

Caring for the Transgender Patient

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No Financial Disclosures

Medications Discussed are Off-Label Use

I am NOT final authority on Transgender Health

Objectives

Review Transgender Terminology & Demographics

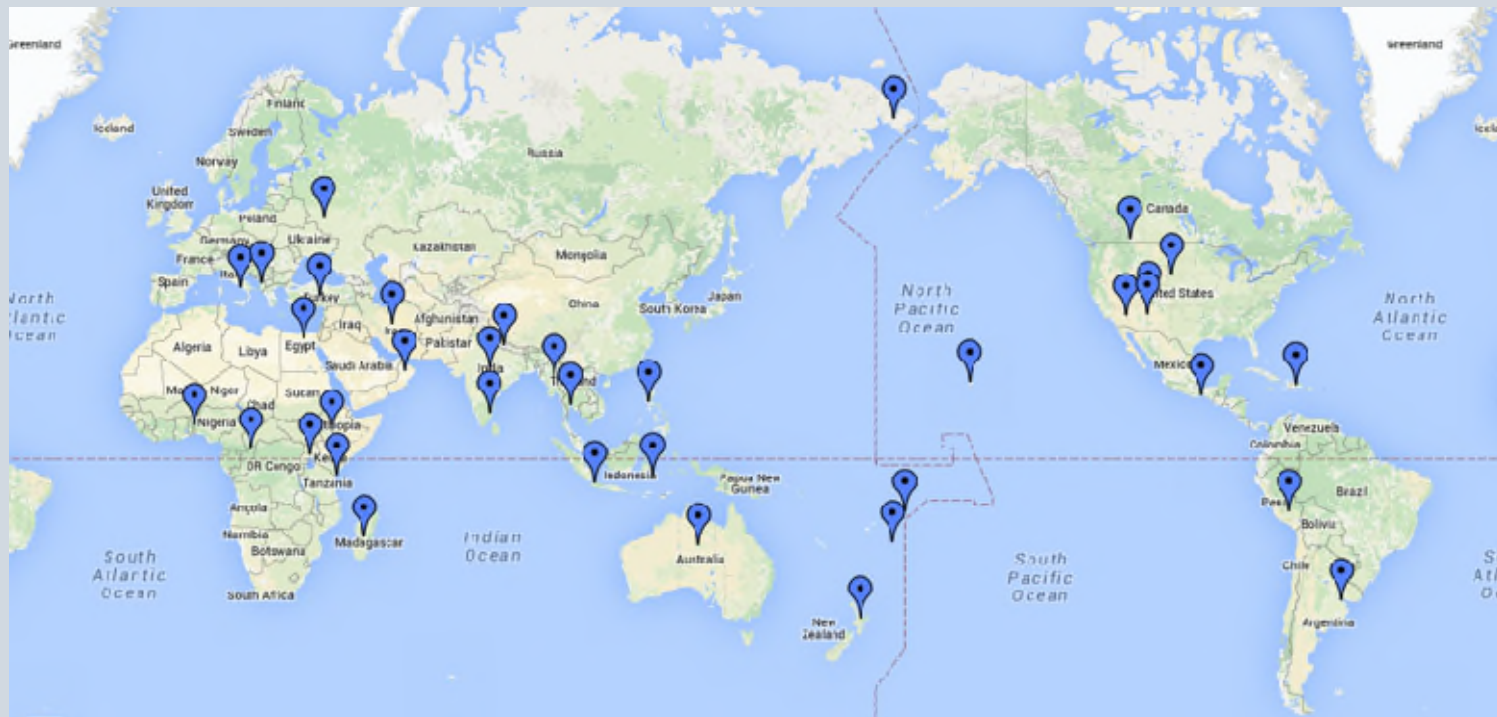
Discuss Transgender Health Disparities

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 Customs¹



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-Tisch² (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.



love human rights discrimination celebration legal
pride flag transsexual proud identity marriage Pa
trans queer together civil LGBTI
sexual GLBT rights sex people bise
homosexuality woman together pair
gender lesbian parade couple gay pride
diversity intersex orientation equality
LGBTI union social free
freedom homosexual support romanticism
gay homo LGBTIQ community sexual identity
event male sexual minority same-sex

Terminology³

Transgender

A person whose gender identity and assigned sex at birth do not align

- Transgender Man: Female-To-Male
- Transgender Woman: Male-To-Female

Non-binary

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

Cisgender

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

Gender Fluid

A person whose gender identity is not fixed.

