Caring for the Transgender Patient

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No Financial Disclosures

Medications Discussed are Off-Labeled Use

I am NOT final authority on Transgender Health
Objectives

Review Transgender Terminology & Demographics
Discuss Transgender Health Disparities
Develop Methods to Foster a Gender-Affirming Environment
Brief Review of Medical & Surgical Options for Transitioning
Effects of Hormone Therapy on Labs & Imaging
World Gender Customs
Two Spirit

Two Spirit people held positions of great respect
- Medicine Men/Women
- Shamans/Visionaries/Mystics
- Keepers of oral traditions
- Cooks
- Matchmakers/Marriage counselors
- Singers/Artists

Osh-Tisch$^2$ (Finds Them and Kills Them) - pictured on the left
- Badé of the Crow Tribe
- Afforded distinctive social and ceremonial status
- Served as a scout and earned a reputation for bravery after the Battle of the Rosebud, June 17, 1876.
Terminology

**Transgender**
A person whose gender identity and assigned sex at birth do not align
- Transgender Man: Female-To-Male
- Transgender Woman: Male-To-Female

**Cisgender**
A person whose gender identity and assigned sex at birth correspond (i.e., a person who is not transgender).

**Non-binary**
A person whose gender identity falls outside of the traditional gender binary structure

**Gender Fluid**
A person whose gender identity is not fixed.
Terminology

**Intersex/Differences of Sexual Development (DSD)**
Group of rare conditions where the reproductive organs and genitals do not develop as expected secondary to variations in chromosomal, hormonal, gonadal or anatomical development

**Transsexual**
Sometimes used in medical literature or by some transgender people to describe those who have transitioned through medical interventions

**Transition/Gender Affirmation Process**
Period when a person makes social, legal, and/or medical changes
- Gender Affirming Hormone Therapy
- Gender Affirming Surgery

**Gender Dysphoria**
Experienced by some whose gender identity does not correspond with their assigned sex at birth. Manifests itself as clinically significant distress or impairment
## Terminology

<table>
<thead>
<tr>
<th>Problematic</th>
<th>Preferred</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Transgenders, A transgender</td>
<td>- Transgender people, A transgender person</td>
</tr>
<tr>
<td>- Transgendered</td>
<td>- Transgender</td>
</tr>
<tr>
<td>- Transgenderism</td>
<td>- Being Transgender</td>
</tr>
<tr>
<td>- Sex change, Pre-op, Post-op</td>
<td>- Transition</td>
</tr>
<tr>
<td>- Biologically male/female, genetically male/female, born a man/woman</td>
<td>- Assigned male/female at birth, Designated male/female at birth</td>
</tr>
<tr>
<td>- Passing/Stealth</td>
<td>- Visibly/Not Visibly Transgender</td>
</tr>
</tbody>
</table>

**Defamatory:** Tranny, She-male, He/She, It, Shim
The Genderbread Person

Gender Identity
- Woman
- Genderqueer
- Man

Gender identity is how you, in your head, think about yourself. It's the chemistry that composes you (e.g., hormonal levels) and how you interpret what that means.

Gender Expression
- Feminine
- Androgynous
- Masculine

Gender expression is how you demonstrate your gender (based on traditional gender roles) through the ways you act, dress, behave, and interact.

Biological Sex
- Female
- Intersex
- Male

Biological sex refers to the objectively measurable organs, hormones, and chromosomes. Female = vagina, ovaries, XX chromosomes; male = penis, testes, XY chromosomes; intersex = a combination of the two.

Sexual Orientation
- Heterosexual
- Bisexual
- Homosexual

Sexual orientation is who you are physically, spiritually, and emotionally attracted to, based on their sex/gender in relation to your own.
The Genderbread Person

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Gender Identity Development

Establishment of gender identity varies

For some children, gender identity may be fairly firm when they are as young as two or three years. For others it may be fluid until adolescence and occasionally later.

