Gender Dysphoria in Children

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ABSTRACT: Gender dysphoria (GD) of childhood describes a psychological condition in which children experience a marked incongruence between their experienced gender and the gender associated with their biological sex. When this occurs in the pre-pubertal child, GD resolves in the vast majority of patients by late adolescence. Currently there is a vigorous, albeit suppressed, debate among physicians, therapists, and academics regarding what is fast becoming the new treatment standard for GD in children. This new paradigm is rooted in the assumption that GD is innate, and involves pubertal suppression with gonadotropin releasing hormone (GnRH) agonists followed by the use of cross-sex hormones—a combination that results in the sterility of minors. A review of the current literature suggests that this protocol is founded upon an unscientific gender ideology, lacks an evidence base, and violates the long-standing ethical principle of "First do no harm."

Gender Dysphoria in Children: This Debate Concerns More than Science

Gender is a term that refers to the psychological and cultural characteristics associated with biological sex.[1] It is a psychological concept and sociological term, not a biological one. Gender identity refers to an individual's awareness of being male or female and is sometimes referred to as an individual's "experienced gender." Gender dysphoria (GD) in children describes a psychological condition in which they experience marked incongruence between their experienced gender and the gender associated with their biological sex. They often express the belief that they are the opposite sex.[2] The prevalence rates of GD among children has been estimated to be less than 1%.[3] Sex differences in rate of referrals to specialty clinics vary by age. In pre-pubertal children, the ratio of boys to girls ranges from 2:1 to 4.5:1. In adolescents, the sex ratio is close to parity; in adults, the ratio of males to females range from 1:1 to 6.1:1.[2]

The debate over how to treat children with GD is primarily an ethical dispute; one that concerns physician worldview as much as science. Medicine does not occur in a moral vacuum; every therapeutic action or inaction is the result of a moral judgment of some kind that arises from the physician's philosophical worldview.

Medicine also does not occur in a political vacuum and being on the wrong side of sexual politics can have severe consequences for individuals who hold the politically incorrect view.

As an example, Dr. Kenneth Zucker, long acknowledged as a foremost authority on gender identity issues in children, has also been a lifelong advocate for gay and transgender rights. However, much to the consternation of adult transgender activists, Zucker believes that gender-dysphoric pre-pubertal children are best served by helping them align their gender identity with their anatomic sex. This view ultimately cost him his 30-year directorship of the Child Youth and Family Gender Identity Clinic (GIC) at the Center for Addiction and Mental Health in Toronto.[4,5]

Many critics of pubertal suppression hold a modernist teleological worldview. They find it self-evident that there is a purposeful design to human nature, and that cooperation with this design leads to human flourishing. Others, however, identify as post-modernists who reject teleology. What unites the two groups is a traditional interpretation of "First do no harm." For example, there is a growing online community of gay-affirming physicians, mental health professionals, and academics with a webpage entitled "First, do no harm: youth trans critical professionals." They write:

> *We are concerned about the current trend to quickly diagnose and affirm young people as transgender, often setting them down a path toward medical transition…. We feel that unnecessary surgeries and/or hormonal treatments which have not been proven safe in the long-term represent significant risks for young people. Policies that encourage—either directly or indirectly—such medical treatment for young people who may not be able to evaluate the risks and benefits are highly suspect, in our opinion.*[6]

Advocates of the medical interventionist paradigm, in contrast, are also post-modernists but hold a subjective view of "First do no harm." Dr. Johanna Olson-Kennedy, an adolescent medicine specialist at Children's Hospital Los Angeles, and leader in pediatric gender transitioning, has stated that "[First do no harm] is really subjective. [H]istorically we come from a very paternalistic perspective… [in which] doctors are really given the purview of deciding what is going to be harmful and what isn't. And that, in the world of gender, is really problematic."[7] Not only does she claim that "First do no harm" is subjective, but she later also states that it should be left to the child decide what constitutes harm based upon their own subjective thoughts and feelings.[7] Given the cognitive and experiential immaturity of the child and adolescent, the American College of Pediatricians (ACPeds) finds this highly problematic and unethical.

Gender dysphoria as the result of an innate internal sexed identity

Professor of social work, Dr. William Brennan, has written that "[t]he power of language to color one's view of reality is profound."[8] It is for this reason that linguistic engineering always precedes social engineering — even in medicine. Many hold the mistaken belief that gender once meant biological sex. Though the terms are often used interchangeably they were never truly synonymous.[9,10] Feminists of the late 1960's and 1970's used gender to refer to a "social sex" that could differ from one's "biological sex" in order to overcome unjust discrimination against women rooted in sex stereotypes. These feminists are largely responsible for mainstreaming the use of the word gender in place of sex. More recently, in an attempt to eliminate heteronormativity, queer theorists have expanded gender into an excess of 50 categories by merging the concept of a social sex with sexual attractions.[9] However, neither usage reflects the original meaning of the term.

