinforcing their earlier experience that clothes help fortify their gender.

Despite the divergence in these sex-related experiences, the pos-pubertal convergence for all these youth relates to the desire to have an *adult* presentation—physically as a woman as the culture knows women to look or physically as a man as the culture know men to look. Whether the request for gender affirming hormones involves removing T or adding T, the psychological experience is the same: I need convergence between my psyche and my body to fully live in my authentic gender, and I am turning to a shift in sex hormones to achieve this.

The co-authors of this review have been involved in a four-site NIH longitudinal study exploring the physical and psychological effects of gender-affirming hormones, known as the Trans Youth Care Project. Data at baseline was collected from 316 youth, just before they embarked on either receiving testosterone or removing testosterone and replacing it with estrogen, with average age of 16, and 65% designated female at birth, 35% designated male at birth. Results indicated the following about the youths’ state of being prior to intervention,

regardless of which hormone they would be receiving: two-thirds (66.6%) reported lifetime suicidal ideation, with 24.6% endorsing a past suicide attempt; over half scored in the clinical range for anxiety (57.3%), and their scores for life satisfaction were over one standard deviation below the general population mean. There were no differences in depression, anxiety, life satisfaction, or recent suicidality based on designed sex at birth. Regarding feelings about their bodies before embarking on hormone therapy, the youth had low levels of body esteem ($M=36.0$, $SD=9.1$, range 17-67) (Chen et al., 2020).

Other studies measuring mental health of youth prior to receiving gender affirming hormones have found similar results. Estimates of depression in the clinical range have averaged between 20 to 30 % (Olson et al., 2015; Reisner et al, 2014; Spack et al., 2012; Peterson et al., 2017), anxiety from 20 to 30% (Reisner et al. 2014; Kuperet al, 2019, De Vries et al, 2011; Hol et al., 2014t), suicidal ideation from 30 to 50% (Olson, Reisner, Holt), suicide attempts from 15-30% (Olson et al.,2015,; Reisner, Peterson et al, 2017), and self-harm 20 to 40% (Spack et al., 2012; Peterson et al., 2017; Holt et al., 2014). Pullen Sansfacon et al. (2019) found in their qualitative research that youth seeking gender affirming hormones felt they needed medical care mainly for what they identified mainly as their gender dysphoria, which led to experienced periods of anxiety, depression, suicidal thoughts, self-harm, or disordered eating. In sum, post-pubertal youth arriving at a clinic seeking gender affirming hormones are likely to be carrying a substantial amount of anxiety, depression, despair about living, and discomfort with their bodies, with the older teens exhibiting worse mental health than the younger ones (Sorbara et al., 2020), negative experiences they hope will be relieved with the introduction of gender affirming hormones.

- T or +T: Effects on Psychological Functions

Riley (2018) stated: “Only through continued research, advocacy, school awareness and programs regarding gender diversity within qualifying training is the emotional and physical safety and access to critical services for GD adolescents going to be normalized and readily available in order to reduce the rates of anxiety, self-harm, depression, victimization, substance abuse, suicidal ideation and homelessness that place GD adolescents at risk” (p.209). It is these specific risk factors, with documentation of their evidence supported in the studies cited above, that are in play when we ask, “How will the introduction of gender affirming hormones reduce the rates of anxiety, self-harm, depression, and suicidality among our transgender and gender-nonbinary youth?” On the other side of adversity is resilience, generating the second question: “How will the introduction of gender affirming hormones increase a sense of well-being, confidence, body satisfaction, and happiness?”

A study conducted at the GENECIS program at Children’s Health in Dallas found a significant decrease in self-reported body dissatisfaction, depression and anxiety both for youth removing T and for youth adding T after beginning a course of gender affirming hormones. The amount of improvement was not related to which gender affirming hormone they received—estrogen or testosterone. Youth also reported modest improvements in mental health functioning during the follow-up period. That these mental health improvements were not greater was attributed to the fact that the full effects of the hormone treatment had not yet occurred and that environmental stressors associated with one’s transgender status may remain and even worsen if the hormonal care makes more visible the youth’s visibility as a transgender person (Kuper et al., 2020).