Terminology³

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

Terminology³

Problematic

- Transgenders, A transgender
- Transgendered
- Transgenderism
- Sex change, Pre-op, Post-op
- Biologically male/female, genetically male/female, born a man/woman
- Passing/Stealth

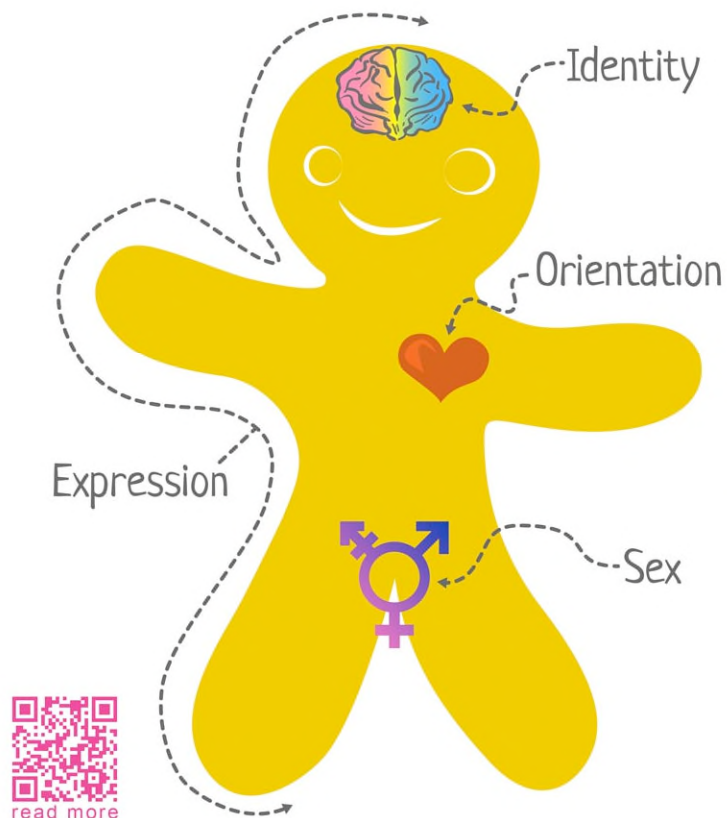
Preferred

- Transgender people, A transgender person
- Transgender
- Being Transgender
- Transition
- Assigned male/female at birth, Designated male/female at birth
- Visibly/Not Visibly Transgender

Defamatory: Tranny, She-male, He/She, It, Shim

The Genderbread Person

by www.ItsPronouncedMetrosexual.com



 **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.

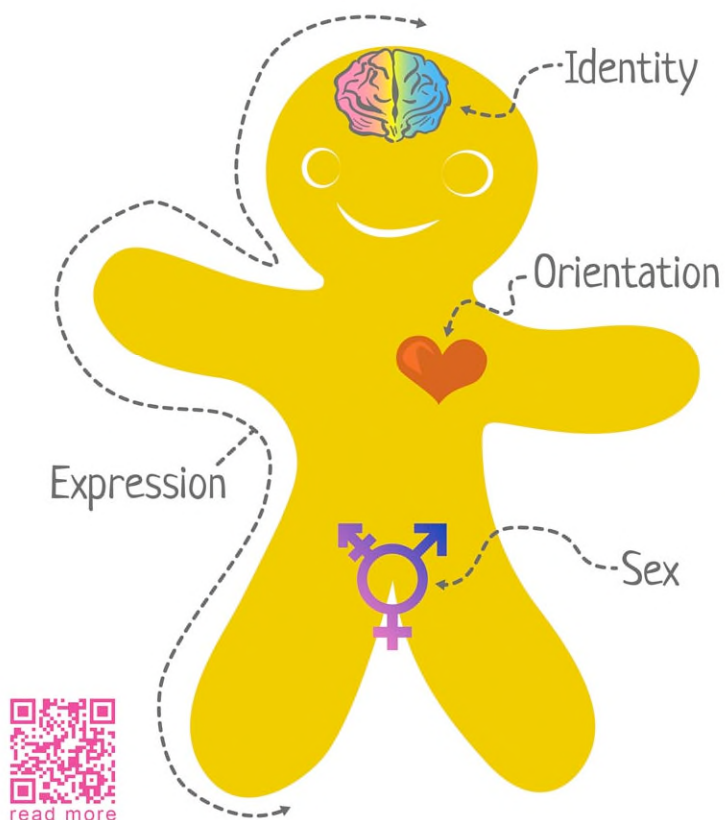
 **Sexual Orientation**

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

by www.ItsPronouncedMetrosexual.com



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Gender Identity Development⁵

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 Institute⁶

State	Age									
	13 to 17		18 to 24		25 to 64		65 and older		All Adults (ages 18+)	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
United States	149,750	0.73%	205,850	0.66%	967,100	0.58%	217,050	0.50%	1,397,150	0.58%
Missouri	2,500	0.63%	3,600	0.60%	17,000	0.54%	4,400	0.50%	25,050	0.54%

