Recent Advances in Caring for Transgender Youth

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Continuing Medical Education Commercial Disclosure

- Meredith Chapman has nothing to disclose.
- Jason Jarin has nothing to disclose.
- May Lau has the following commercial relationship(s) to disclose: Gilead – stockholder
  Merck – Speaker’s bureau
- We will be discussing the use of unapproved pharmaceuticals such as leuprolide, histrelin, estrogen, and testosterone therapy for transgender youth.
Objectives

- State the changes in the most recent Pediatric Endocrine Society guidelines regarding care of transgender youth and compare these changes with the World Professional Association for Transgender Health Standards of Care guidelines.
- Explore the latest research in the care and management of transgender youth.
- Discuss the management of transgender youth with special considerations.
Clinical Practice Guidelines

- World Professional Association for Transgender Health (WPATH) - Version 7 published September 2011
- Pediatric Endocrine Society (PES) Guidelines published November 2017
Evaluation of Youth

- Only mental health professionals (MHPs) diagnose gender dysphoria (GD) or gender incongruence (GI)
Role of Mental Health Professionals

- Training in child and adolescent developmental psychology and psychopathology
- Competently use Diagnostic and Statistical Manual of Mental Disorders (DSM) or International Statistical Classification of Diseases and Related Health Problems (ICD) for diagnostic purposes
- Distinguish between GD/GI and conditions with similar features
Role of Mental Health Professionals cont.

- Training in diagnosing psychiatric conditions
- Ability to undertake or refer for appropriate treatment
- Assess youth’s understanding and conditions that impact gender-affirming hormone treatment (GAHT)
- Regularly attend relevant professional meetings
- Knowledge of GAHT criteria
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ICD-10</th>
<th>DSM-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis Name</td>
<td>Transsexualism</td>
<td>Gender Dysphoria</td>
</tr>
<tr>
<td>Time needed for diagnosis</td>
<td>2 years</td>
<td>At least 6 months</td>
</tr>
</tbody>
</table>
| Main criteria               | Desire to live and be accepted as member of opposite sex and usually accompanied by wish to make body as congruent as possible with preferred sex by medical treatment | Incongruence between experienced/expressed gender and $1^\circ/2^\circ$ sex characteristics  
Strong desire to rid of $1^\circ/2^\circ$ sex characteristics  
Strong desire for $1^\circ/2^\circ$ sex characteristics of desired gender  
Strong desire to be of other gender  
Strong desire to be treated as other gender  
Strong conviction that one has feelings and reactions of other gender |
Role of Mental Health Professionals cont.

- Advise regarding social transition of prepubertal youth with GD/GI
Changes in the Management of Adolescents with GD/GI
Treatment of Adolescents: Pubertal Suppression

- Suggest youth who meet criteria for GD/GI, fulfill treatment criteria, and request treatment, begin with pubertal suppression
- Suggest pubertal suppression therapy begin with onset of physical changes of puberty
  - Delete confirmation of puberty by levels of estradiol and testosterone
Eligibility Criteria for GnRH Agonist

- MHP confirms long lasting GD
- GD worsens with puberty
- No co-existing psychological, medical, or social problems that may interfere with treatment
- **Youth has sufficient mental capacity to give consent**

GnRH = gonadotropin-releasing hormone agonist
Eligibility Criteria for GnRH Agonist cont.

- Youth understands effects and side effects of GnRH agonist, and fertility preservation options
- Youth has given informed consent and parents consented
- Experienced clinician agrees with GnRH treatment, confirmed puberty started, and no medical contraindications exist
Monitoring During Puberty Suppression

- Every 3-6 months
  - Vitals and Tanner stages
- Every 6-12 months
  - LH, FSH, estradiol, testosterone, and 25OH vitamin D
- Every 1-2 years
  - Bone density
  - Bone age (if clinically indicated)

LH = luteinizing hormone; FSH = follicle stimulating hormone
Treatment of Adolescents: Hormones

- For youth who request cross sex hormone treatment (CSHT), recommend an increasing dose schedule after multidisciplinary team confirms:
  - GD/GI diagnosis
  - Capacity of youth to give informed consent
- Recognize reasons exist to initiate CSHT < 16 years old and recommend management by multidisciplinary team
Multidisciplinary Team