Around 2-years-old
- Children become conscious of the physical differences between sexes

Around 3-years-old
- Most children are easily able to label themselves as either a boy or a girl

Around 4-years-old
- Most children have a stable sense of their gender identity
- Same time of life children learn gender role behavior
## US Transgender Demographics

2017 - Williams Institute\(^6\)

<table>
<thead>
<tr>
<th>State</th>
<th>13 to 17</th>
<th>18 to 24</th>
<th>25 to 64</th>
<th>65 and older</th>
<th>All Adults (ages 18+)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percent</td>
<td>Number</td>
<td>Percent</td>
<td>Number</td>
</tr>
<tr>
<td>United States</td>
<td>149,750</td>
<td>0.73%</td>
<td>205,850</td>
<td>0.66%</td>
<td>967,100</td>
</tr>
<tr>
<td>Missouri</td>
<td>2,500</td>
<td>0.63%</td>
<td>3,600</td>
<td>0.60%</td>
<td>17,000</td>
</tr>
<tr>
<td></td>
<td>217,050</td>
<td>0.50%</td>
<td>4,400</td>
<td>0.50%</td>
<td>25,050</td>
</tr>
<tr>
<td></td>
<td>1,397,150</td>
<td>0.58%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Epilepsy 0.66%\(^7\)*

*Down’s Syndrome 0.15%\(^8\)*

*Type 1 DM 0.34%\(^9\)*
U.S. Transgender Survey (2015)\textsuperscript{10}

- 27,715 respondents from all 50 states, D.C, American Samoa, Guam, Puerto Rico and US military bases overseas
- Anonymous online survey for transgender adults (18 and older)
  - English and Spanish
- Explored categories related to education, employment, family life, health, housing and interactions with the criminal justice system

*Figure 4.19 [Distribution of 2015 USTS Respondents](#) [Distribution of the population of the United States](#)*

*Each dot on the maps represents the number of people in a zip code. Every dot corresponds to at least one person, and the size of each dot increases in accordance with the number of people in each zip code.*

*Washington University in St. Louis*
*School of Medicine*
Health Disparities

Disparities stem from structural/legal factors, social discrimination, and lack of culturally competent health care
- Poverty/Homelessness
- Access to Healthcare
- Unemployment
- Substance Abuse
- Bullying & Physical/Sexual Assault
- Sex Work
- HIV/STDs
- Obesity
- Eating and Body Image Disorders
- Depression/Anxiety
- Suicidality
Suicidality

40% of respondents have attempted suicide in their lifetime, nearly nine times the rate reported in the general U.S. population (4.6%).

Seven percent (7%) of all respondents attempted suicide in the past year, nearly twelve times the rate of attempted suicide in the U.S. population (0.6%).
Health Disparities$^{10}$

- Refusal/Denial of Insurance Coverage
- Discrimination within the medical setting
- Delay in seeking health care
- Lack of population specific competent care
Health Disparities

33% had at least one negative experience with a doctor or other health care provider related to being transgender over the past year - Verbal harassment, refusal of treatment, or having to teach the health care provider about transgender health.
Health Disparities

23% did not see a doctor when they needed to because of fear of being mistreated as a transgender person

24% had to teach the provider about transgender health in order to receive appropriate care

8% were refused transition-related health care

6% were harassed in a health care setting
Societal Support

Figure 1. Proportion of trans youth age 16-24 years in Ontario experiencing positive health and life conditions, by level of parental support

- Parent(s) very supportive
- Parent(s) somewhat to not at all supportive

- Satisfied with life*
- VG/excellent physical health
- VG/excellent mental health*
- High self esteem*
- Intent to parent
- Adequate housing*
- Adequate food

* = statistically significant difference (p < 0.05)
Societal Support

Figure 2. Proportion of trans youth age 16-24 years in Ontario experiencing negative health and life conditions, by level of parental support

<table>
<thead>
<tr>
<th>Condition</th>
<th>Parent(s) very supportive</th>
<th>Parent(s) somewhat to not at all supportive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depressive symptoms*</td>
<td>23</td>
<td>34</td>
</tr>
<tr>
<td>Considered suicide, past yr</td>
<td>75</td>
<td>70</td>
</tr>
<tr>
<td>Suicide attempt, past yr*</td>
<td>57</td>
<td>4</td>
</tr>
</tbody>
</table>