Epilepsy 0.66%⁷

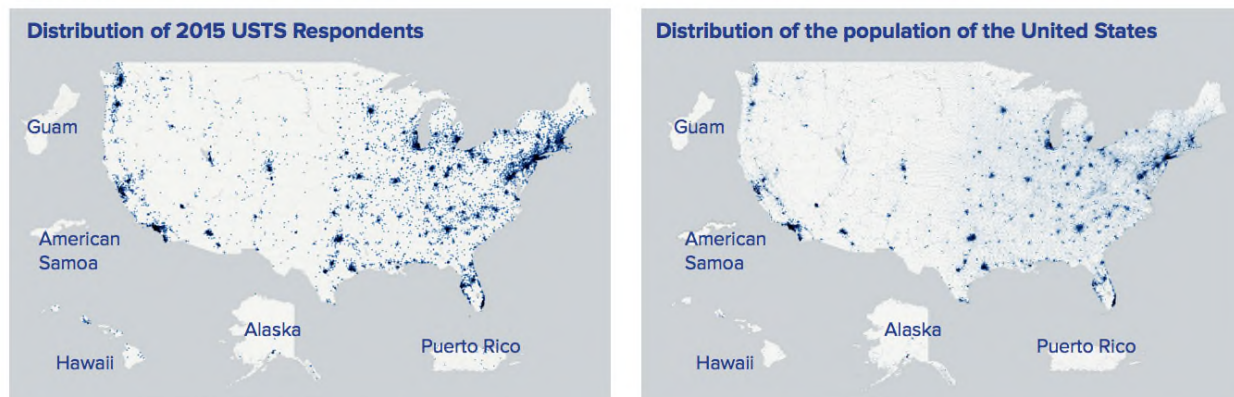
Down's Syndrome 0.15%⁸

Type 1 DM 0.34%⁹

U.S. Transgender Survey (2015)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



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.

Health Disparities¹⁰

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

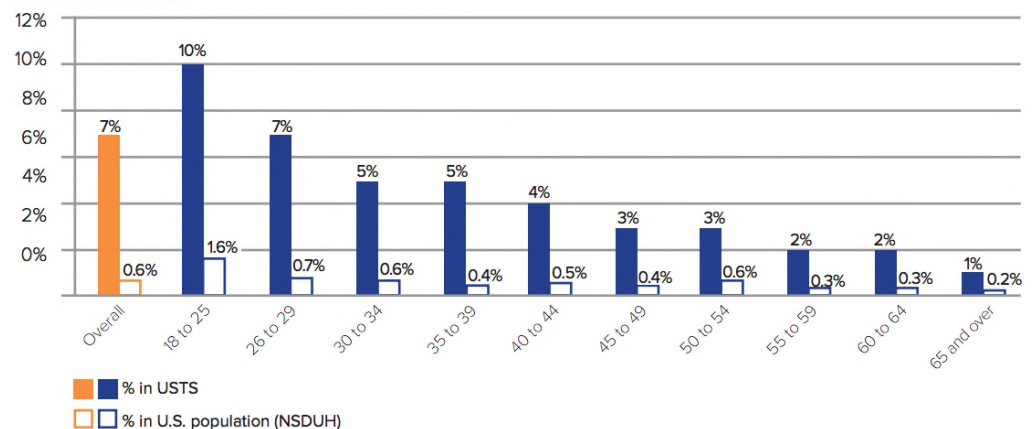


Suicidality¹⁰

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%).

Figure 7.31: Attempted suicide in the past year
CURRENT AGE (%)



Health Disparities¹⁰

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



Health Disparities⁷



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 Disparities¹⁰

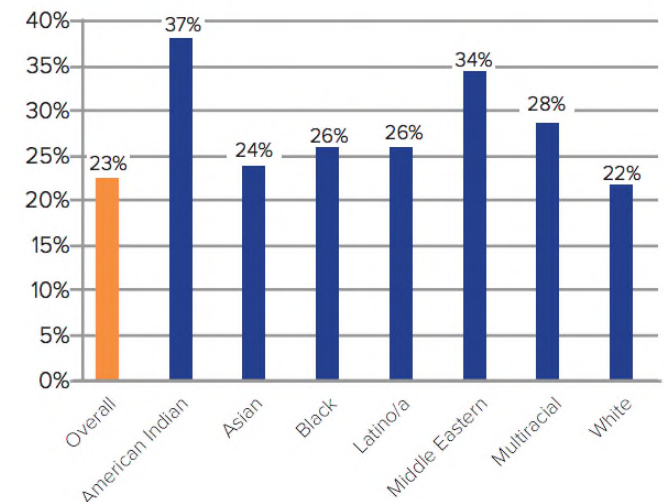
23% did not see a doctor when they needed to because of fear of being mistreated as a transgender person