ENDOCRINE CARE

PSYCHIATRY

PSYCHOLOGY

NURSING

SOCIAL WORK

BIOETHICS

PASTORAL CARE
Eligibility Criteria for CSHT

- MHP confirmed
  - persistence of GD
  - co-existing psychological, medical, or social problems which may interfere with treatment being addressed
  - capacity to understand consequences of CSHT, weigh risks and benefits, and give informed consent
- Youth informed of CSHT effects and side effects and provided informed consent
- Experienced clinician agrees with CSHT and confirmed no medical contraindications
Monitoring During Puberty Induction

- **Every 3-6 months**
  - Vitals and Tanner stage

- **Every 6-12 months**
  - **Affirmed males:** check hemoglobin/hematocrit, lipids, testosterone, and 25OH vitamin D
  - **Affirmed females:** check prolactin, estradiol, and 25 OH vitamin D

- **Every 1-2 years**
  - Bone density
  - Bone age (the latter if clinically indicated)
Monitoring of Transgender Adults on CSHT

- Affirmed males
  - For testosterone enanthate/cypion ate, target range of testosterone level 400-700 ng/dl
  - Check hematocrit/hemoglobin at baseline and every 3 months for year one, then every 6-12 months. Monitor vitals and lipids at regular intervals
Monitoring of Transgender Adults on CSHT

- Affirmed females
  - Target serum testosterone level < 50 ng/dl
  - Serum estradiol: 100-200 pg/ml
  - If on spironolactone, check electrolytes every 3 months first year and then yearly
Monitoring of Transgender Adults

- **Suggest** monitoring of cardiovascular risk factors using fasting lipid profile, **diabetes screening**, and/or other diagnostic tools
Gender-Affirming Surgery

- Recommend clinicians refer for gender-affirming surgery (GAS) after individual:
  - Has satisfactory social change
  - Is satisfied with hormonal effects
  - Desires surgical changes

- Suggest delay GAS $\geq$ 18 years old or legal age of majority in country

- Suggest timing of breast surgery for affirmed males based on physical and mental health status of youth.
Criteria for GAS, Which Affects Fertility

- Persistent well-documented GD
- Legal age of majority in given country
- Continuously and responsibly used CSHT for 12 months
- Successful continuous full-time living in new gender role for 12 months
- If significant medical or mental health concerns present, they must be well-controlled
- Demonstrable knowledge of all practical aspects of surgery
WPATH Standards of Care Guidelines

- The standards of care (SOC) based on best available science and expert professional consensus
- Goal: provide clinical guidance to assist transgender and gender nonconforming individuals with safe and effective pathways to achieve lasting comfort with their gendered selves to maximize their overall health, psychological well-being, and self-fulfillment
- Includes additional standards on voice and communication therapy and surgeons, and GAS
Psychological Assessment

- Not dismiss or express negative attitudes toward non-conforming gender identities or indications of gender dysphoria
- Explore nature and characteristics of youth’s gender identity
- For teens, assessment phase used to inform youth and their families about treatment possibilities and limitations
Psychological and Social Interventions

- MHP should help families have accepting and nurturing response to concerns of their gender dysphoric youth
- Psychotherapy should focus on reducing youth’s distress related to GD and improving any other psychosocial difficulties
MHP Tasks For Assessment and Referral

- Assess for GD
- Provide information for gender identity options and expression, and possible medical interventions
- Assess, diagnose, and discuss treatment options for co-existing mental health concerns
- Assess eligibility, prepare, and refer for hormone therapy
- Assess eligibility, prepare, and refer for surgery
MHP Tasks Related to Psychotherapy

- Psychotherapy not required for hormone therapy and surgery
- Psychotherapy including counseling and support for gender role changes
- Family therapy or support for family members
- Educate and advocate on behalf of clients
- Provide information and referral for peer support
WPATH: Eligibility Criteria for GnRH Agonist

- Parents/guardians involved in supporting the youth through treatment
Tasks of CSHT-Prescribing Clinicians

- Perform initial evaluation that includes discussion of physical transition goals, health history, physical examination, risk assessment and needed lab tests
- Discuss the expected effects of CSHT and possible adverse effects
- Confirm capacity to understand risk and benefits of treatment and making informed decisions about medical care
Tasks of CSHT-Prescribing Clinicians cont.