An earlier systematic review of primary studies in which researchers examined treatment with gender affirming hormones found that the psychosocial effects of gender-

affirming hormones in transgender youth had not yet been adequately assessed, calling for future research to address these knowledge gaps (Chew et al., 2018). That research is now taking place. The NIH four-site Transyouth Care Project and the research at the GENEICIS program have had exactly that intent. At present, the TYC follow-up data to measure outcome effects of receiving testosterone or removing testosterone has not yet been published, but a recent Canadian qualitative study indicated that youth who had received hormones generally felt positively about the intervention received and the resultant improvement in their well-being and outlook on the future (Pullen Sansfacon et al., 2019). Most specifically, taking hormones made them happier, less anxious or less dysphoric, with reported positive body changes. For those taking the T out, the decrease in dysphoria and increase in well-being was associated with fat redistribution and softer skin. Interesting to note is that breast development was not on that list, which might be a factor of the youth having only begun to receive the effects of estrogen when the study was conducted. For those putting the T in, the decrease in dysphoria and increase in well-being was associated with lower voice, presence of facial and body hair, changing shape of face, neck, and shoulders. To quote one of the transmasculine youth in their study:

My life was magically better. . . like I was still the same person. It's just that I had more

drive to study, more drive to pay attention in class, I wouldn't be plagued by like, "oh my god, I want to die." (Pullen Sansfacon et al, 2019, p. 380)

A qualitative study in Australia found that when youth received gender affirming hormones, they were more able to be back to being themselves (Riggs et al, 2019).

An earlier study by De Vries et al.(analyzing young adult outcomes for youth who had gone through their gender program in the Netherlands and received puberty suppression, gender affirming hormones, and gender affirming genital surgeries did not isolate youth who received only gender affirming hormones after completing pubertal development, but their data did indicate that none of the 55 individuals in their study, which included both transmen and transwomen, indicated any regret about receiving gender affirming hormones as youth. The conclusion was that for these youth, not only was gender dysphoria resolved but their well-being was in many ways comparable to cisgender peers in the Dutch population, including quality of life, satisfaction with life, and subjective happiness (De Vries et al, 2014).

In increasing numbers, youth are asserting a gender that is neither male nor female, but somewhere in-between or some very personalized iteration for gender. Some of these youth will be requesting gender affirming hormones, either testosterone or estrogen. Longitudinal data has not yet been collected to document the psychological effects of adding T or removing T in this population of gender expansive youth, but one can anticipate that for them, too, the reduction of gender dysphoria and increase in psychological well-being that accompanies the hormonal intervention in which an individual consolidates their authentic gender identity, whether it be non-binary or transgender. In that gender is also not a static but evolving human experience, it can be anticipated that the meaning to the youth of the T they received or the T that was removed may also shift over time, as, for example, if a transgender youth receiving testosterone transitions into a young adult with a transmale identity, or vice versa.

To summarize, evidence of the psychological effects of either taking the T out or putting the T in include decrease in gender dysphoria, increase in general well-being, and positive feelings that the youths' bodies are now better aligned with their gender identities.

- T or +T: Shifts in One's Social World

Pullen Sansfacon et al. (2020) emphasize that a youth's experience of their gender consolidation is not just an internal phenomenon but highly interactive with the information and responses they receive from others; in other words, their interactions with the social world: "Despite experiencing some dimensions of the process as being fundamentally personal, most of the dimensions that youth navigate in the process of affirming and consolidating their gender identity are social" (p. 317). Youth in their study indicated that the medical interventions they sought had social significance, as the physical changes facilitated the perception by others of a gender identity they knew themselves to be.

Mirroring is a concept in the psychoanalytic literature capturing the social/interpersonal dimensions of the effects of gender affirming hormonal interventions for youth (Ehrensaft, 2021). As delineated in the work of D.W. Winnicott and Heinz Kohut, others serve as a mirror that reflects back a sense of self-worth and value to an individual. Just as people use a mirror to check appearance, social mirroring involves use of the affirming and positive responses of others to see positive traits within the self (Winnicott, 1970; Kohut, 2009). To feel authentic and vital in the world is to be recognized by others for who you are. Gender affirming hormones not only facilitate internal harmony between body and psyche for the youth; they also allow this type of validating recognition, based on others more likely seeing them as the gender they know themselves to as a result of the changes in appearance effected by hormone replacement. With such accurate mirroring,

the risks of being misgendered are reduced while the opportunities to be acknowledged by others for their authentic gender are enhanced.