Prior to the 1950s, gender meant male or female, but applied only to grammar not persons.[9,10] Latin based languages categorize nouns and their modifiers as masculine or feminine and for this reason are still referred to as having a gender. This changed during the 1950s and 1960s as sexologists realized that their sex reassignment agenda could not be sufficiently defended using the words sex and transsexual. From a purely scientific standpoint, human beings possess a biologically determined sex and innate sex differences. No sexologist could actually change a person's genes through hormones and surgery. Sex change is objectively impossible. Their solution was to hijack the word gender and infuse it with a new meaning that applied to persons.

John Money, PhD was among the most prominent of these sexologists who redefined gender to mean "the social performance indicative of an internal sexed identity".[10] In essence, these sexologists invented the ideological foundation necessary to justify their treatment of transsexualism with sex reassignment surgery and called it gender. It is this man-made ideology of an innate and immutable "internal sexed identity" that now dominates mainstream medicine, psychiatry and academia. This linguistic history makes it clear that gender is not and never has been a biological or scientific entity. Rather, gender is a socially and politically constructed concept.

In their "Overview of Gender Development and Gender Nonconformity in Children and Adolescents," Forcier and Olson-Kennedy dismiss the binary model of human sexuality as "ideology" and present an "alternate perspective" of "innate gender identity" that presents along a "gender continuum." They recommend that pediatricians tell parents that a child's "real gender" is what he or she feels it to be because "a child's brain and body may not be on the same page."[11]

Forcier and Olson-Kennedy's claim of an innate discordance between a child's brain and the rest of the body derives from diffusion-weighted MRI scans that demonstrate the pubertal testosterone surge in boys increases

white matter volume, as well as from brain studies of adults who identify as transgender. A study by Rametti and colleagues found that the white matter microstructure of the brains of female-to-male (FtM) transsexual adults, who had not begun testosterone treatment, more closely resembled that of men than that of women.[12] Other diffusion-weighted MRI studies have concluded that the white matter microstructure in both FtM and male-to-female (MtF) transsexuals falls halfway between that of genetic females and males.[13] These and more recent studies, however, fail to prove causation due to several design flaws. A properly designed brain difference study needs to be prospective and longitudinal; it would require a large randomly selected population based sample of a fixed set of individuals, would follow them with serial brain imaging from infancy through adulthood, and would have to be replicated. Not one brain study to date meets a single one of these requirements to be considered rigorous research design. Even if they did, causation would not be certain due to neuroplasticity.

Neuroplasticity

Neuroplasticity is the well-established phenomenon in which thinking and behavior alters brain microstructure. There is no evidence that people are born with brain microstructures that are forever unalterable, but there is significant evidence that experience changes brain microstructure.[14] Therefore, if scientifically rigorous studies ever do identify transgender brain differences, these differences will still more likely be the result of transgender behavior rather than its cause.

More importantly, however, is the fact that the brains of all male infants are masculinized prenatally by their own endogenous testosterone, which is secreted from their testes beginning at approximately eight weeks' gestation. Female infants, of course, lack testes, and therefore, do not have their brains masculinized by endogenous testosterone.[15,16,17] For this reason, barring maternal exposure to androgens or one of the rare disorders of sex development (DSDs), boys are not born with feminized brains, and girls are not born with masculinized brains.

Genetic Determinism

Might gender identity be genetically determined? Behavior geneticists have known for decades that while genes *influence* behavior, they do not hard-wire a person to think, feel, or behave in a particular way. The science of epigenetics has established that genes are not analogous to rigid "blueprints" for behavior. Rather, humans "develop traits through the dynamic process of gene-environment interaction… [genes alone] don't determine who we are."[18] Regarding the etiology of transgenderism, twin studies of adult transsexuals prove definitively that genetic influence is far less than that of environmental factors.

Twin studies are instrumental in elucidating whether genes or environmental factors contribute more significantly to a particular trait. Since monozygotic twins are conceived with exactly the same DNA, and spontaneous mutations before birth are rare, traits that are solely determined by genes, will manifest in both identical twins close to if not exactly 100 percent of the time. Skin color is an example of a trait that identical twins share virtually 100 percent of the time because it is solely determined by genes.