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

8% were refused transition-related health care

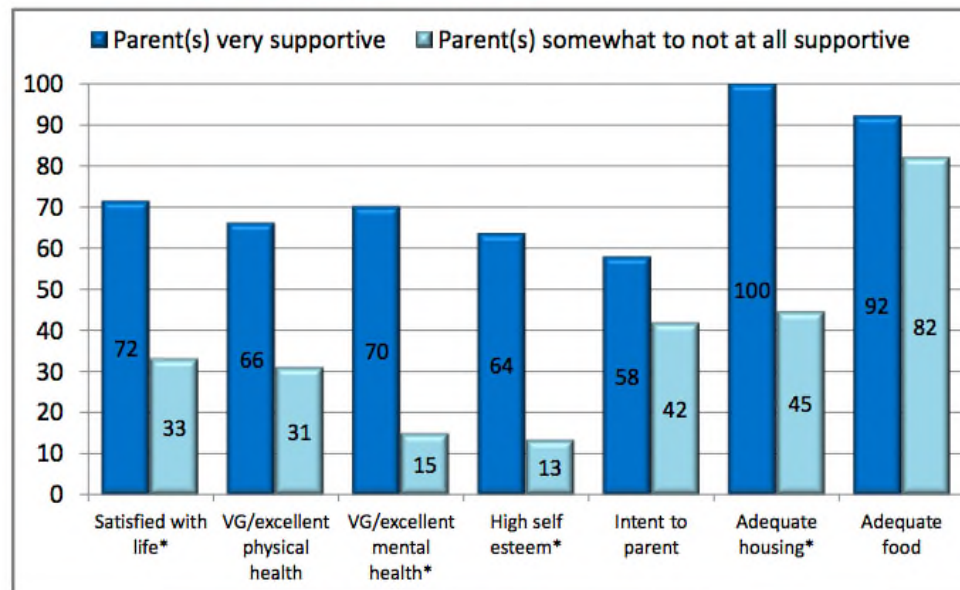
6% were harassed in a health care setting

Figure 7.6: Did not see health provider due to fear of mistreatment in the past year
RACE/ETHNICITY (%)



Societal Support¹¹

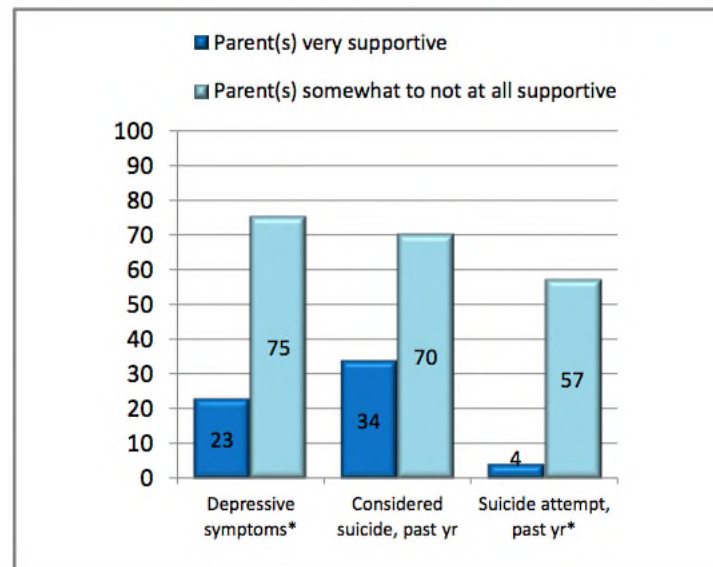
Figure 1. Proportion of trans youth age 16-24 years in Ontario experiencing positive health and life conditions, by level of parental support



* = statistically significant difference ($p < 0.05$)