The qualitative study conducted in Canada (2019) indicated that among their subjects who were receiving testosterone, the positive body changes that accompanied the administration of the hormones were definitely associated with being read as male more often and more convincingly, which in turn added to an enhanced sense of well-being. As referred to above, the mirroring effects for youth removing the T from the bodies and replacing it with estrogen are not as strong, as permanent changes of their earlier pubertal development are not as easily replaced with feminine attributes without the added interventions of hair removal, voice training, facial feminization and for some, breast augmentation.

There is one caveat to this sex-designated difference in mirroring. Transmale youth receiving the full effects of testosterone without accompanying chest surgery may discover increased chest dysphoria, after first experiencing the positive effects of their treatment with testosterone, for now they are a man with breasts who may be mirrored with confusion by the outside world; or alternatively, they may be startled by their own gaze in an actual mirror. A study conducted at Children's Hospital Los Angeles, which included 68 transmasculine youth who had received testosterone but had not yet undergone chest surgery, chest dysphoria increased by 0.33 points each month that passed between a youth initiating testosterone therapy and then later undergoing surgery (Olson-Kennedy et al, 2018). The increased distress can be understood as located both at an internal and an interpersonal level, as youth grow increasingly discomforted by the possibility that the existence of their breasts will seriously interfere with the potential for being mirrored appropriately in the social world.

Beyond accurate mirroring, social acceptance and reduction in chronic microaggressions are additional social dimensions at play in the introduction or removal of

testosterone from a youth's body. It is not uncommon for some transfeminine youth to hold off on a social transition from male to female until they see some visual effects of their androgen suppression and estrogen treatment, not just for internal psychological reasons, but from awareness that the social world may not receive them well, perhaps even with hostility, until they can arrive at a physical presentation that will be read as female or tending toward feminine. Transmasculine youth are not exempt from this concern about acceptance and microaggressions, but the treatment with testosterone has a stronger effect, and sooner, than treatment with estrogen as a cross-sex hormone that can present to the social world the gender the youth know themselves to be.

Factoring in the added dimension of intersectionality of race, ethnicity, and gender, careful attention to the social dimensions of the effects of gender affirming hormones on gender affirmation and well-being is particularly important for trans youth of color, both transfeminine and transmasculine. A study conducted at UCSF found that Black and LatinX transgender youth indicated even higher rates of gender stress and harassment, without protective factors in place, when compared to white transgender youth (Vance et al., 2021). It could be posited that transgender youth of color will potentially accrue even greater mental health benefits from the increase in positive mirroring and decrease in microaggressions that accompany a better alignment between inner knowledge of one's self and physical presentation of self as the hormones take effect an important consideration given that transyouth of color have also been reported to have less access to gender affirming medical care than their white counterparts (Vance et al, 2021).

What About the Gametes and Future Family Building?

When considering taking the T out or putting the T in, ethical practices include providing youth with information about possible impacts on fertility (Coleman et al, 2012; Hembree et al, 2017). A transmale youth can at a later date discontinue testosterone and allow their body, if they have kept one or both ovaries, to begin producing eggs if they should decide they want to build a family with their own gametes, with the caveat that the testosterone treatment may potentially affect the quality of the eggs they would later produce. A transfemale, if they have kept one or both testicles, can later discontinue their androgen suppression and estrogen treatment, in order to allow mature sperm to form. Either of these potential plans for fertility in the future must come with the warning that long term exposure to exogenous hormones may negatively impact reproductive functioning (Ikeda et al, 2013; Pache et al., 1991; Schulze, 1988). Alternatively, youth requesting gender affirming hormones can choose to undergo fertility preservation prior to any hormone interventions, extracting eggs or sperm and freezing them for later use before they have been exposed to cross-sex hormones.

Both research studies and clinical observations indicate that, when offered, the majority of youth decline fertility preservation prior to going on either testosterone or estrogen (Chen et al., 2017; Nahata et al., 2017). In youth making these choices about gamete preservation, the experiences are in part sex-specific. If considering fertility preservation, extracting sperm is far less invasive and time consuming than extracting eggs, has no physical pain, surgical procedure, or infusion of high doses of endogenous hormones involved, and is far less expensive to store. For young transmales, not only is the procedure more invasive, painful, and costly (both for the procedure and for storage), the association of egg preservation with conceiving or carrying a child has been found to thwart any interest in

preserving gametes for further use (Kyweluk et al, 2018; Armuand et al., 2017). For transfemales, on the other hand, the requirement of masturbation and ejaculation generates its own form of dysphoria, particularly for those who have shied away from any contact with genitalia, a contact associated with high levels of dysphoria. For a young trans woman, considering sperm preservation can also generate the emotional deflation that comes with the realization that at this time in history they will never have a womb of their own in which to grow a child--a trope of womanhood, out of their reach, that is touted around the world. Taking the T out does not make a uterus grow.