The largest transsexual twin study to date examines 110 twin pairs and was published by Dr. Milton Diamond in the May 2013 issue of the International Journal of Transgenderism.[19] Table 5 documents that the number of monozygotic twin pairs concordant for transsexualism is greater than that of dizygotic twin pairs. This suggests a possible biological predisposition for gender dysphoria. The most significant data entry, however, is the low number of concordant monozygotic twin pairs. Only 21 monozygotic twin pairs out of a total of 74 monozygotic pairs, or 28 percent, were concordant for transsexualism; the remaining 72 percent of identical twins were discordant for transsexualism.

This means that environmental factors trump any biological predisposition. Environmental factors account for nearly 75 percent of what causes transsexualism in one twin and not in the other; and since identical twins develop in the same uterus, non-shared post-birth experiences are likely to have a greater influence than the prenatal environment. A high 72 percent discordance rate among identical twins proves that no one is born pre-determined to have gender dysphoria let alone pre-determined to identify as transgender or transsexual.

This is what would be expected given the dramatic rates of resolution of gender dysphoria documented among children when they are not encouraged to impersonate the opposite sex. The low concordance rate also supports the theory that persistent GD is due predominantly to the impact of non-shared environmental influences upon certain biologically vulnerable children. To be clear, twin studies alone establish that the "alternative perspective" of an "innate gender identity" trapped in the wrong body is in fact an ideological belief that has no basis in rigorous science.

A teleological binary view of human sexuality, in contrast, is compatible with biological reality. The norm for human design is to be conceived either male or female. Sex chromosome pairs "XY" and "XX" are genetic determinants of sex, male and female, respectively. They are not genetic markers of a disordered body or birth defect. Human sexuality is binary by design with the purpose being the reproduction of our species. This principle is self-evident. Barring one of the rare disorders of sex development (DSD), no infant is "assigned" a sex or a gender at birth. Sex declares itself anatomically in utero and is clearly evident and acknowledged at birth.

Disorders of sex development (DSDs), including but not limited to androgen insensitivity syndrome and congenital adrenal hyperplasia, affect less than 0.02 percent of the population.[20] These disorders are all medically identifiable deviations from the human binary sexual norm. Unlike individuals with a normal genotype and hormonal axis who identify as "transgender," those with DSDs have an innate biological condition. Sex assignment in individuals with DSDs can be complex and depends on a variety of genetic, hormonal, and physical factors. Nevertheless, the 2006 consensus statement of the Intersex Society of North America did not endorse DSD as a third sex.[21]

Post-natal Factors Predominate in the Development and Persistence of GD

Identical twin studies demonstrate that environmental factors, especially post-natal non-shared events, predominate in the development and persistence of gender dysphoria. This is not surprising since it is well accepted that a child's emotional and psychological development is impacted by positive and negative experiences from infancy forward. Family and peer relationships, one's school and neighborhood, the experience of any form of abuse, media exposure, chronic illness, war, and natural disasters are all examples of environmental factors that impact an individual's emotional, social, and psychological development. *There is no single family dynamic, social situation, adverse event, or combination thereof that has been found to destine any child to develop GD.* This fact, together with twin studies, suggests that there are many paths that may lead to GD in certain predisposed children.

The literature regarding the etiology and psychotherapeutic treatment of childhood GD is heavily based upon clinical case studies. These studies suggest that social reinforcement, parental psychopathology, family dynamics, and social contagion -facilitated by mainstream and social media, all contribute to the development and/or persistence of GD in some vulnerable children. There may be other as yet unrecognized contributing factors as well.

Most parents of children with GD recall their initial reactions to their child's cross-sex dressing and other cross-sex behaviors to have been tolerance and/or encouragement. Sometimes parental psychopathology is at the root of the social reinforcement. For example, among mothers of boys with GD who had desired daughters, a small subgroup experienced what has been termed "pathologic gender mourning." Within this subgroup the mother's desire for a daughter was acted out by the mother actively cross-dressing her son as a girl. These mothers typically suffered from severe depression that was relieved when their sons dressed and acted in a feminine manner.[22]

A large body of clinical literature documents that fathers of feminine boys report spending less time with their sons between the ages of two and five as compared with fathers of control boys. This is consistent with data that shows feminine boys feel closer to their mothers than to their fathers. In his clinical studies of boys with GD, Stoller observed that most had an overly close relationship with their mother and a distant, peripheral relationship with their father. He postulated that GD in boys was a "developmental arrest … in which an excessively close and gratifying mother-infant symbiosis, undisturbed by father's presence, prevents a boy from adequately separating himself from his mother's female body and feminine behavior."[22]