Societal Support¹¹

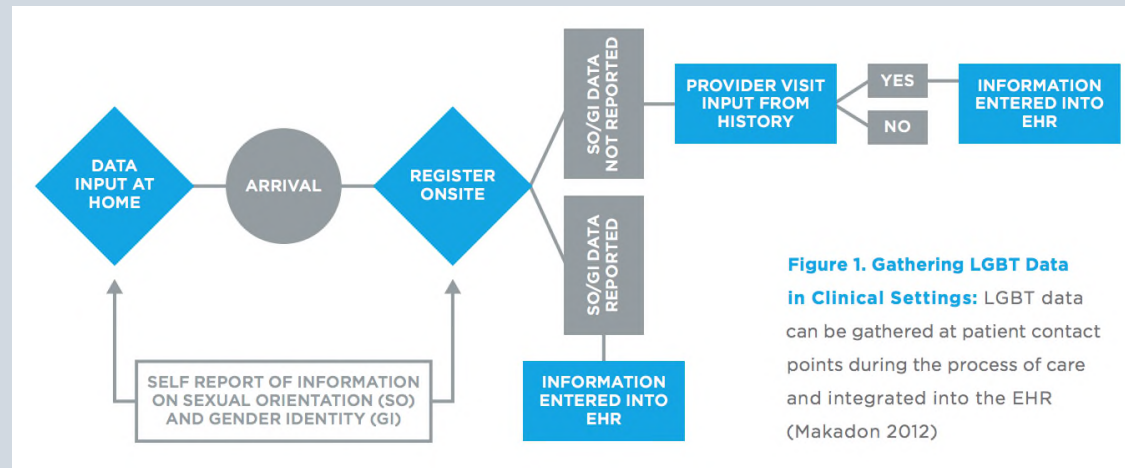
Figure 2. Proportion of trans youth age 16-24 years in Ontario experiencing negative health and life conditions, by level of parental support



* = statistically significant difference ($p < 0.05$)

Creating a Gender Affirming Environment¹²

- 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 Environment¹²

<p>1. Which of the categories best describes your current annual income? Please check the correct category:</p> <p><input type="checkbox"/> <\$10,000 <input type="checkbox"/> \$10,000-14,999 <input type="checkbox"/> \$15,000-19,999 <input type="checkbox"/> \$20,000-29,999 <input type="checkbox"/> \$30,000-49,999 <input type="checkbox"/> \$50,000-79,999 <input type="checkbox"/> Over \$80,000</p>	<p>2. Employment Status:</p> <p><input type="checkbox"/> Employed full time <input type="checkbox"/> Employed part time <input type="checkbox"/> Student full time <input type="checkbox"/> Student part time <input type="checkbox"/> Retired <input type="checkbox"/> Other _____</p>	<p>3. Racial Group(s):</p> <p><input type="checkbox"/> African American/Black <input type="checkbox"/> Asian <input type="checkbox"/> Caucasian <input type="checkbox"/> Multi racial <input type="checkbox"/> Native American/Alaskan Native/Inuit <input type="checkbox"/> Pacific Islander <input type="checkbox"/> Other _____</p>	<p>4. Ethnicity:</p> <p><input type="checkbox"/> Hispanic/Latino/Latina <input type="checkbox"/> Not Hispanic/Latino/Latina</p> <p>5. Country of Birth:</p> <p><input type="checkbox"/> USA <input type="checkbox"/> Other _____</p>
<p>6. Language(s):</p> <p><input type="checkbox"/> English <input type="checkbox"/> Español <input type="checkbox"/> Français <input type="checkbox"/> Português <input type="checkbox"/> Русский</p>	<p>7. Do you think of yourself as:</p> <p><input type="checkbox"/> Lesbian, gay, or homosexual <input type="checkbox"/> Straight or heterosexual <input type="checkbox"/> Bisexual <input type="checkbox"/> Something Else <input type="checkbox"/> Don't know</p>	<p>8. Marital Status:</p> <p><input type="checkbox"/> Married <input type="checkbox"/> Partnered <input type="checkbox"/> Single <input type="checkbox"/> Divorced <input type="checkbox"/> Other _____</p> <p>8. Veteran Status:</p> <p><input type="checkbox"/> Veteran <input type="checkbox"/> Not a veteran</p>	<p>1. Referral Source:</p> <p><input type="checkbox"/> Self <input type="checkbox"/> Friend or Family Member <input type="checkbox"/> Health Provider <input type="checkbox"/> Emergency Room <input type="checkbox"/> Ad/Internet/Media/ Outreach Worker/School <input type="checkbox"/> Other _____</p>

Creating a Gender Affirming Environment¹²

**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

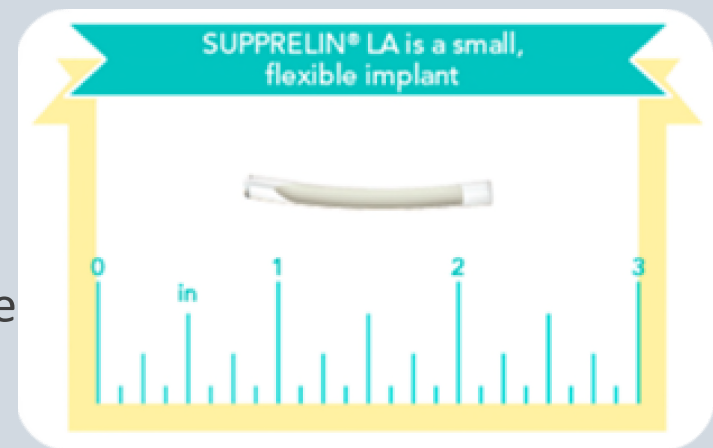
GnRH Agonist

Subcutaneous Implants (Histrelin)