- Communicate as needed with primary care physician, MHP, and surgeon
- Provide patients with written statement indicating under medical supervision and care for CSHT
Conclusions

- Changes made to the PES guidelines include
  - Criteria for MHP working with transgender youth
  - GAHT recommendations and criteria
  - Monitoring and labs needed for youth on GAHT
  - Estrogen and testosterone treatment goals
  - GAS recommendations and criteria
Conclusions

- **WPATH**
  - Co-sponsored the PES guidelines
  - Clarified and expanded the role of the MHP for psychological assessment, psychological and social intervention, and other tasks including those for assessment and referral
  - Clarified the role of CSHT-prescribing physicians and added additional tasks
Latest Research in the Care and Management of Transgender Youth:
Part 1 Physical Interventions

- Jason Jarin, MD
- Assistant Professor
- Pediatric and Adolescent Gynecology
- Department of Obstetrics and Gynecology
- UTSW Medical Center
- Children’s Health
Physical Interventions

- Fully reversible
  - GnRH agonists
- Partially reversible
  - Testosterone or Estrogen
- Irreversible
  - Surgical procedures
Fully Reversible Interventions
GnRH Analogues

- Suppresses puberty via down regulation of LH/FSH
  - Stop estrogen/testosterone secretion
- Administered as an injection or implant
  - Leuprolide
  - Histrelin (Vantas/Supprelin)
- Fully reversible
- Preferred method due to efficacy, safety and reversibility
GnRH Analogues: Cognition

Does GnRH treatment worsen gender incongruence away from natal gender?
Staphorsius et al (2015) studied executive function in 6 groups through functional MRIs:

- two GnRH agonist-treated groups (transgender boys and transgender girls)
- two untreated groups and
- a control male group and a control female group

Executive function assessed with the Tower of London (ToL) task showed no effect of GnRH agonist therapy.

fMRI analyses during tasks showed that cortical activation in the treated groups aligned more with assigned sex.
GnRH Analogues: Cognition

- Wojniusz et al (2016) studied female patients with idiopathic central precocious puberty to see if GnRH agonist therapy affected cognitive, emotional, and psychosocial functioning.

- Results between the two groups were similar in auditory and visual memory, response inhibition, spatial ability, behavioral problems, and social competence.

- Patients receiving GnRH agonists processed emotional stimuli differently from their age-matched peers:
  - direct effects of GnRH agonist treatment
  - deprivation of sexual steroids.
GnRH Analogues: Bone Mineral Density

Does GnRH treatment increase risk for low bone mineral density and fractures in adulthood?
GnRH Analogues: Bone Mineral Density

- Studies of BMD in children with central precocious puberty treated with GnRH agonist therapy did not suggest any bone density loss compared to peers
  - Do not consider considerations unique to individuals who identify as transgender
  - More data on natal girls with precocious puberty
Klink et al (2015) studied peak bone mass (PBM) at age 22 in transgender patients

- Transgender boys and transgender girls received GnRH agonists for a median of 1.3 and 1.5 years, respectively
- Subsequent treatment with cross sex hormones in transgender men and transgender women was 5.4 and 5.8 years

Decrease in Z score noted between the start of GnRH therapy and at age 22 years

- decrease from 0.2 to −0.3 in transgender men
- decreased significantly from −0.8 to −1.4 in transgender women
GnRH Analogues: Bone Mineral Density

- No data available regarding change to fracture risk as adults
- No data as to which of the following has the greatest effect on bone density:
  - Duration of GnRH treatment
  - Puberty induction practices with cross sex hormones
GnRH Analogues: Adult Height

Does GnRH treatment in adolescence affect potential adult height?
GnRH Analogues: Terminal Height

- Cohen-Kettenis et al: case report on a transgender male followed for after 22 years following transition
  - Treated with GnRH analogs at 13 years of age
  - Started androgen treatment at 18 years of age
  - Gender reassignment surgery at 20 and 22 years of age.

- After follow-up:
  - Bone mineral density was within the normal range for both sexes
  - His final height was short as compared to comparable males
  - Body proportions were within normal range
GnRH Analogues: Terminal Height

- No more recent data available looking at adolescents treated with GnRH analogues longitudinally

- Case was started in 1998:
  - GnRH analogs started after completion of 2 years of puberty (but before menarche)
  - Started androgen treatment at age 18
Partially Reversible Interventions

Cross-Sex Steroids
Cross-Sex Steroids

- Pubertal development in the desired, opposite sex is typically initiated at the age of 16 years, with reports of initiation before 13.5-14 years of age
  - There is available data that support treatment with sex hormones starting at age 16 years
Cross-Sex Steroids

Can Cross Sex Steroids be started before the age of 16?
Cross-Sex Steroids

- de Vries et al (2014): followed 55 young transgender adults before the start of puberty suppression, upon initiation of cross-sex hormones and after gender reassignment surgery
  - mean age of CSH initiation was 16.7 years with an age range of 13.9-19.0
Cross-Sex Steroids: Short Term Effects