It has also been found that among children with GD, the rate of maternal psychopathology, particularly depression and bipolar disorder is "high by any standard." Additionally, a majority of the fathers of GD boys are easily threatened, exhibit difficulty with affect regulation, and possess an inner sense of inadequacy. These fathers typically deal with their conflicts by overwork or otherwise distance themselves from their families. Most often, the parents fail to support one another, and have difficulty resolving marital conflicts. This produces an intensified air of conflict and hostility. In this situation, the boy becomes increasingly unsure about his own self-value because of the mother's withdrawal or anger and the father's failure to intercede. The boy's anxiety and insecurity intensify, as does his anger, which may all result in his inability to identify with his biological sex.[23]

Systematic studies regarding girls with GD and the parent-child relationship have not been conducted. However, clinical observations suggest that the relationship between mother and daughter is most often distant and marked by conflict, which may lead the daughter to disidentify from the mother. In other cases, masculinity is praised while femininity is devalued by the parents. Furthermore, there have been cases in which girls are afraid of their fathers who may exhibit volatile anger up to and including abuse toward the mother. A girl may perceive being female as unsafe, and psychologically defend against this by feeling that she is really a boy; subconsciously believing that if she were a boy she would be safe from and loved by her father.[22]

There is evidence that psychopathology and/or developmental diversity may precipitate GD in adolescents, particularly among young women. Recent research has documented increasing numbers of adolescents who present to adolescent gender identity clinics and request sex reassignment (SR). Kaltiala-Heino and colleagues sought to describe the adolescent applicants for legal and medical sex reassignment during the first two years of an adolescent gender identity clinic in Finland, in terms of sociodemographic, psychiatric, and gender identity related factors and adolescent development. They conducted a structured quantitative retrospective chart review and qualitative analysis of case files of all adolescent SR applicants who entered the assessment by the end of 2013. They found that the number of referrals exceeded expectations in light of epidemiological knowledge.

Natal girls were markedly overrepresented among applicants. Severe psychopathology preceding the onset of GD was common. Many youth were on the autism spectrum. These findings do not fit the commonly accepted image of a gender dysphoric child. The researchers conclude that treatment guidelines need to consider GD in minors in the context of severe psychopathology and developmental difficulties.[24]

A recent study has documented an increasing trend among adolescents to self-diagnose as transgender after binges on social media sites such as Tumblr, Reddit, and YouTube.[25] This suggests that social contagion may be at play. In many schools and communities, there are entire peer groups "coming out" as trans at the same time.[25] Finally, strong consideration should be given to investigating a causal association between adverse childhood events, including sexual abuse, and transgenderism. The overlap between childhood gender discordance and an adult homosexual orientation has long been acknowledged.[26] There is also a large body of literature documenting a significantly greater prevalence of childhood adverse events and sexual abuse among homosexual adults as compared to heterosexual adults. Andrea Roberts and colleagues' published a study in 2013 that found "half to all of the elevated risk of childhood abuse among persons with same-sex sexuality compared to heterosexuals was due to the effects of abuse on sexuality."[27] It is therefore possible that some individuals develop GD and later claim a transgender identity as a result of childhood maltreatment and/or sexual abuse. This is an area in need of research.

GD as an Objective Mental Disorder

Psychology has increasingly rejected the concept of norms for mental health, focusing instead on emotional distress. The American Psychiatric Association (APA), for example, explains in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) that GD is listed therein not due to the discrepancy between the individual's thoughts and physical reality, but due to the presence of emotional distress that hampers social functioning. The DSM-5 also notes that a diagnosis is required for insurance companies to pay for cross-sex hormones and sex reassignment surgery (SRS) to alleviate the emotional distress of GD. Once the distress is relieved, GD is no longer considered a disorder.[2]

There are problems with this reasoning. Consider the following examples: a girl with anorexia nervosa has the persistent mistaken belief that she is obese; a person with body dysmorphic disorder (BDD) harbors the erroneous conviction that she is ugly; a person with body integrity identity disorder (BIID) identifies as a disabled person and feels trapped in a fully functional body. Individuals with BIID are often so distressed by their fully capable bodies that they seek surgical amputation of healthy limbs or the surgical severing of their spinal cord.[28] Dr. Anne Lawrence, who is transgender, has argued that BIID has many parallels with GD.[29] The aforementioned false beliefs, like GD, are not merely emotionally distressing for the individuals but also life-

threatening. In each case, surgery to "affirm" the false assumption (liposuction for anorexia, cosmetic surgery for BDD, amputation or surgically induced paraplegia for BIID, sex reassignment surgery for GD) may very well alleviate the patient's emotional distress, but will do nothing to address the underlying psychological problem, and may result in the patient's death. Completely removed from physical reality, the art of psychotherapy will diminish as the field of psychology increasingly devolves into a medical interventionist specialty, with devastating results for patients.