Effective for 12+ months

Intramuscular Injection (Leuprolide/Triptorel)

Every 1, 3 or 6 month preparations



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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)¹⁴

Psychological support and puberty suppression were both associated with an improved global psychosocial functioning in GD adolescents¹⁵

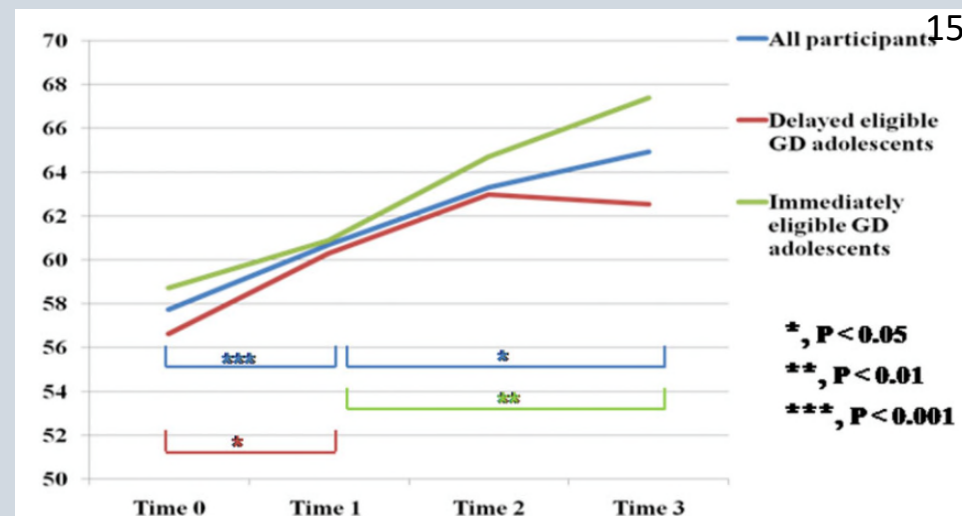


Figure 2 Gender dysphoria adolescents' psychosocial functioning (CGAS) at baseline, after psychological support, and after puberty suppression
CGAS, Children's Global Assessment Scale; Time 0, baseline; Time 1, 6 months from baseline (after 6 months of psychological support); Time 2, 12 months from baseline (delayed eligible gender dysphoria [GD] adolescents, after 12 months of psychological support; immediately eligible GD adolescents, after 12 months of psychological support + 6 months of puberty suppression); Time 3, 18 months from baseline (delayed eligible GD adolescents, after 18 months of psychological support; immediately eligible GD adolescents, after 18 months of psychological support + 12 months of puberty suppression)

Hormonal Options for Transitioning

GnRH Analogues & Bone Health

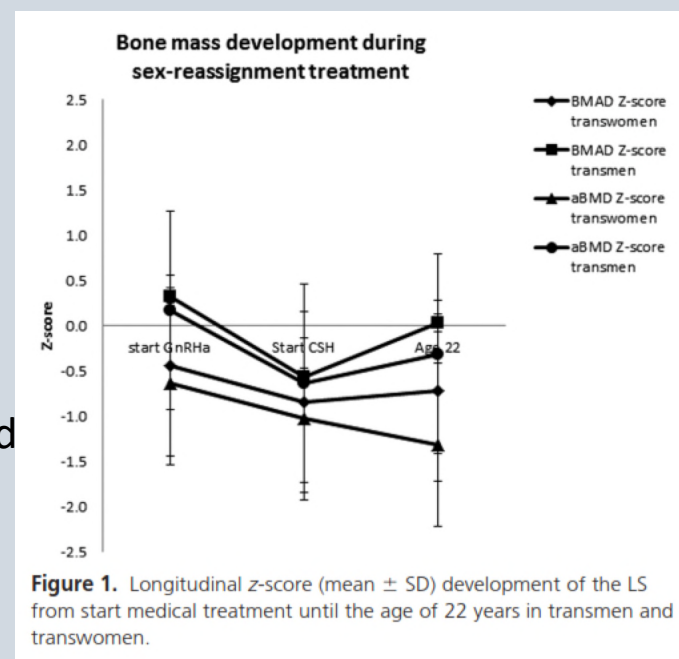
BMD below pretreatment potential suggests delayed attainment of peak bone mass or attenuation of peak bone mass¹⁶

FTM individuals - sex steroid therapy does not seem to be associated with significant changes in BMD¹⁷