- Olson-Kennedy et al (April 2017): followed metabolic parameters in 59 adolescents age 12-23 between 21 and 31 months after initiation of hormones
  - Metabolic parameter changes were not clinically significant
  - Frequent laboratory examination in transgender adolescents may be unnecessary
  - Use of cross-sex hormones in transgender adolescents appears to be safe over a treatment course of approximately two years
Cross-Sex Steroids: Short Term Effects

- Jarin et al (April 2017): published data supporting at least the short term safety of cross sex-hormones in adolescents

- 116 adolescents (72 transgender boys and 44 transgender girls) were included retrospectively
  - Testosterone use was associated with increased hemoglobin and hematocrit, increased BMI, and lowered high-density lipoprotein levels
  - Estrogen was associated with lower testosterone and alanine aminotransferase levels
## Cross-Sex Steroids: Short Term Effects

### Mean Metabolic and Anthropometric Data for Transgender Boys

<table>
<thead>
<tr>
<th></th>
<th>Baseline (n)</th>
<th>1-3 Months (n)</th>
<th>4-6 Months (n)</th>
<th>Beyond 6 months (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BMI (kg/m²)</strong></td>
<td>26.0 (72)</td>
<td>26.2 (21)*</td>
<td>27.2 (22)*</td>
<td>27.0 (34)*</td>
</tr>
<tr>
<td><strong>SBP (mm/Hg)</strong></td>
<td>118 (72)</td>
<td>122 (29)</td>
<td>119 (28)</td>
<td>118 (36)</td>
</tr>
<tr>
<td><strong>DBP (mm/Hg)</strong></td>
<td>71 (72)</td>
<td>72 (39)</td>
<td>67 (.01)(28)</td>
<td>69 (36)</td>
</tr>
<tr>
<td><strong>HCT (%)</strong></td>
<td>39.4 (52)</td>
<td>42.4 (5)*</td>
<td>43.0 (6)*</td>
<td>44.5 (40)*</td>
</tr>
<tr>
<td><strong>HGB (g/dL)</strong></td>
<td>13.5 (41)</td>
<td>14.2 (5)</td>
<td>14.3 (6)*</td>
<td>15.0 (40)*</td>
</tr>
<tr>
<td><strong>Total T (ng/dL)</strong></td>
<td>29.5 (48)</td>
<td>342.8 (19)*</td>
<td>462.6 (21)*</td>
<td>424.8 (40)*</td>
</tr>
<tr>
<td><strong>Estradiol (pg/dL)</strong></td>
<td>55.1 (35)</td>
<td>51.1 (18)</td>
<td>42.9 (14)</td>
<td>46.0 (21)</td>
</tr>
<tr>
<td><strong>Tchol (mg/dL)</strong></td>
<td>151.2 (52)</td>
<td>157.4 (13)</td>
<td>160.7 (9)</td>
<td>153.5 (31)</td>
</tr>
<tr>
<td><strong>LDL (mg/dL)</strong></td>
<td>84.5 (52)</td>
<td>93.0 (13)</td>
<td>98.3 (9)</td>
<td>90.6 (31)</td>
</tr>
<tr>
<td><strong>HDL (mg/dL)</strong></td>
<td>50.2 (51)</td>
<td>44.3 (13)*</td>
<td>42.9 (9)*</td>
<td>45.1 (31)*</td>
</tr>
<tr>
<td><strong>TG (mg/dL)</strong></td>
<td>93.2 (51)</td>
<td>102.6 (13)</td>
<td>108.5 (9)</td>
<td>98.1 (31)</td>
</tr>
<tr>
<td><strong>TG:HDL Ratio</strong></td>
<td>2.0 (51)</td>
<td>2.5 (13)</td>
<td>2.9 (9)</td>
<td>2.3 (31)</td>
</tr>
<tr>
<td><strong>BUN (mg/dL)</strong></td>
<td>10.7 (11)</td>
<td>10.5 (8)</td>
<td>8.3 (7)</td>
<td>6.5 (2)</td>
</tr>
<tr>
<td><strong>Cr (mg/dL)</strong></td>
<td>0.7 (11)</td>
<td>0.9 (8)</td>
<td>0.9 (7)</td>
<td>0.8 (2)</td>
</tr>
<tr>
<td><strong>Prolactin (ng/mL)</strong></td>
<td>16.5 (12)</td>
<td>26.6 (9)</td>
<td>12.0 (17)</td>
<td>28.1 (5)</td>
</tr>
<tr>
<td><strong>AST (U/L)</strong></td>
<td>18.8 (53)</td>
<td>20.1 (10)</td>
<td>25.9 (14)</td>
<td>19.5 (26)</td>
</tr>
<tr>
<td><strong>ALT (U/L)</strong></td>
<td>21.1 (53)</td>
<td>21.7 (10)</td>
<td>26.9 (14)</td>
<td>20.0 (26)</td>
</tr>
<tr>
<td><strong>HgbA1c (%)</strong></td>
<td>5.3 (14)</td>
<td>5.5 (1)</td>
<td>4.9 (1)</td>
<td>5.3 (12)</td>
</tr>
</tbody>
</table>
Cross-Sex Steroids: Short Term Effects