In sum, for transmales, association with the reproductive process representing the “gender that is not me” and for transfemales the implicit erotica associated with self-stimulation and ejaculation or the experienced deflation that one component of womanhood will be forever denied is enough to turn away any youth either requesting the addition or subtraction of T from the possibility of “freezing for their future” (Kyweluk et al, 2019). For those who feel conflicted about whether or not to undergo fertility preservation, it can be likened to a “Sophie’s choice”—my own life with gender consolidation through hormones vs. the future possibility of producing another life (Chen et al., 2018).

For youth, considering fertility preservation prior to beginning gender affirming hormones is often a family affair. Not only the youth, but the parents are contemplating their child’s family-building future. For some parents, the focus is on their own desire to become grandparents someday and the grief if that option was foreclosed; for others, they anticipate that their adolescent children cannot accurately predict their later feelings about conceiving a child and want to protect them from decisions they might later regret. In these situations, a parent may put as a stipulation to consenting to gender affirming hormones that the youth

assent to first undergo fertility preservation (Chen et al., 2018). This creates ethical dilemmas in denying youth rights to their own reproductive bodies at the behest of their parents.

Medical advances may be on the cusp of providing widened possibilities for fertility and family building for transgender and gender nonbinary youth seeking gender affirming hormones. At present, however, the sex-linked association with reproduction is one aspect of a youth's sex designated at birth that becomes difficult to discard as young people turn to either estrogen or testosterone to reach toward their consolidated gender self.

Should youth require parental consent to either remove T or put T in?

The gender affirmative model is built on the premise that establishing a gender identity is a life-long process, rather than a developmental milestone with a set end-point (Keo-Meier and Ehrensaft, 2018; Pullen Sansfacon et al, 2019). The implication is that there will never be 100% gender certainty at the time in which a youth requests gender affirming hormones. The youth are still in the thrust of the last stage of childhood development, adolescence, often regarded in Western culture as a turbulent time, and the myelin sheath of their brains will not be fully developed until they reach the age of 25. Lastly, the gender affirmative model of pediatric care has moved from an ages to stages approach, an individualized protocol in which the developmental status and psychological readiness is privileged over pre-set chronological age norms for time at which a youth is eligible for gender affirming hormones (Keo-Meier & Ehrensaft, 2018). All of these factors give many people pause as to whether a youth is able to consent to a medical treatment, testosterone or estrogen, that is only partially reversible and with possible compromises on their future fertility.

De Vries et al. provided the following guideline: “psychological maturity and the capacity to give full informed consent may surface as the required criteria for puberty suppression and CSH [cross-sex hormones] in cases that meet other eligibility requirements” (De Vries et al, 2014, p. 703). Exploring this premise, Riggs et al.’s qualitative study of youth in Australia receiving gender affirming hormones concluded that the young people know who they were, knew their gender, and knew the services they needed moving forward, which included gender affirming hormones (Riggs et al, 2019). A similar study conducted in British Columbia demonstrated that providers, parents, and youth all have different perspectives on youths’ capacity to make mature decisions about receiving gender affirming hormones, with parents holding the most concerns about their children having the capacity to look into the future and weigh those factors as they made decisions in the present to change their bodies. Yet all three groups were in agreement that overall, youth are capable of governing their own gender-affirming medical care (Clarke and Virani, 2021). A third qualitative study of youth conducted in Canada concluded: “youth demonstrated their ability to identify and assert needs such as prompt access to services and medication. They clearly delineate the substantial benefits they draw from the care they receive when it is timely and responsive” (Pullen Sansfacon, 2019, p. 282)