* = statistically significant difference (p < 0.05)
Creating a Gender Affirming Environment

- Simple changes in forms, signage, and office practices can go far in making LGBT individuals feel more welcome.
- The Institute of Medicine recommends inclusion of structured data fields to obtain information on sexual orientation and gender identity (SOGI) as part of electronic health records.
Creating a Gender Affirming Environment

<table>
<thead>
<tr>
<th>1. Which of the categories best describes your current annual income? Please check the correct category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ &lt;$10,000</td>
</tr>
<tr>
<td>□ $10,000–14,999</td>
</tr>
<tr>
<td>□ $15,000–19,999</td>
</tr>
<tr>
<td>□ $20,000–29,999</td>
</tr>
<tr>
<td>□ $30,000–49,999</td>
</tr>
<tr>
<td>□ $50,000–79,999</td>
</tr>
<tr>
<td>□ Over $80,000</td>
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</table>

<table>
<thead>
<tr>
<th>2. Employment Status:</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Employed full time</td>
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<tr>
<td>□ Employed part time</td>
</tr>
<tr>
<td>□ Student full time</td>
</tr>
<tr>
<td>□ Student part time</td>
</tr>
<tr>
<td>□ Retired</td>
</tr>
<tr>
<td>□ Other ____________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Racial Group(s):</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ African American/Black</td>
</tr>
<tr>
<td>□ Asian</td>
</tr>
<tr>
<td>□ Caucasian</td>
</tr>
<tr>
<td>□ Multi racial</td>
</tr>
<tr>
<td>□ Native American/Alaskan Native/Inuit</td>
</tr>
<tr>
<td>□ Pacific Islander</td>
</tr>
<tr>
<td>□ Other ____________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. Ethnicity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Hispanic/Latino/Latina</td>
</tr>
<tr>
<td>□ Not Hispanic/Latino/Latina</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. Country of Birth:</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ USA</td>
</tr>
<tr>
<td>□ Other ____________</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>6. Language(s):</th>
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</thead>
<tbody>
<tr>
<td>□ English</td>
</tr>
<tr>
<td>□ Español</td>
</tr>
<tr>
<td>□ Français</td>
</tr>
<tr>
<td>□ Português</td>
</tr>
<tr>
<td>□ Русский</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7. Do you think of yourself as:</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Lesbian, gay, or homosexual</td>
</tr>
<tr>
<td>□ Straight or heterosexual</td>
</tr>
<tr>
<td>□ Bisexual</td>
</tr>
<tr>
<td>□ Something Else</td>
</tr>
<tr>
<td>□ Don't know</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8. Marital Status:</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Married</td>
</tr>
<tr>
<td>□ Partnered</td>
</tr>
<tr>
<td>□ Single</td>
</tr>
<tr>
<td>□ Divorced</td>
</tr>
<tr>
<td>□ Other ____________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8. Veteran Status:</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Veteran</td>
</tr>
<tr>
<td>□ Not a veteran</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1. Referral Source:</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Self</td>
</tr>
<tr>
<td>□ Friend or Family Member</td>
</tr>
<tr>
<td>□ Health Provider</td>
</tr>
<tr>
<td>□ Emergency Room</td>
</tr>
<tr>
<td>□ Ad/internet/Media/Outreach Worker/School</td>
</tr>
<tr>
<td>□ Other ____________</td>
</tr>
</tbody>
</table>
Creating a Gender Affirming Environment

1. What is your current gender identity? (Check an/or circle ALL that apply)
   - Male
   - Female
   - Transgender Male/Trans Man/FTM
   - Transgender Female/Trans Woman/MTF
   - Genderqueer
   - Additional category (please specify):
     ____________
   - Decline to answer

2. What sex were you assigned at birth? (Check one)
   - Male
   - Female
   - Decline to answer

3. What pronouns do you prefer (e.g., he/him, she/her)?
   ________________
Creating a Gender Affirming Environment

• Develop and display non-discrimination policies that include sexual orientation and gender identity