Mean Metabolic and Anthropometric Data for Transgender Girls

<table>
<thead>
<tr>
<th></th>
<th>Baseline (n)</th>
<th>1-3 Months (n)</th>
<th>4-6 Months (n)</th>
<th>Beyond 6 months (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BMI (kg/m²)</strong></td>
<td>23.7 (38)</td>
<td>23.0 (21)</td>
<td>23.6 (21)</td>
<td>23.6 (25)</td>
</tr>
<tr>
<td><strong>SBP (mm/Hg)</strong></td>
<td>125 (42)</td>
<td>124 (29)</td>
<td>121 (28)</td>
<td>121 (29)</td>
</tr>
<tr>
<td><strong>DBP (mm/Hg)</strong></td>
<td>72 (42)</td>
<td>74 (29)</td>
<td>72 (28)</td>
<td>72 (29)</td>
</tr>
<tr>
<td><strong>HCT (%)</strong></td>
<td>43.8 (13)</td>
<td>38.3 (5)</td>
<td>40.3 (5)</td>
<td>42.3 (12)</td>
</tr>
<tr>
<td><strong>HGB (g/dL)</strong></td>
<td>14.5 (13)</td>
<td>12.7 (5)</td>
<td>13.6 (5)</td>
<td>14.4 (13)</td>
</tr>
<tr>
<td><strong>Total T (ng/dL)</strong></td>
<td>391.7 (32)</td>
<td>256.3 (19)*</td>
<td>233.6 (21)*</td>
<td>199.3 (24)*</td>
</tr>
<tr>
<td><strong>Estradiol (pg/dL)</strong></td>
<td>21.6 (14)</td>
<td>40.9 (18)</td>
<td>49.9 (14)</td>
<td>96.4 (19)*</td>
</tr>
<tr>
<td><strong>Tchol (mg/dL)</strong></td>
<td>147.8 (26)</td>
<td>158.0 (13)</td>
<td>138.2 (9)</td>
<td>142.8 (23)</td>
</tr>
<tr>
<td><strong>LDL (mg/dL)</strong></td>
<td>82.6 (27)</td>
<td>95.9 (13)</td>
<td>73.0 (9)</td>
<td>77.4 (22)</td>
</tr>
<tr>
<td><strong>HDL (mg/dL)</strong></td>
<td>48.2 (27)</td>
<td>47.4 (13)</td>
<td>51.2 (9)</td>
<td>49.3 (22)</td>
</tr>
<tr>
<td><strong>TG (mg/dL)</strong></td>
<td>93.5 (27)</td>
<td>77.9 (13)</td>
<td>74.7 (9)</td>
<td>83.6 (22)</td>
</tr>
<tr>
<td><strong>TG:HDL Ratio</strong></td>
<td>2.1 (27)</td>
<td>1.7 (13)</td>
<td>1.0 (9)</td>
<td>1.9 (22)</td>
</tr>
<tr>
<td><strong>BUN (mg/dL)</strong></td>
<td>14.6 (11)</td>
<td>14.9 (8)</td>
<td>15.0 (7)</td>
<td>11.5 (6)</td>
</tr>
<tr>
<td><strong>Cr (mg/dL)</strong></td>
<td>0.7 (11)</td>
<td>0.6 (8)</td>
<td>0.7 (7)</td>
<td>0.7 (6)</td>
</tr>
<tr>
<td><strong>Prolactin (ng/mL)</strong></td>
<td>11.9 (18)</td>
<td>10.9 (9)</td>
<td>17.5 (16)</td>
<td>20.7 (18)</td>
</tr>
<tr>
<td><strong>AST (U/L)</strong></td>
<td>20.1 (36)</td>
<td>24.9 (10)</td>
<td>19.6 (14)</td>
<td>17.5 (24)</td>
</tr>
<tr>
<td><strong>ALT (U/L)</strong></td>
<td><strong>25.4 (34)</strong></td>
<td><strong>23.5 (10)</strong></td>
<td><strong>15.2 (14)</strong>*</td>
<td>**17.3 (24) ***</td>
</tr>
</tbody>
</table>
Cross-Sex Steroids