Alternatively, a minimal standard could be sought. Normality has been defined as "that which functions according to its design."[30] One of the chief functions of the brain is to perceive physical reality. Thoughts that are in accordance with physical reality are normal. Thoughts that deviate from physical reality are abnormal—as well as potentially harmful to the individual or to others. This is true whether or not the individual who possesses the abnormal thoughts feels distress. A person's belief that he is something or someone he is not is, at best, a sign of confused thinking; at worst, it is a delusion. Just because a person thinks or feels something does not make it so. This would be true even if abnormal thoughts were biologically "hardwired."

The norm for human development is for an individual's thoughts to align with physical reality; for an individual's gender identity to align with biologic sex. People who identify as "feeling like the opposite sex" or "somewhere in between" or some other category do not comprise a third sex. They remain biological men or biological women. GD is a problem that resides in the mind not in the body. Children with GD do not have a disordered body—even though they feel as if they do. Similarly, a child's distress over developing secondary sex characteristics does not mean that puberty should be treated as a disease to be halted, because puberty is not, in fact, a disease. Likewise, although many men with GD express the belief that they are a "feminine essence" trapped in a male body, this belief has no scientific basis.

Until recently, the prevailing worldview with respect to childhood GD was that it reflected abnormal thinking or confusion on the part of the child that may or may not be transient. Consequently, the standard approach was either watchful waiting or pursuit of family and individual psychotherapy.[1,2] The goals of therapy were to address familial pathology if it was present, treat any psychosocial morbidities in the child, and aid the child in aligning gender identity with biological sex.[22,23] Experts on both sides of the pubertal suppression debate agree that within this context, 80 percent to 95 percent of children with GD accepted their biological sex by late adolescence.[31] This worldview began to shift, however, as adult transgender activists increasingly promoted the "feminine essence" narrative to secure social acceptance.[10] In 2007, the same year that Boston Children's Hospital opened the nation's first pediatric gender clinic, Dr. J. Michael Bailey wrote:

> *Currently the predominant cultural understanding of male-to-female transsexualism is that all male-to-female (MtF) transsexuals are, essentially, women trapped in men's bodies. This understanding has little scientific basis, however, and is inconsistent with clinical observations. Ray Blanchard has shown that there are two distinct subtypes of MtF transsexuals. Members of one subtype, homosexual transsexuals, are best understood as a type of homosexual male. The other subtype, autogynephilic transsexuals, are (sic) motivated by the erotic desire to become women. The persistence of the predominant cultural understanding, while explicable, is damaging to science and to many transsexuals.*[32]

As the "feminine essence" view persisted, the suffering of transgender adults was invoked to argue for the urgent rescue of children from the same fate by early identification, affirmation, and pubertal suppression. It is now alleged that discrimination, violence, psychopathology, and suicide are the direct and inevitable consequences of withholding social affirmation and puberty blockers or cross-sex hormones from a gender dysphoric child.[33] Yet, the fact that 80 percent to 95 percent of gender-dysphoric youth emerge physically and psychologically intact after passing through puberty without social affirmation refutes this claim.[31] Furthermore, over 90 percent of people who die of suicide have a diagnosed mental disorder.[34] There is no evidence that gender-dysphoric children who commit suicide are any different. Therefore, the cornerstone for suicide prevention should be the same for them as for all children: early identification and treatment of psychological co-morbidities.

Nevertheless, there are now 40 gender clinics across the United States that promote the use of pubertal suppression and cross-sex hormones in children. The rationale for suppression is to allow the gender-dysphoric child time to explore gender identity free from the emotional distress triggered by the onset of secondary sex characteristics. The standards followed in these clinics are based on "expert opinion." There is not a single large, randomized, controlled study that documents the alleged benefits and potential harms to gender-dysphoric children from pubertal suppression and decades of cross-sex hormone use. Nor is there a single long-term, large, randomized, controlled study that compares the outcomes of various psychotherapeutic interventions for childhood GD with those of pubertal suppression followed by decades of toxic synthetic steroids. In today's age of "evidence-based medicine," this should give everyone pause. Of greater concern is that pubertal suppression at Tanner Stage 2 (usually 11 years of age) followed by the use of cross-sex hormones will leave these children sterile and without gonadal tissue or gametes available for cryo-preservation.[35,36,37]

Neuroscience clearly documents that the adolescent brain is cognitively immature and lacks the adult capacity needed for risk assessment prior to the early to mid-twenties.[38] There is a serious ethical problem with allowing

irreversible, life-changing procedures to be performed on minors who are too young to give valid consent themselves. This ethical requirement of informed consent is fundamental to the practice of medicine, as emphasized by the U.S. Department of Health & Human Services website: "The voluntary consent of the human subject is absolutely essential."[39] Moreover, when an individual is sterilized, even as a secondary outcome of therapy, lacking full, free, and informed consent, it is a violation of international law.[40]

Transgender-Affirming Protocol: What Is the Evidence Base?