• Educational brochures on LGBT health topics can be made available where other patient information materials are displayed

• Gender-neutral facilities

• Provide diversity training to all staff - including receptionists, medical assistants, nurses, and physicians, to treat all LGBT patients with respect including using patients’ preferred names and pronouns
Creating a Gender Affirming Environment

Front-line Staff

• Front desk staff, nursing staff, lab and x-ray staff, etc.
• Critical Role
• Address people without using terms indicating gender
  • Sir/Ma’am, Mr./Mrs./Miss/Ms.
• If unsure of name or pronouns, ask...
  • What name and pronouns would you like me/us to use?”
  • Never ask a person what their “real” name is.
Name/Pronoun Awareness

We should respect the pronouns a person uses
- She/Her/Hers
- He/Him/His
- They/Them/Theirs
- Others

Avoid the phrase “preferred pronouns”
- “What pronouns do you use?”
Creating a Gender Affirming Environment

Making Mistakes

• Many providers are uncomfortable discussing gender identity with patients due to fear of making a mistake or upsetting a patient

• It is okay to make mistakes, as long as you are considerate towards the person you are addressing

• If you do make a mistake, simply apologize - a thoughtful apology can go a long way in changing their experience, even beyond your interaction
Creating a Gender Affirming Environment

Continue to educate yourself about LGBT health topics

- Glossary of LGBT Terms
  https://www.lgbthealtheducation.org/publication/lgbt-glossary/
- Gender Spectrum
  https://www.genderspectrum.org/
- UCSF Center of Excellence for Transgender Health
  http://transhealth.ucsf.edu
- TransLine
  http://project-health.org/transline/
- TransYouth Family Allies
  http://www.imatyfa.org/healthcare.html
- Endocrine Society Guidelines - Endocrine Treatment of Gender-Dysphoric/Gender-Incongruent Persons
  www.endo-society.org/guidelines
- WPATH Standards of Care
  http://www.wpath.org/
Creating a Gender Affirming Environment
Hormonal Options for Transitioning

GnRH Agonist

- Available at Tanner Stage 2-5
- Suppresses pubertal progression
- Time to explore gender/development and desired outcomes
- Can stop & proceed with endogenous puberty
- Prevents development of undesired sexual characteristics that are difficult or impossible to erase
  - Decrease need for various surgical procedures
- May allow for lower dosages of hormone replacement therapy
Hormonal Options for Transitioning

GnRH Agonist

Subcutaneous Implants (Histrelin)
- Effective for 12+ months

Intramuscular Injection (Leuprolide/Triptorelin)
- Every 1, 3 or 6 month preparations
Hormonal Options for Transitioning

GnRH Agonist & Fertility

Treating early puberty temporarily impairs spermatogenesis and oocyte maturation

Delaying or temporarily discontinuing blockers to promote gamete maturation is an option

    Not often preferred because mature sperm production is associated with later stages of puberty and significant secondary sex characteristic development

Reproductive Endocrine Gynecologist can counsel before hormone treatment or surgery regarding potential fertility options

Early suppression of trans-females may lead to insufficient penile tissue for vaginoplasty
Hormonal Options for Transitioning

GnRH Agonist & Brain Development

Pubertal suppression with GnRH agonists is not associated with a detrimental effect on higher order cognitive processing (ToL performance scores - reaction time or accuracy)\(^\text{14}\)

Psychological support and puberty suppression were both associated with an improved global psychosocial functioning in GD adolescents\(^\text{15}\)
Hormonal Options for Transitioning

GnRH Analogues & Bone Health

BMD below pretreatment potential suggests delayed attainment of peak bone mass or attenuation of peak bone mass\(^{16}\)

FTM individuals - sex steroid therapy does not seem to be associated with significant changes in BMD\(^{17}\)

MTF individuals - sex steroid therapy appears to be associated with increased BMD\(^{17}\)

The impact of these BMD changes on patient important outcomes such as fracture risk remains uncertain.