In 2020 a court decision in the UK, *Bell v. Tavistock*, challenged this perspective, one supported by the WPATH and Endocrine Societies’ standards of care or practice guidelines (Coleman et al., Hembree et al.) by ruling that no youth under the age of sixteen would be eligible for gender affirming medical care, including puberty blockers or hormones, without approval by the court (*Quincy Bell v. Tavistock*, 2020). In the court’s ruling, they determined that under the Gillick principle, referring to a youth’s ability to consent to medical care (*Gillick v West Norfolk and Wisbech*, 1986), it was highly unlikely that child

age 13 or under would be capable of having those abilities, doubtful that a child 14 or 15 would be able to understand and weigh long-term risks and consequences, and possible that in certain situations of youth over 16 providers should seek authorization by the court before receiving gender affirming hormonal care (Quincy Bell v. Tavistock, 2020). The implications of this court ruling have reverberated across the globe, with serious implications for youth desiring to remove T or insert T in their bodies and their ability to receive such services. From a human rights perspective, “Denying trans youth the right to access hormone therapy would therefore clearly be an affront to their right to development and potentially their right to survival” (Clarke and Virani, 2021). From a mental health perspective, creating such barriers to care has significant implications for compromising the well-being of youth who have demonstrated an increase in well-being and a decrease in depression, anxiety, self-harm, and suicidality following treatment with gender-affirming hormones, as cited above. Youth in early to mid- rather than late adolescence are at particular risk, as they are the age group asserted to be least capable of making informed medical decisions, despite empirical evidence indicating otherwise (Riggs et al., 2019; Clarke and Virani, 2021; Pullen Sansfacon et al., 2019). A second vulnerable group are the youth who identify as non-binary, a category that was not initially included when more binary models of gender affirming medical care were put into practice and sometimes looked at askance by providers and parents alike, with questions about the stability of these new iterations of gender among youth (Diamond, 2020).

For youth under the age of majority, a solution to this challenge of their cognitive capacities is to institute a dual model: youth assent and adult consult. In many programs that provide gender affirming medical care to youth, parental consent is required in order for the youth to take the T out or put T in their bodies (Hein et al, 2016). In this manner, the ability of the youth to comprehend and make informed decisions about their medical care is

acknowledged (Schumer and Tishelman, 2015), and the legal consent of the parents ensures that the family as a whole has considered the risks and benefits of the procedure and agrees to go forward with the requested treatment. This translates to these youth requiring the support of their parents to receive treatment. On the one hand, this ensures that the child receives the full benefit of parental input into significant decisions related to the child's health and well-being. On the other hand, if support is not forthcoming for beginning a course of gender affirming hormone is not forthcoming, the youth may find themselves treading water until they old enough to legally consent to their own treatment. This holding pattern can come with potential harm to their mental health as they struggle with increased levels of gender dysphoria and distress in the face of one or both parents' refusal to allow them to go forward with medical affirming medical care (Dubin et al., 2020; Kimberly et al, 2018; Riggs et al., 2019). Courts or legal statutes may be called into play to protect the youth in those situations, with mental health professionals stepping in to work with the entire family to move beyond the impasse. It behooves clinicians to pay attention to these significant risk factors and potential barriers to care as they consider the ethics of their assent/consent practices for taking the T out or putting the T in among our transgender/gender-nonbinary youth.

Conclusion

The cohort of youth who come to medical providers after completing puberty and request gender affirming hormones both have a great deal in common and also extensive variation among them. Those who were designated female at birth and identify as transmasculine or lean toward masculine will want to suppress the estrogen in their bodies and replace it with testosterone. Those designated male at birth and identifying as transfeminine or leaning toward feminine will want to suppress the testosterone in their

bodies and replace it with estrogen. To date, clinical observations and research data indicate these youth may range in age from 12 to 18. No matter what their request and no matter what their stated gender identity, the task for the medical provider will be to work with the family and allied professionals involved in the youth's care to assure that the youth's gender health is enhanced, barriers to care are removed, and mental health risks are reduced, whether the T is coming out or going in.

Conflicts of Interest:

The authors have no conflict of interest to disclose.

References:

Aitken M, Steensma TD, Blanchard R, VanderLaan DP, Wood H, Fuentes A, Spegg C, Wasserman L, Ames M, Fitzsimmons CL, Leef JH, Lishak V, Reim E, Takagi A, Vinik J, Wreford J, Cohen-Kettenis PT, de Vries AL, Kreukels BP, Zucker KJ. Evidence for an altered sex ratio in clinic-referred adolescents with gender dysphoria. *J Sex Med*. 2015 Mar;12(3):756-63. doi: 10.1111/jsm.12817. Epub 2015 Jan 22. PMID: 25612159.