Over the past two decades, Hayes, Inc. has grown to become an internationally recognized research and consulting firm that evaluates a wide range of medical technologies to determine the impact on patient safety, health outcomes, and resource utilization. This corporation conducted a comprehensive review and evaluation of the scientific literature regarding the treatment of GD in adults and children in 2014. It concluded that although "evidence suggests positive benefits" to the practice of using sex reassignment surgery in gender dysphoric adults, "serious limitations [inherent to the research] permit only weak conclusions."[41] Similarly, Hayes, Inc. found the practice of using cross-sex hormones for gender dysphoric adults to be based on "very low" quality of evidence:

> *Statistically significant improvements have not been consistently demonstrated by multiple studies for most outcomes. Evidence regarding quality of life and function in male-to-female (MtF) adults was very sparse. Evidence for less comprehensive measures of well-being in adult recipients of cross-sex hormone therapy was directly applicable to GD patients but was sparse and/or conflicting. The study designs do not permit conclusions of causality and studies generally had weaknesses associated with study execution as well. There are potentially long-term safety risks associated with hormone therapy but none have been proven or conclusively ruled out.*[42]

Regarding treatment of children with GD using gonadotropin releasing hormone (GnRH) agonists and cross-sex hormones, Hayes, Inc. awarded its lowest rating indicating that the literature is "too sparse and the studies [that exist are] too limited to suggest conclusions."[42]

Gender Clinics Proliferate Across United States Despite Lack of Medical Evidence

In 2007 Dr. Norman Spack, a pediatric endocrinologist and founder of the nation's first gender clinic at Boston Children's Hospital, launched the pubertal suppression paradigm in the United States.[43] It consists of first affirming the child's false self-concept by instituting name and pronoun changes, and facilitating the impersonation of the opposite sex within and outside of the home. Next, puberty is suppressed via GnRH agonists as early as age 11 years, and then finally, patients may graduate to cross-sex hormones at age 16 in

preparation for sex-reassignment surgery as an older adolescent or adult.[44] Endocrine Society guidelines currently prohibit the use of cross-sex hormones before age 16 but this prohibition is being reconsidered.[45] Some gender specialists are already bypassing pubertal suppression and instead putting children as young as 11 years old directly onto cross-sex hormones.[46] The rationale is that the child will experience the pubertal development of the desired sex and thereby avoid the iatrogenic emotional distress from maintaining a pre-pubertal appearance as peers progress along their natural pubertal trajectory.

In 2014 there were 24 gender clinics clustered chiefly along the East Coast and in California; one year later there were 40 across the nation. Dr. Ximena Lopez, a pediatric endocrinologist at Children's Medical Center Dallas, and a member of that program's GENder Education and Care, Interdisciplinary Support program (Genecis) stated, "[Use of this protocol is] growing really fast. And the main reason is [that] parents are demanding it and bringing patients to the door of pediatric endocrinologists because they know this is available."[47] Notice, the *main* reason for the protocol's increased use is parent demand; not evidence-based medicine.

Risks of GnRH Agonists

The GnRH agonists used for pubertal suppression in gender dysphoric children include two that are approved for the treatment of precocious puberty: leuprolide by intramuscular injection with monthly or once every three month dosing formulations, and histrelin, a subcutaneous implant with yearly dosing.[36] In addition to preventing the development of secondary sex characteristics, GnRH agonists arrest bone growth, decrease bone accretion, prevent the sex-steroid dependent organization and maturation of the adolescent brain, and inhibit fertility by preventing the development of gonadal tissue and mature gametes for the duration of treatment. If the child discontinues the GnRH agonists, puberty will ensue.[36,44] Consequently, the Endocrine Society maintains that GnRH agonists, as well as living socially as the opposite sex, are fully reversible interventions that carry no risk of permanent harm to children.[44] However, social learning theory, neuroscience, and the single long-term follow-up study of adolescents who have received pubertal suppression described below challenge this claim.

In a follow-up study of their first 70 pre-pubertal candidates to receive puberty suppression, de Vries and colleagues documented that all subjects eventually embraced a transgender identity and requested cross-sex hormones.[48] This is cause for concern. Normally, 80 percent to 95 percent of pre-pubertal youth with GD do not persist in their GD. To have 100 percent of pre-pubertal children choose cross-sex hormones suggests that the protocol itself inevitably leads the individual to identify as transgender.