MTF individuals - sex steroid therapy appears to be associated with increased BMD¹⁷

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

Delayed growth plate closure



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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 ¹⁸

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

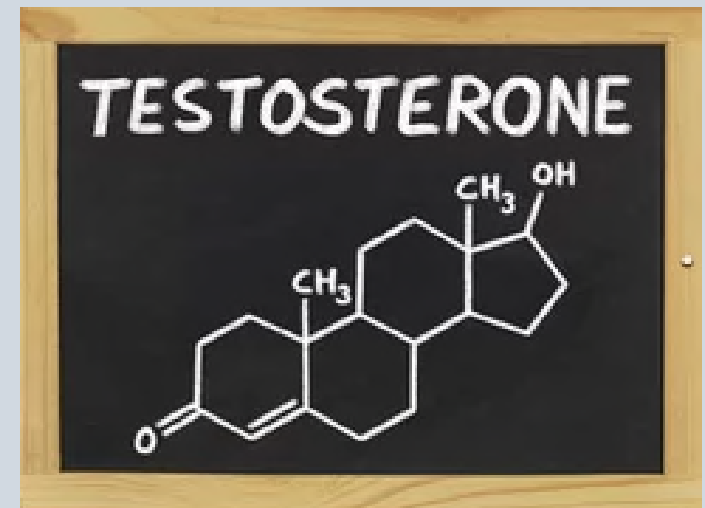


TABLE 1A: EFFECTS AND EXPECTED TIME COURSE OF MASCULINIZING HORMONES ^A

Effect	Expected Onset ^B	Expected Maximum Effect ^B
● Skin oiliness/acne	1-6 months	1-2 years
● Facial/body hair growth	3-6 months	3-5 years
● Scalp hair loss	>12 months ^C	variable
● Increased muscle mass/strength	6-12 months	2-5 years ^D
● Body fat redistribution	3-6 months	2-5 years
● Cessation of menses	2-6 months	n/a
● Clitoral enlargement	3-6 months	1-2 years
● Vaginal atrophy	3-6 months	1-2 years
● Deepened voice	3-12 months	1-2 years

^A Adapted with permission from Hembree et al. (2009). Copyright 2009, The Endocrine Society.

^B Estimates represent published and unpublished clinical observations.

^C Highly dependent on age and inheritance; may be minimal.

^D Significantly dependent on amount of exercise.

● Reversible

● Partially Reversible

● Irreversible

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

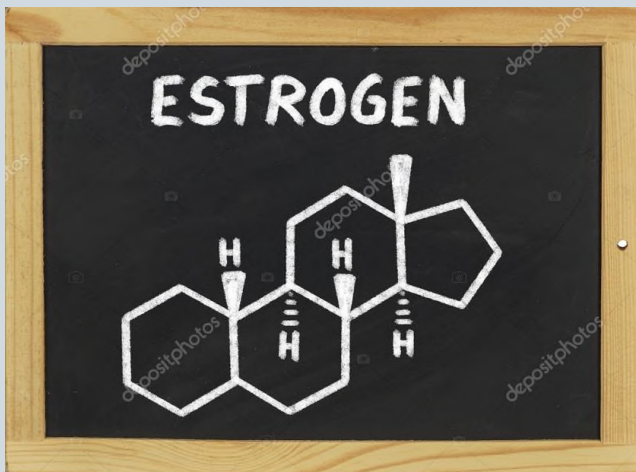













TABLE 1B: EFFECTS AND EXPECTED TIME COURSE OF FEMINIZING HORMONES ^A

Effect	Expected Onset ^B	Expected Maximum Effect ^B
 Body fat redistribution	3-6 months	2-5 years
 Decreased muscle mass/ strength	3-6 months	1-2 years ^C
 Softening of skin/decreased oiliness	3-6 months	unknown
 Decreased libido	1-3 months	1-2 years
 Decreased spontaneous erections	1-3 months	3-6 months
 Male sexual dysfunction	variable	variable
 Breast growth	3-6 months	2-3 years
 Decreased testicular volume	3-6 months	2-3 years
 Decreased sperm production	variable	variable
 Thinning and slowed growth of body and facial hair	6-12 months	> 3 years ^D
 Male pattern baldness	No regrowth, loss stops 1-3 months	1-2 years

^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.