Armuaud G, Dhejne C, Olofsson JI, Rodriguez-Wallberg KA. Transgender men's experiences of fertility preservation: a qualitative study. *Hum Reprod*. 2017 Feb;32(2):383-390. doi: 10.1093/humrep/dew323. Epub 2016 Dec 19. PMID: 27999119.

Chen D, Simons L, Johnson EK, Lockart BA, Finlayson C. Fertility Preservation for Transgender Adolescents. *J Adolesc Health*. 2017 Jul;61(1):120-123. doi: 10.1016/j.jadohealth.2017.01.022. Epub 2017 Mar 28. PMID: 28363716; PMCID: PMC5604229.

Chen, D, Abrams, M, Clark, L, Ehrensaft, D, Tishelman, AC, Chan, YM., Garofalo, R, Olson-Kennedy, J, Rosenthal, SM, & Hidalgo, MA (2020). Psychosocial Characteristics of Transgender Youth Seeking Gender-Affirming Medical Treatment: Baseline Findings from the Trans Youth Care Study. *Journal of Adolescent Health*. 2020
<https://doi.org/10.1016/j.jadohealth.2020.07.033>

Chew, D, Anderson, J, Williams, K, May, T, Pang, K. Hormonal Treatment in Young People with gender dysphoria: A Systematic Review. *Pediatric*. 2018; 14(4):e20173742

Clarke, B & Virani A. This wasn't a split-second decision: An empirical ethical analysis of transgender youth capacity, rights, and authority to consent to hormone therapy. *Bioethical Inquiry*. 2021;<https://doi.org/10.1007/s11673-020-10086-9>

Coleman E, Bockting W, Botzer M, Cohen-Kettenis P, DeCuypere G, Feldman J, Fraser L, Green J, Knudson G, Meyer WJ, Monstrey S, Adler RK, Brown GR, Devor AH, Ehrbar R, Ettner R, Eyler E, Garofalo R, Karasic DH, Lev AI, Mayer G, Meyer-Bahlburg H, Hall BP, Pfaefflin F, Rachlin K, Robinson B, Schechter LS, Tangpricha V, van Trotsenburg M, Vitale A, Winter S, Whittle S, Wylie KR, & K. Zucker K. Standards of Care for the Health of Transsexual, Transgender, and Gender-Nonconforming People, Version 7. *International Journal of Transgenderism*, 2011; 13:165–232, World Professional Association for Transgender Health ISSN: 1553-2739 print / 1434-4599 online DOI: 10.1080/15532739.2011.700873

De Vries AL, Doreleijers TA, Steensma TD, Cohen-Kettenis PT. Psychiatric comorbidity in gender dysphoric adolescents. *J Child Psychol Psychiatry*. 2011 Nov;52(11):1195-202. doi: 10.1111/j.1469-7610.2011.02426.x. Epub 2011 Jun 14. PMID: 21671938.

De Vries AL, McGuire JK, Steensma TD, Wagenaar EC, Doreleijers TA, Cohen-Kettenis PT. Young adult psychological outcome after puberty suppression and gender reassignment. *Pediatrics*. 2014 Oct;134(4):696-704. doi: 10.1542/peds.2013-2958. Epub 2014 Sep 8. PMID: 25201798.

Diamond L. Gender fluidity and nonbinary gender identities among children and adolescent. *Society for Research in Child Development*. 2020;14(2):110-115, DOI:10.1111/cdep12366

Dubin S, Lane M, Morrison S, Radix A, Belkind U, Vercler C, Inwards-Breland D. Medically assisted gender affirmation: when children and parents disagree. *J Med Ethics*. 2020 May;46(5):295-299. doi: 10.1136/medethics-2019-105567. Epub 2019 Dec 31. PMID: 31892617.

Ehrensaft D. *Gender Born, Gender Made*. 2011. New York: The Experiment.

Ehrensaft, D. *The Gender Creative Child*. 2016. New York: The Experiment.