There is an obvious self-fulfilling nature to encouraging a young child with GD to socially impersonate the opposite sex and then institute pubertal suppression. Purely from a social learning point of view, the repeated behavior of impersonating and being treated as the opposite sex will make identity alignment with the child's biologic sex less likely. This, together with the suppression of puberty that prevents further endogenous masculinization or feminization of the entire body and brain, causes the child to remain either a gender non-conforming pre-pubertal boy disguised as a pre-pubertal girl, or the reverse. Since their peers develop normally into young men or young women, these children are left psychosocially isolated. They will be less able to identify as being the biological male or female they actually are. A protocol of impersonation and pubertal suppression that sets into motion a single inevitable outcome (transgender identification) that requires lifelong use of toxic synthetic hormones, resulting in infertility, is neither fully reversible nor harmless.

GnRH Agonists, Cross-sex Hormones, and Infertility

Since GnRH agonists prevent the maturation of gonadal tissue and gametes in both sexes, youth who graduate from pubertal suppression at Tanner Stage 2 to cross-sex hormones will be rendered infertile without any possibility of having genetic offspring in the future because they will lack gonadal tissue and gametes for cryo-preservation. The same outcome will occur if pre-pubertal children are placed directly upon cross-sex hormones. Older adolescents who declined pubertal suppression are advised to consider cryo-preservation of gametes prior to beginning cross-sex hormones. This will allow them to conceive genetic offspring in the future via artificial reproductive technology. While there are documented cases of transgendered adults who stopped their cross-sex hormones in order to allow their bodies to produce gametes, conceive, and have a child, there is no absolute guarantee that this is a viable option in the long term. Moreover, transgendered individuals who undergo sex reassignment surgery and have their reproductive organs removed are rendered permanently infertile.[36,37,38]

Additional Health Risks Associated with Cross-sex Hormones

Potential risks from cross-sex hormones to children with GD are based on the adult literature. Recall that regarding the adult literature, the Hayes report states: "There are potentially long-term safety risks associated with hormone therapy but none have been proven or conclusively ruled out."[42] For example, most experts agree that there is an increased risk of coronary artery disease among MtF adults when placed on oral ethinyl estradiol; therefore, alternative estrogen formulations are recommended. However, there is one study of MtF adults using alternative preparations that found a similar increased risk. Therefore, this risk is neither established nor ruled out.[49,50,51] Children who transition will require these hormones for a significantly greater length of time than their adult counterparts. Consequently, they may be more likely to experience physiologically theoretical though rarely observed morbidities in adults. With these caveats, it is most accurate

to say that oral estrogen administration to boys *may* place them at risk for experiencing: thrombosis/thromboembolism; cardiovascular disease; weight gain; hypertrigyceridemia; elevated blood pressure; decreased glucose tolerance; gallbladder disease; prolactinoma; and breast cancer.[49,50,51] Similarly, girls who receive testosterone *may* experience an elevated risk for: low HDL and elevated triglycerides; increased homocysteine levels; hepatotoxicity; polycythemia; increased risk of sleep apnea; insulin resistance; and unknown effects on breast, endometrial and ovarian tissues.[49,50,51] In addition, girls may legally obtain a mastectomy as early as 16 years of age after receiving testosterone therapy for at least one year; this surgery carries its own set of irreversible risks.[36]

The Post-Pubertal Adolescent with GD

As previously noted, 80 percent to 95 percent of pre-pubertal children with GD will experience resolution by late adolescence if not exposed to social affirmation and medical intervention. This means that 5 percent to 20 percent will persist in their GD as young adults. Currently, there is no medical or psychological test to determine which children will persist in their GD as young adults. Pre-pubertal children with GD who persist in their GD beyond puberty are more likely to also persist into adulthood. The Endocrine Society and others, including Dr. Zucker, therefore regard it reasonable to affirm children who persist in their GD beyond puberty, as well as those who present after puberty, and to proceed with cross-sex hormones at age 16 years.[44]

ACPeds disagrees for the following reasons. First, not all adolescents with GD inevitably go on to trans-identification, but cross-sex hormones inevitably result in irreversible changes for all patients. Second, adolescents are not sufficiently mature to make significant irreversible medical decisions. The adolescent brain does not achieve the capacity for full risk assessment until the early to mid-twenties. There is a serious ethical problem with allowing minors to receive life-altering medical interventions including cross-sex hormones and, in the case of natal girls, bilateral mastectomy, when they are incapable of providing informed consent for themselves.