Do Cross Sex Steroids increase risk for low bone mineral density and fractures in adulthood?
Cross Sex Steroids: Bone Mineral Density in Transgender Men

- Turner et al (2004): testosterone therapy increases BMD at the hip while maintaining BMD at the spine
- Long term testosterone may be protective or beneficial to bone mineral density in transgender men
Cross Sex Steroids: Bone Mineral Density in Transgender Women

Van Caenegem et al (2013): Transgender women have a higher incidence of low bone mineral density prior to treatment when compared to their peers

- Estrogen restores bone mineral density in transgender females
- Serum estradiol correlates more with BMD than does testosterone
Cross Sex Steroids: Bone Mineral Density

Fracture data in transgender males and females are not available
Cross-Sex Steroids

Is there a role for progesterone in the treatment of transgender girls?
Cross Sex Steroids: Role of Progesterone

- Wierckx et al (2014): There is no evidence to indicate that the use of progesterone has any effect on breast development, both positively or otherwise
- Meyer et al (1986): addition of progestins neither enhanced breast growth nor lowered serum levels of free testosterone
- Bannink et al (2009): During puberty induction in girls with Turner syndrome, normal breast development may be noted with up to a 2 year delay
Cross-Sex Steroids

How about fertility?
Chen et al (2018): showed that transgender and gender nonconforming adolescents expressed interest in multiple family building options that include adoption and biological parenthood
• 70.5% of transgender adolescents were interested in adoption
• 35.9% in biological parenthood, with more gender-nonconforming youth (43.8%) than transgender youth (25.8%) expressing interest
• Providers should be aware of the unique fertility and reproductive health needs of transgender adolescents.
Cross-Sex Steroids: Future Fertility

- The gonads (both testes and ovary) have not matured at Tanner stage 2
  - Successful sperm retrieval either by electroejaculation or testicular sperm extraction has only been documented at least at tanner stage 3 development
  - Only one case report of successful ovarian stimulation and oocyte retrieval on a premenarchal natal female with Tanner stage 3 breast development and Tanner stage 1 pubic hair
- No data in this population concerning the time required for sufficient spermatogenesis or for resumption of ovulation following pubertal suppression
Cross-Sex Steroids: Future Fertility

- Prolonged use of cross sex hormones can make biological reproduction difficult in the future
- There is no data examining the length of time on cross sex hormones that guarantees infertility in both trans boys and trans girls
- Effects of cross sex hormones to fertility may be permanent even if the hormones are discontinued
Cross-Sex Steroids: Future Fertility

- Light et al (2014) documented 7 unplanned pregnancies in transgender males on consistent testosterone therapy.

- Despite the evidence from human and animal data, pregnancy (as documented by self-report) has been reported in transmen who have previously used testosterone.

  - This suggests that the effects of testosterone (at the doses typically used by transmen) on ovarian function are incomplete and/or at least partially reversible.
Cross-Sex Steroids: Future Fertility

  - 17-year-old transgender boy, accompanied by his mother, underwent oocyte cryopreservation following ovarian hyperstimulation. His oocytes remain in storage
  - The remainder of the case series (30 and 30 year-old males) had pregnancies carried by their sexually intimate partners
Cross-Sex Steroids: Future Fertility

- **Uterine Transplantation**
  - October 2014: first healthy baby born to a uterine transplant recipient in Sweden reported in *The Lancet*
  - Since then 6 live births have been reported from the same center, with one woman giving birth to two babies from the same transplanted uterus
  - November 2017: first healthy baby born to a uterine transplant recipient in the US at Baylor University Medical Center in Dallas, TX
Latest Research in the Care and Management of Transgender Youth:  
Part 2 Social Emotional Considerations

- Meredith R. Chapman, MD
  - Director of Mental Health Services, GENder Education and Care Interdisciplinary Support (GENECIS) Program, Children’s Health
  - Associate Professor, Department of Psychiatry
  - UTSW Medical Center
Professional Consensus on Gender Identity and Gender Expression in Youth
Consensus on the Overall Phenomena of Gender Identity and Gender Expression in Youth