Ehrensaft D. Psychoanalysis meets transgender children: The best of times and the worst of times. *Psychoanalytic Perspectives*, 2021;18:1:68-91, DOI: [10.1080/1551806X.2021.1845022](https://doi.org/10.1080/1551806X.2021.1845022)

Gillick v West Norfolk and Wisbech AHA AC 112 ((HL)) 1986

Hein IM, De Vries MC, Troost PW, Meynen G, Van Goudoever JB, Lindauer RJ. Informed consent instead of assent is appropriate in children from the age of twelve: policy implications of new findings on children's competence to consent to clinical research. *BMC Med Ethics*. 2015;**16**(1):76pmid:26553304

Hembree, WC, Cohen-Kettenis, PT, Gooren, L, Hannema, S.E., Meyer, WJ, Murad, MH, Rosenthal, SM, Safer, JD, Tangpricha, V, T'Sjoen, GG. Endocrine treatment of gender-dysphoric/gender-incongruent Persons: An Endocrine Society Clinical Practice Guideline. *The Journal of Clinical Endocrinology & Metabolism*. 2017;**102**(11): 3869–3903, <https://doi.org/10.1210/jc.2017-01658>

Holt V, Skagerberg E, Dunsford M. Young people with features of gender dysphoria: Demographics and associated difficulties. *Clin Child Psychol Psychiatry*. 2016 Jan;**21**(1):108-18. doi: 10.1177/1359104514558431. Epub 2014 Nov 26. PMID: 25431051.

Ikeda K, Baba T, Noguchi H, Nagasawa K, Endo T, Kiya T, Saito T. Excessive androgen exposure in female-to-male transsexual persons of reproductive age induces hyperplasia of the ovarian cortex and stroma but not polycystic ovary morphology. *Hum Reprod*. 2013 Feb;**28**(2):453-61. doi: 10.1093/humrep/des385. Epub 2012 Nov 27. PMID: 23188113.

Keo-Meier C & Ehrensaft D. *The Gender Affirmative Model: An Interdisciplinary Approach to Supporting Transgender and Gender Expansive Children*. 2018. Washington, DC: American Psychological Association Publications.

Kimberly LL, Folkers KM, Friesen P, et al. Ethical issues in gender-affirming care for youth. *Pediatrics*. 2018;**142**(6):e20181537

Kohut D. *The Restoration of the Self*. 2009. Chicago: University of Chicago Press.

Kuper L, Mathews S, Lau M. Baseline mental health and psychosocial functioning of transgender adolescents seeking gender-affirming hormone therapy. *Journal of Developmental & Behavioral Pediatrics*: [October/November 2019 - Volume 40 - Issue 8 - p 589-596](#)
doi: 10.1097/DBP.0000000000000697

Kuper LE, Stewart S, Preston S, Lau M. and Lopez X. Body dissatisfaction and mental health outcomes of youth on gender-affirming hormone therapy. *Pediatrics* April 2020, **145** (4) e20193006; DOI: <https://doi.org/10.1542/peds.2019-3006>

Kyweluk, MA, Afiya Sajwani, A, & Chen. D. (2018) Freezing for the future: Transgender youth respond to medical fertility preservation, *International Journal of Transgenderism*, **19**:4, 401-416, DOI: [10.1080/15532739.2018.1505575](https://doi.org/10.1080/15532739.2018.1505575)

Nahata L, Tishelman AC, Caltabellotta NM, Quinn GP. Low Fertility Preservation Utilization Among Transgender Youth. *J Adolesc Health*. 2017 Jul;61(1):40-44. doi: 10.1016/j.jadohealth.2016.12.012. Epub 2017 Feb 1. PMID: 28161526.

Olson J, Schrager SM, Belzer M, Simons LK, Clark LF. Baseline Physiologic and Psychosocial Characteristics of Transgender Youth Seeking Care for Gender Dysphoria. *J Adolesc Health*. 2015 Oct;57(4):374-80. doi: 10.1016/j.jadohealth.2015.04.027. Epub 2015 Jul 21. PMID: 26208863; PMCID: PMC5033041.

Olson-Kennedy J, Warus J, Okonta V, Belzer M, Clark LF. Chest Reconstruction and Chest Dysphoria in Transmasculine Minors and Young Adults: Comparisons of Nonsurgical and Postsurgical Cohorts. *JAMA Pediatr*. 2018 May 1;172(5):431-436. doi: 10.1001/jamapediatrics.2017.5440. PMID: 29507933; PMCID: PMC5875384.

Pache TD, Chadha S, Gooren LJ, Hop WC, Jaarsma KW, Dommerholt HB, Fauser BC. Ovarian morphology in long-term androgen-treated female to male transsexuals. A human model for the study of polycystic ovarian syndrome? *Histopathology*. 1991 Nov;19(5):445-52. doi: 10.1111/j.1365-2559.1991.tb00235.x. PMID: 1757084.