Delayed growth plate closure
Hormonal Options for Transitioning

Gender Affirming Hormones

Exogenous 17-beta-Estrogen or Testosterone

Develop desired secondary sex characteristics and suppress/minimize undesired secondary sex characteristics

Age availability varies between institutions - 13.5 to 16 years for initiation with parental consent

If suppressed, extensive delay could impact bone health and psychosocial development
Hormonal Options for Transitioning

Adjunctive Therapies

Bicalutamide: androgen receptor blocker
  - Liver disease

Spironolactone: androgen receptor blocker & testosterone synthesis suppression
  - Diuretic effect; Hyperkalemia; Negative effects of well being, energy or mood

5-alpha reductase inhibitors: blocks conversion of testosterone to dihydrotestosterone

Oxandrolone: weak androgen; escapes aromatization into estrogen

Progesterone: gonadotropin suppression; possible improved breast development; cessations of menses
Hormonal Options for Transitioning

Testosterone

Injection, Topical, Pellet Implant

SubQ vs IM route: subQ route equal efficacy and improved patient satisfaction, less pain, smaller needle, more gradual absorption, avoid IM fibrosis from long term (possibly > 50 years) IM therapy

Side Effects
Hair loss
Unwanted body hair
Acne
Vaginal atrophy
Effects on mood/energy
Weight/Appetite changes
Secondary exposure
Impaired fertility
Abnormal fetal development
Changes in sex drive
<table>
<thead>
<tr>
<th>Effect</th>
<th>Expected Onset&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Expected Maximum Effect&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin oiliness/acne</td>
<td>1-6 months</td>
<td>1-2 years</td>
</tr>
<tr>
<td>Facial/body hair growth</td>
<td>3-6 months</td>
<td>3-5 years</td>
</tr>
<tr>
<td>Scalp hair loss</td>
<td>&gt;12 months&lt;sup&gt;c&lt;/sup&gt;</td>
<td>variable</td>
</tr>
<tr>
<td>Increased muscle mass/strength</td>
<td>6-12 months</td>
<td>2-5 years&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>Body fat redistribution</td>
<td>3-6 months</td>
<td>2-5 years</td>
</tr>
<tr>
<td>Cessation of menses</td>
<td>2-6 months</td>
<td>n/a</td>
</tr>
<tr>
<td>Clitoral enlargement</td>
<td>3-6 months</td>
<td>1-2 years</td>
</tr>
<tr>
<td>Vaginal atrophy</td>
<td>3-6 months</td>
<td>1-2 years</td>
</tr>
<tr>
<td>Deepened voice</td>
<td>3-12 months</td>
<td>1-2 years</td>
</tr>
</tbody>
</table>

<sup>A</sup> Adapted with permission from Hembree et al. (2009). Copyright 2009, The Endocrine Society.

<sup>B</sup> Estimates represent published and unpublished clinical observations.

<sup>C</sup> Highly dependent on age and inheritance; may be minimal.

<sup>D</sup> Significantly dependent on amount of exercise.
Hormonal Options for Transitioning