As stated earlier, ACPeds is also concerned about an increasing trend among adolescents to self-diagnose as transgender after binges on social media sites. While many of these adolescents will seek out a therapist after self-identifying, many states have been forced by non-scientific political pressure to ban therapists from asking why an adolescent believes he or she is transgender. In these states therapists may not explore underlying mental health issues; cannot consider the symbolic nature of the gender dysphoria; and may not look at possible confounding issues such as social media use or social contagion.[6]

Impact of sex reassignment in adults as it relates to risk in children

Surveys suggest that transgender adults initially express a sense of "relief" and "satisfaction" following the use of hormones and sex reassignment surgery (SRS). In the long term, however, SRS does not result in a level of health equivalent to that of the general population.[52] For example, a 2001 study of 392 male-to-female and 123 female-to-male transgender persons found that 62 percent of the male-to-female (MtF) and 55 percent of the female-to-male (FtM) transgender persons were depressed. Nearly one third (32 percent) of each population had attempted suicide.[53] Similarly, in 2009, Kuhn and colleagues found considerably lower general health and general life satisfaction among 52 MtF and 3 FtM transsexuals fifteen years after SRS when compared with controls.[54] Finally, a thirty-year follow-up study of post-operative transgender patients from Sweden found that thirty years out from surgery, the rate of suicide among post-operative transgender adults was nearly twenty times greater than that of the general population.

To be clear, this does not prove that sex reassignment causes an increased risk of suicide or other psychological morbidities. Rather, it indicates that sex reassignment alone does not provide the individual with a level of mental health on par with the general population. The authors of the Swedish study summarized their findings as follows:

> Persons with transsexualism, after sex reassignment, have considerably higher risks for mortality, suicidal behaviour, and psychiatric morbidity than the general population. Our findings suggest that sex reassignment, though alleviating gender dysphoria, may not suffice as treatment for transsexualism, and should inspire improved psychiatric and somatic care after sex reassignment for this patient group.[52]

It is noteworthy that these mental health disparities are observed in one of the most lesbian, gay, bisexual and transgender (LGBT) affirming nations of the world. It suggests that these health differences are not due primarily to social prejudice, but rather due to underlying trauma that also induced transgender belief, and/or the adult transgender condition or lifestyle. This is also consistent with an American study published in the *Journal of LGBT Health* in 2008 that found discrimination did not account for the mental health discrepancies between LGBT-identified individuals and the heterosexual population.[55]

Absent hormonal and surgical intervention, only 5-20 percent of pre-pubertal children with GD will face a transgender adulthood which seems to predispose them to certain morbidities and an increased risk of early death. In contrast, the single study of pre-pubertal children with GD who received pubertal suppression makes clear that as many as 100 percent of these children will face a transgender adulthood. Therefore, the current transgender affirming interventions at pediatric gender clinics will statistically yield this outcome for the

remaining 80 to 95 percent of pre-pubertal children with GD who otherwise would have identified with their biological sex by adulthood.

Recommendations for research

Identical twin studies establish that post-natal environmental factors exert a significant influence over the development of GD and transgenderism. Data also reflects a greater than 80% resolution rate among pre-pubertal children with GD. Consequently, identification of the various environmental factors and pathways that trigger GD in biologically vulnerable children should be one focus of research. Particular attention should be given to the impact of childhood adverse events and social contagion. Another area of much needed research is within psychotherapy. Large long term longitudinal studies in which children with GD and their families are randomized to treatment with various therapeutic modalities and assessed across multiple measures of physical and social emotional health are desperately needed and should have been launched long ago. In addition, long term follow-up studies that assess objective measures of physical and mental health of post-surgical transsexual adults must include a matched control group consisting of transgender individuals who do not undergo SRS. This is the only way to test the hypothesis that SRS itself may cause more harm to individuals than they otherwise would experience with psychotherapy alone.

Conclusion

Gender dysphoria (GD) in children is a term used to describe a psychological condition in which a child experiences marked incongruence between his or her experienced gender and the gender associated with the child's biological sex. Twin studies demonstrate that GD is not an innate trait. Moreover, barring pre-pubertal affirmation and hormone intervention for GD, 80 percent to 95 percent of children with GD will accept the reality of their biological sex by late adolescence.

The treatment of GD in childhood with hormones effectively amounts to mass experimentation on, and sterilization of, youth who are cognitively incapable of providing informed consent. There is a serious ethical problem with allowing irreversible, life-changing procedures to be performed on minors who are too young to give valid consent themselves; adolescents cannot understand the magnitude of such decisions.

Ethics alone demands an end to the use of pubertal suppression with GnRH agonists, cross-sex hormones, and sex reassignment surgeries in children and adolescents. The American College of Pediatricians recommends an immediate cessation of these interventions, as well as an end to promoting gender ideology via school curricula and legislative policies. Healthcare, school curricula and legislation must remain anchored to physical reality. Scientific research should focus upon better understanding the psychological underpinnings of this disorder,

optimal family and individual therapies, as well as delineating the differences among children who resolve with watchful waiting versus those who resolve with therapy and those who persist despite therapy.

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