 Reversible

 Partially Reversible

 Irreversible

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

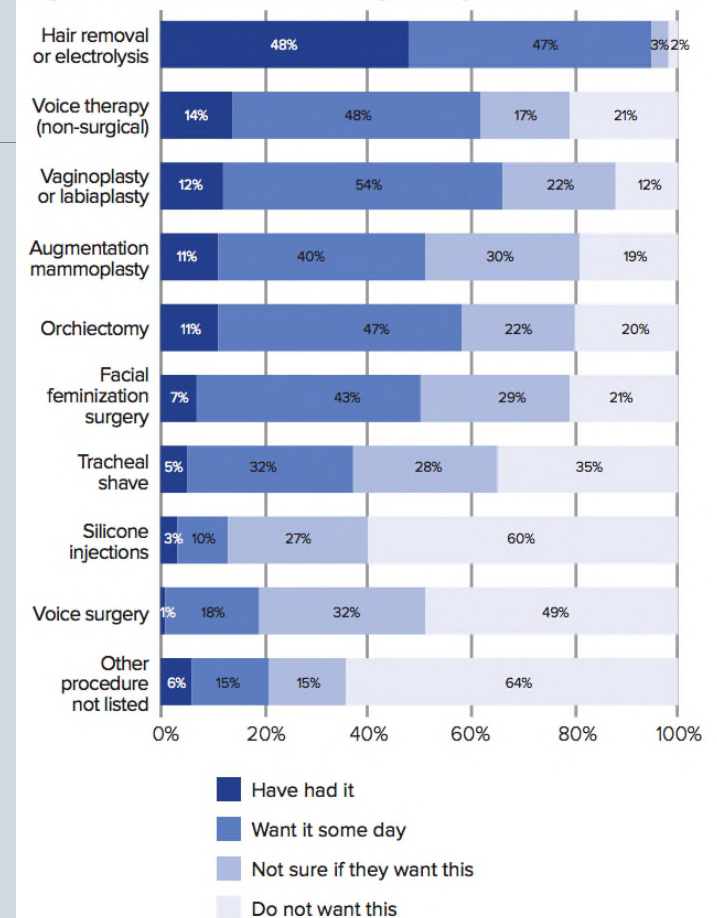
Bottom Surgery

- Vaginoplasty
- Orchiectomy

Other

- Facial feminization surgery
- Reduction thyrochondroplasty (tracheal cartilage shave)
- Voice surgery
- Facial/Body Hair Removal

Figure 7.14: Procedures among transgender women



Surgical Interventions

Transgender men

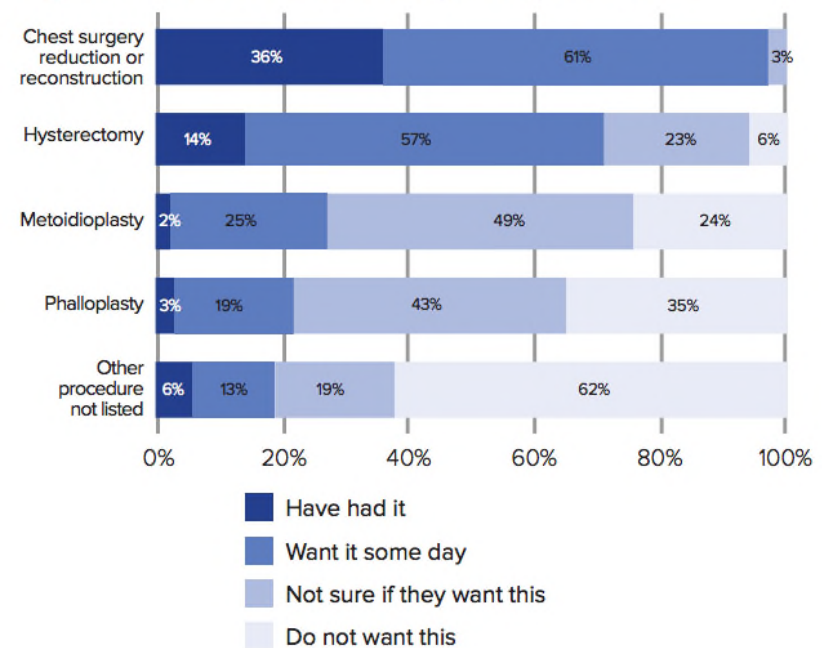
Top Surgery

- Masculinizing Chest Surgery (Mastectomy)

Bottom Surgery

- Phalloplasty/Metoidioplasty
- Hysterectomy

Figure 7.12: Procedures among transgender men



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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
 - Erythropoetic 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

20

Lab measure	Lower Limit of normal	Upper Limit of normal
Creatinine	Not defined	Male value
Hemoglobin/Hematocrit	Female value	Male value
Alkaline Phosphatase	Not defined	Male value

Laboratory Sciences - Masculinizing Therapy

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

20

Lab measure	Lower Limit of normal	Upper Limit of normal
Creatinine	Not defined	Male value
Hemoglobin/Hematocrit	Male value if amenorrheic*	Male value
Alkaline Phosphatase	Not defined	Male value

* 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

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