17-beta Estradiol

Injection, Topical, Oral/Sublingual

Ethinyl estradiol/Premarin not recommended

Increased adverse health effects & unable to measure in serum

Side effects
Exacerbation of migraines/seizure
Effects on mood
Hot flashes
Weight changes
Impaired fertility
Changes in energy
Decreased libido and erectile dysfunction
<table>
<thead>
<tr>
<th>Effect</th>
<th>Expected Onset</th>
<th>Expected Maximum Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body fat redistribution</td>
<td>3-6 months</td>
<td>2-5 years</td>
</tr>
<tr>
<td>Decreased muscle mass/strength</td>
<td>3-6 months</td>
<td>1-2 years</td>
</tr>
<tr>
<td>Softening of skin/decreased oiliness</td>
<td>3-6 months</td>
<td>unknown</td>
</tr>
<tr>
<td>Decreased libido</td>
<td>1-3 months</td>
<td>1-2 years</td>
</tr>
<tr>
<td>Decreased spontaneous erections</td>
<td>1-3 months</td>
<td>3-6 months</td>
</tr>
<tr>
<td>Male sexual dysfunction</td>
<td>variable</td>
<td>variable</td>
</tr>
<tr>
<td>Breast growth</td>
<td>3-6 months</td>
<td>2-3 years</td>
</tr>
<tr>
<td>Decreased testicular volume</td>
<td>3-6 months</td>
<td>2-3 years</td>
</tr>
<tr>
<td>Decreased sperm production</td>
<td>variable</td>
<td>variable</td>
</tr>
<tr>
<td>Thinning and slowed growth of body and facial hair</td>
<td>6-12 months</td>
<td>&gt; 3 years</td>
</tr>
<tr>
<td>Male pattern baldness</td>
<td>No regrowth, loss stops 1-3 months</td>
<td>1-2 years</td>
</tr>
</tbody>
</table>

A Adapted with permission from Hembree et al. (2009). Copyright 2009, The Endocrine Society.
B Estimates represent published and unpublished clinical observations.
C Significantly dependent on amount of exercise.
D Complete removal of male facial and body hair requires electrolysis, laser treatment, or both.
Risks of Feminizing Hormone Therapy

**Thromboembolic Disease**
- Additional increase risk in >40 years of age, tobacco users, sedentary and obese
- Risk decreased with transdermal/IM route of estradiol
- Highest risk during the first year of therapy

**Cardiovascular/Cerebrovascular Disease**
- Increases rates of VTE and ischemic stroke but not myocardial infarctions
- Higher rates of tobacco use, obesity, age >40 years, diabetes and lipid disorders, and reduced physical activity
- Transdermal route has lower risk

**Epilepsy/Seizure Disorder**
- Lowers seizure threshold and may exacerbate underlying seizure disorders

**Migraines**
- Exacerbate migraine events
Risks of Feminizing Hormone Therapy

Cancer

- No identified difference in general cancer rate in transgender patients on hormone therapy compared to sex-assigned controls.
- Insufficient evidence of changes in risk factor for organ-specific cancer risk

Breast Cancer

- Transwomen on estrogen have developed breast cancer but degree of risk compared to cisgender female peers poorly studied
- Duration of estrogen exposure, family history of breast cancer, obesity and use of progestins likely influence the level of risk
- If a patient has a particular organ, screening should occur regardless of hormone use
Risks of Feminizing Hormone Therapy

Hyperprolactinemia
- Increased risk during the first year of therapy
  - Unlikely to develop after the first year
- May promote the clinical appearance of pre-existing but clinically unapparent prolactinoma
- Expectant management only in absence of visual disturbance, galactorrhea or new onset headaches

Liver Disease
- May have transient liver enzyme elevations and, rarely, clinical hepatotoxicity
Risks of Feminizing Hormone Therapy

Peri-operative Use

Many surgeons prefer that estrogen be discontinued for at least 2 weeks before and after any procedure.

- Can have profound impact to patient
- No evidence suggests that transgender women who lack risk factors (personal/ family history, excessive use of estrogen, smoking) must cease peri-operatively
  - Appropriate use of prophylaxis (heparin or compression devices)
  - Informed consent of pros and cons

Alternatives:

- Lower estrogen dose
- Convert to transdermal route
Risks of Masculinizing Hormone Therapy

Polycythemia/Erythrocytosis

Hgb & Hct levels should be interpreted in terms of dosing and menstruation status
- Physiologic male range testosterone and amenorrhea: expect male range Hgb/Hct

Mental Health Conditions/Aggression

No clear evidence of direct association between testosterone and mental health status
May see some influence when on higher doses or supra-physiologic blood levels

Hair Loss

Unpredictable nature, extent and time course
Managed with 5-alpha reductase inhibitors
Risks of Masculinizing Hormone Therapy

Metabolic Syndrome/PCOS

Not contraindicated but require monitoring for dyslipidemias and diabetes

Liver Disease

May have transient liver enzyme elevations

Cancer

No clear increased risk for breast, cervical, ovarian or endometrial cancers

Cardiovascular

Evidence suggests that risk is unchanged among transgender men using testosterone compared with non-transgender women
Surgical Interventions