- Variations in gender identity and expression are normal aspects of human diversity
- Pre-pubertal children and peri-pubertal adolescents with gender diverse expression or gender dysphoria may or may not develop a transgender identity in adolescence or adulthood
  - In pubertal and post-pubertal adolescents diverse gender expression and/or transgender identity usually continue into adulthood
Consensus on Efforts to Change Gender Identity

- Published research on efforts to change gender identity in youth are lacking
  - No existing research that supports interventions with children or adolescents alter gender identity
- It is clinically inappropriate to have a prescriptive goal related to gender identity, gender expression, or sexual orientation for the ultimate outcome of a youth’s gender identity or expression
Interventions aimed at achieving a fixed outcome including those aimed at changing gender identity or expression are coercive, can be harmful, and should not be part of treatment.

- Directing the child/adolescent to conform
- Directing the parents/guardians to place pressure on a child/adolescent to conform
AACAP Policy on “Conversion Therapies”

- Based on the scientific evidence, “conversion therapies” lack scientific credibility and clinical utility
- Evidence that such interventions are harmful
- “Conversion therapies” should not be part of any behavioral health treatment of children and adolescents

Psychosocial Impact

Lifetime Suicide Attempts for Highly Rejected LGBT Young People
(One or more times)

DRUGS & ALCOHOL
Nearly half of gender-expansive youth (48 percent) agreed "strongly" or "somewhat" that they have experimented with alcohol and drugs. This is a rate double that of their straight cisgender peers.

Level of Family Rejection

LOW rejection  MODERATE rejection  HIGH rejection

Ryan, Family Acceptance Project, 2009
GeMS Data

- 97 consecutive patients <21 presenting for initial visit between January 1998 and February 2010
  - 44.3% reported significant psychiatric history (n=43)
  - 20.6% reported at least one episode of non suicidal self injury
  - 9.3% reported at least one suicide attempt

<table>
<thead>
<tr>
<th>Diagnoses</th>
<th>Percentage</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>58.1%</td>
<td>25</td>
</tr>
<tr>
<td>GAD</td>
<td>18.6%</td>
<td>7</td>
</tr>
<tr>
<td>Bipolar Disorder</td>
<td>16.3%</td>
<td>7</td>
</tr>
<tr>
<td>PDD</td>
<td>9.3%</td>
<td>4</td>
</tr>
<tr>
<td>Eating Disorder</td>
<td>7.0%</td>
<td>3</td>
</tr>
<tr>
<td>ADHD</td>
<td>4.7%</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>6.9%</td>
<td>3</td>
</tr>
</tbody>
</table>

Boston Community Health Center Data

- Retrospective cohort study of electronic health record data
- 180 transgender patients seen between 2002 and 2011
  - Ages 12-29
  - 106 Trans males
  - 74 Trans females
- 180 cisgender controls (matched on gender identity, age, visit date, and race/ethnicity)
- Compares mental health of transgender and cisgender youth in a community-based setting
- Disparity in negative mental health outcomes
### Boston Community Health Center Data cont.

<table>
<thead>
<tr>
<th></th>
<th>Transgender</th>
<th>Cisgender</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>50.6%</td>
<td>20.6%</td>
</tr>
<tr>
<td>Anxiety</td>
<td>26.7%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Suicidal Ideation</td>
<td>31.1%</td>
<td>11.1%</td>
</tr>
<tr>
<td>Suicide Attempt</td>
<td>17.2%</td>
<td>6.1%</td>
</tr>
<tr>
<td>NSSI</td>
<td>16.7%</td>
<td>4.4%</td>
</tr>
<tr>
<td>Inpatient MH care</td>
<td>22.8%</td>
<td>11.1%</td>
</tr>
<tr>
<td>Outpatient MH care</td>
<td>45.6%</td>
<td>16.1%</td>
</tr>
</tbody>
</table>

## Minnesota Student Survey

<table>
<thead>
<tr>
<th></th>
<th>TGNC</th>
<th>Cisgender</th>
<th>(\rho) value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depressive symptoms</td>
<td>57.9%</td>
<td>21.3%</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Self-harm (past year)</td>
<td>54.8%</td>
<td>14.4%</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Suicidal ideation (ever)</td>
<td>61.3%</td>
<td>20%</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Suicide attempt (ever)</td>
<td>31%</td>
<td>7.1%</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Bullying victimization (past 30 days)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Physical</td>
<td>25.1%</td>
<td>12.7%</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>• Relational</td>
<td>52.2%</td>
<td>32%</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>• Cyber</td>
<td>27.6%</td>
<td>12.3%</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>• Gender</td>
<td>35.3%</td>
<td>4.7%</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>• Gender expression</td>
<td>46.9%</td>
<td>15%</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