Peterson CM, Matthews A, Copps-Smith E, Conard LA. Suicidality, Self-Harm, and Body Dissatisfaction in Transgender Adolescents and Emerging Adults with Gender Dysphoria. *Suicide Life Threat Behav*. 2017 Aug;47(4):475-482. doi: 10.1111/sltb.12289. Epub 2016 Aug 19. PMID: 27539381.

Pullen Sansfacon A, Medico D, Suerich-Gulick F, Temple-Newhook, J. (2020). "I knew I wasn't cis, I knew that, but I didn't know exactly": Gender identity development, expression and affirmation in youth who access gender affirming medical care. *International Journal of Transgenderism*. 2020; 21(4): 307-320.

Pullen Sansfaçon A, Temple-Newhook J, Suerich-Gulick F, Feder S, Lawson ML, Ducharme J, Ghosh S, Holmes C; Stories of Gender-Affirming Care Team. The experiences of gender diverse and trans children and youth considering and initiating medical interventions in Canadian gender-affirming specialty clinics. *Int J Transgend*. 2019 Aug 30;20(4):371-387. doi: 10.1080/15532739.2019.1652129. PMID: 32999623; PMCID: PMC6913674.

Questions and answers WHO: changes in the classification of gender incongruence (transgender) in the new ICD-11. Geneva: World Health Organization; 2018.

Quincy Bell v. Tavistock and Portman NHS Foundation Trust, Royal Courts of Justice, Strand, London, Neutral Citation Number [2020] EWHC3274 (Admin)

Reisner SL, Veters R, Leclerc M, Zaslow S, Wolfrum S, Shumer D, Mimiaga MJ. Mental health of transgender youth in care at an adolescent urban community health center: a matched retrospective cohort study. *J Adolesc Health*. 2015 Mar;56(3):274-9. doi: 10.1016/j.jadohealth.2014.10.264. Epub 2015 Jan 7. PMID: 25577670; PMCID: PMC4339405.

Riggs DW, Bartholomaeus C, Sansfaçon AP. 'If they didn't support me, I most likely wouldn't be here': Transgender young people and their parents negotiating medical treatment in Australia. *Int J Transgend Health*. 2019;21(1):3-15. Published 2019 Nov 20. doi:10.1080/15532739.2019.1692751

E. Riley. Bullies, blades, and barricades: Practical considerations for working with adolescents expressing concern regarding gender and identity. *International Journal of Transgenderism*. 2018;19(2):203-211.

Röder M, Barkmann C, Richter-Appelt C, Schulte-Markwort M, Ravens-Sieberer U & Inga Becker (2018) Health-related quality of life in transgender adolescents: Associations with body image and emotional and behavioral problems, *International Journal of Transgenderism*.2018; 19(1):78-91, DOI: [10.1080/15532739.2018.1425649](https://doi.org/10.1080/15532739.2018.1425649)

Schulze C. Response of the human testis to long-term estrogen treatment: morphology of Sertoli cells, Leydig cells and spermatogonial stem cells. *Cell Tissue Res*. 1988 Jan;251(1):31-43. doi: 10.1007/BF00215444. PMID: 3342442.

Sorbara, JC, Chiniara, LN, Thompson, S, Palmert, MR. Mental Health and timing of Gender-Affirming Care. *Pediatrics*; 2020;146(4):e20193600.

Spack NP, Edwards-Leeper L, Feldman HA, Leibowitz S, Mandel F, Diamond DA, Vance SR. Children and adolescents with gender identity disorder referred to a pediatric medical center. *Pediatrics*. 2012 Mar;129(3):418-25. doi: 10.1542/peds.2011-0907. Epub 2012 Feb 20. PMID: 22351896.

Schumer DE, Tishelman AC. The role of Assent in the treatment of transgender adolescents. *Int J Transgend* 2015;16(2):97–102.[doi:10.1080/15532739.2015.1075929](https://doi.org/10.1080/15532739.2015.1075929)

Vance SR, Boyer CB, Gidden, DV, Sevelius, J. Mental health and psychological risk and protective factors among Black and Latinx transgender youth compared with peers. *JAMA Network Open*.2021;4(3):e213256. Doi:10.1001/jamanetworkopen.2021.3256

Winnicott, DW. *Playing and Reality*. London: Tavistock Publications, 1971.