Transgender women
  Top Surgery
  - Augmentation mammoplasty
  Bottom Surgery
  - Vaginoplasty
  - Orchiectomy
  Other
  - Facial feminization surgery
  - Reduction thyrochondroplasty (tracheal cartilage shave)
  - Voice surgery
  - Facial/Body Hair Removal
Surgical Interventions

Transgender men

- Top Surgery
  - Masculinizing Chest Surgery (Mastectomy)

- Bottom Surgery
  - Phalloplasty/Metoidioplasty
  - Hysterectomy

Figure 7.12: Procedures among transgender men
Other Special Considerations

Chest Binding
- Provides a flat chest contour
- Tight fitting sport bras, shirts, ace bandages,
- Prolonged use can cause breast pain, skin irritation, fungal infections, rib damage

Genital Tucking
- Provides a flat groin contour
- Testicles moved into inguinal canal
- Penis and scrotum moved posteriorly to the perineum
- Tight fitting underwear or special undergarment (gaffe)
- Some use adhesives or duct tape
- Prolonged use can cause skin irritation, hernias, genitourinary tract trauma/infection, testicular pain/torsion/trauma
Laboratory Sciences

- Transgender appropriate reference interval studies are virtually absent
- Not all patients that have name or gender marker changed are on gender-affirming hormone therapy
- Little to no guidance on when to transition sex-specific normal ranges
  - Many transition after 6 months of hormone therapy
- Lab supplied references ranges may not be appropriate
- Consult with lab to obtain reference ranges for both ‘male’ and ‘female’ norms then apply the most appropriate range when interpreting results
Laboratory Sciences

Alkaline phosphatase, hemoglobin and hematocrit, and creatinine may vary depending on the patient's current sex hormone configuration.
- Several factors contribute to these differences
  - Bone mass
  - Muscle mass
  - Number of myocytes
  - Changes on menstruation
  - Erythropoietic effects
  - Potential for pulsatile undetected androgen activity in those with retained gonads
- No empirical or published evidence of which eGFR equation is better suited for transgender individuals
## Laboratory Sciences - Feminizing Therapy

### Table 3. Lower and upper limits of normal to use when interpreting selected lab tests in transgender women using feminizing hormone therapy

<table>
<thead>
<tr>
<th>Lab measure</th>
<th>Lower Limit of normal</th>
<th>Upper Limit of normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creatinine</td>
<td>Not defined</td>
<td>Male value</td>
</tr>
<tr>
<td>Hemoglobin/Hematocrit</td>
<td>Female value</td>
<td>Male value</td>
</tr>
<tr>
<td>Alkaline Phosphatase</td>
<td>Not defined</td>
<td>Male value</td>
</tr>
</tbody>
</table>
**Table 3. Lower and upper limits of normal to use when interpreting selected lab tests in transgender men using masculinizing hormone therapy**

<table>
<thead>
<tr>
<th>Lab measure</th>
<th>Lower Limit of normal</th>
<th>Upper Limit of normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creatinine</td>
<td>Not defined</td>
<td>Male value</td>
</tr>
<tr>
<td>Hemoglobin/Hematocrit</td>
<td>Male value if amenorrheic*</td>
<td>Male value</td>
</tr>
<tr>
<td>Alkaline Phosphatase</td>
<td>Not defined</td>
<td>Male value</td>
</tr>
</tbody>
</table>

* If menstruating regularly, consider using female lower limit of normal.
Laboratory Sciences

Bone Health
- Growth Plate Maturation & Bone Mineralization
  - Standards for interpretation are based on age matched male or female standards
  - No guidelines on how to interpret standards in transgender patients undergoing hormonal therapy
    - GnRH agonist vs Gender-Affirming Hormones vs Other hormonal options
    - When to compare to cis-gender peers matched for sex assigned at birth or affirmed gender
Questions?

Compassion is the basis of all morality.

Arthur Shopenhaur
References