Additional Research of the Prevalence of Depression in TGNC Youth

- New Zealand High School Students (2014)¹
  - Significantly higher rates of depression (41.3%) in trans as compared to cisgender students (11.8%)

- Adolescents referred to a gender clinic in Amsterdam (2011)²
  - Parents/caregivers administered DISC to identify DSM-IV diagnoses
    - 12.4% of the sample with mood disorders
      - 8.6% met criteria for MDD, 3.6% for Dysthymia


Additional Research of the Prevalence of Suicide and Self-Harm in TGNC Youth

<table>
<thead>
<tr>
<th>Location</th>
<th>Suicidal Ideation</th>
<th>Suicide Attempt</th>
<th>Non Suicidal Self Injury</th>
<th>Suicide or Self-Harm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender clinic in Los Angeles, US</td>
<td>51%</td>
<td>30%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender clinic in Finland</td>
<td></td>
<td></td>
<td></td>
<td>53%</td>
</tr>
<tr>
<td>Gender clinic in Vancouver, Canada</td>
<td></td>
<td>12%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender clinic in London, England</td>
<td></td>
<td>13.3%</td>
<td>38.5%</td>
<td></td>
</tr>
<tr>
<td>Gender clinic in United Kingdom</td>
<td></td>
<td></td>
<td></td>
<td>46.3%</td>
</tr>
</tbody>
</table>
Predictors of improved psychological outcomes

- Parental support/acceptance
- Supported Social Transition in Childhood
- Gender Affirmative Psychological and Medical Therapy
Trans-affirmative Model of Care

- Endorsed by multiple professional organizations
- Supports and accepts the individual’s gender identity
- Provides a safe space to express and explore without directing
- Medical therapy aimed to support the individual express and present in their gender identity
- Reparative/conversion therapy, intended to change one’s gender identity or sexual orientation, is NOT effective and should not be part of treatment
Outcomes After Intervention for Gender Dysphoria
Mental Health of Transgender Children Who are Supported in Their Identities

- Compared 73 prepubertal (ages 3-12) youth who had socially transitioned with 73 controls matched on age and gender identify as well as a set of 49 siblings
- Parents completed ratings of anxiety and depression
  - Socially transitioned transgender children showed rates of depression similar to the sibling and control groups
  - Rates of anxiety were only slightly elevated in the transgender group (t scores of 54.2, 52.3, and 50.9, respectively (p = .057))

Mental Health and Self-Worth in Socially Transitioned Transgender Youth

- Compared self and parent reported depression and anxiety, in socially transitioned transgender children with 2 control groups, age and gender matched controls and siblings
  - 63 transgender youth, 63 controls, 38 siblings (9-14 years)
    - Transgender youth reported depression that did not differ from their matched-control or sibling peers and marginally higher anxiety ($\rho = .076$)
    - Parent report was consistent with self-report (more anxiety than controls, equivalent depression)

Mental Health and Self-Worth in Socially Transitioned Transgender Youth cont.

- Children in all groups also reported on their self worth
  - 116 transgender youth, 122 controls, 72 siblings (6-14 years)
    - Transgender children did not differ from controls in self-worth

Young Adult Psychological Outcome After Puberty Suppression and Gender Reassignment

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Young Adult Psychological Outcome After Puberty Suppression and Gender Reassignment cont.

- Behavioral and emotional functioning improved with pubertal suppression and continued after gender reassignment surgery
- Global functioning improved with pubertal suppression and post gender reassignment surgery
- Gender dysphoria and body image dissatisfaction persisted through puberty suppression but remitted after starting hormone therapy and/or surgery

Young Adult Psychological Outcome After Puberty Suppression and Gender Reassignment cont.

Objective and Subjective Well-being

• More likely to be pursuing higher education vs. the Dutch population (58% vs. 31%)
• After GRS, 89% reported having never or seldom being harassed
• 71% experienced social transitioning as easy
• None reported regret during puberty suppression, cross-sex hormone treatment or after surgery

We care for all children and families.

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN™
References

References cont.

References cont.

References cont.


References cont.

- Ending Conversion Therapy: Supporting and Affirming LGBTQ Youth. SAMHSA Oct. 2015
References cont.

References cont.

References cont.

References cont.