Healthcare of the Transgender Patient and The Powers Method of Hormonal Transitioning

v5.2

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Lecture Goals & Objectives

01 Understanding gender dysphoria and the transgender patient
02 Preventative medicine for transgender people
03 Understanding the process of basic hormonal transitioning
Please Note

This lecture is designed to be presented to physicians / medical providers in the context that they will be providing medical or HRT care to transgender people. If it has ended up in your hands, and you are not one of those, please keep this perspective in mind!

Additionally, language is used in this PowerPoint which is medical in nature. It contains the statements of major medical groups or publications. This language may not be sensitive to the very people this presentation is about. That being said, it cannot be edited without misquoting the source, so please be mindful of this as well. In short, not all the words here are mine. Some are quoted from other sources.
Transgender Medicine is an evolving field. No major medical society has standards of care yet for transgender people (Such as the AOA, AMA, ACOG, etc) Some of the information presented here is based on my own personal observations with my own patients. I see approximately 10-15 transgender patients daily, and have somewhere around 1500 in my practice. I therefore have derived some information not yet published or independently verified/peer reviewed. This is information based on my personal experience and not trial data. For this, I annotate these findings with this symbol: (P)
Acknowledgements

I’ve been able to make great advancements in this field over the years due to the assistance and research of the transgender community on itself, as well as the contributions of certain online communities. I would not have the thriving practice I do today without the help of the following people. This list is certainly not all encompassing:

Sigrid Svartvatn – For her biochemistry research regarding estrone.

Beverly Cosgrove and Juno Krahn– For their research into the usage of progesterone as an AA and the risks of Spironolactone and her informal publications on both.

Anonymous Redditor /u/Alyw234237 (Aly W.) who has aggregated a tremendous amount of clinical and research data and routinely publishes it freely without paywall for the benefit of anyone who wishes to read it.
How Do Transgender People View Hormone Providers?
But, Seriously... Doctors are People Too!

(My Guinness world record Savannah cat Arcturus, My Guinness world record Maine Coon Cygnus (Tallest and longest tail) Steampunk Cosplay, Me and my wife at Electric Forest, Playing Pokemon Go with friends!)
So Why Doesn’t Every Doctor Treat Transgender Patients?
Why Is It So Scary?

- Personal beliefs (ability to provide this care, religious reasons, etc.)

- There are no major long standing medical organizations with transgender standards of care. (AMA, AOA, ACOG, etc.)

- We live in a litigious society (Nobody wants to get sued for doing an “unapproved therapy”
So Why Do I Do It?

> Ethics - Autonomy

> Suicidality (41% attempt suicide by age 30) Risk is reduced by more than half with hormone therapy

Intervenable factors associated with suicide risk in transgender persons: a respondent driven sampling study in Ontario, Canada

*BMC Public Health* 2015
Why Do People Have Gender Dysphoria?

The following are correlated with an increase in the incidence of gender dysphoria:

- DES Exposure
- Congenital Adrenal Hyperplasia
- Aromatase Excess (or deficiency)
- Klinefelter Syndrome XXY
- De La Chapelle Syndrome (XX, male phenotype, +SRY)
- PCOS
- Androgen Insensitivity Syndrome
- Exposure to Prenatal Estrogen/Androgens
- Psychological disorders (ASD/Others)
- Endocrine receptor sensitivity variance (CAG repeat)
- Neuroanatomical structural variance
Why Do People Have Gender Dysphoria?

I include, “Abuse History” as I have a singular patient who describes themselves as non-binary and prefers gender neutral pronouns.

This patient has a personal history of childhood sexual, physical, and emotional abuse. They describe the idea of being “Female” as something vulnerable and that can be harmed. They dislike identifying in this way, and choose non-binary instead as their preferred gender expression.

I include this not to imply that many transgender people have gender dysphoria due to abuse, but that it’s possible a small fraction do.

Patients should be asked about a history of abuse whether they are transgender or not.

In my entire practice, this lone patient is the only example of childhood abuse being self reported as linked to gender dysphoria.
Why Do People Have Gender Dysphoria?

> The overwhelming majority of women with congenital Adrenal Hyperplasia identify as having some same sex attraction - this increases with increases in virilization. (Gender identity and sexual orientation are not the same but thought to arise from similar neurodevelopmental origins)

(Sexual Orientation in Women with Classical or Non-classical Congenital Adrenal Hyperplasia as a Function of Degree of Prenatal Androgen Excess, Archives of sexual behavior, 2008)

> 5.2% identify with a male gender identity

(Gender dysphoria and gender change in chromosomal females with congenital adrenal hyperplasia. Arch Sex Behav. 2005)

> According to research data 1/500 to 1/30000 (depending the definition of the study) of the general population of people assigned female at birth have sufficient gender dysphoria as to seek out medical treatment. According to recent surveys, this number is as high as 1/300
Why Do People Have Gender Dysphoria?

> Prenatal exposure to DES has been documented to cause gender dysphoria and homosexual behavior (as well as hypogonadism and cryptorchidism in male fetuses)

> "Male Pseudohermaphrodisim” — Report of a Case, with Observations on Pathogenesis (1954) (One of the earliest reports on DES)

> Prenatal exposure to female hormones. Effect on psychosexual development in boys". *Archives of General Psychiatry*

> I personally have two patients that are siblings, both exposed to DES (separated in infancy, did not communicate for 5 decades) met each other post transitioning as adults. Started life as brothers, then separated to be reunited again in adulthood now as sisters.
Multiple neuroimaging studies have demonstrated anatomical variation in the brains of transgender people that are consistent with their preferred gender BEFORE the usage of any exogenous hormones.

- Regional gray matter variation in male-to-female transsexualism (Neuroimage 2009)
- The microstructure of white matter in male to female transsexuals before cross-sex hormonal treatment. A DTI study (Journal of Psychiatric Research Feb 2011) MTF
- White matter microstructure in female to male transsexuals before cross-sex hormonal treatment. A diffusion tensor imaging study (Journal of Psychiatric Research Feb 2011) FTM
- Structural Connectivity Networks of Transgender People (Cereb Cortex 2015)
A Mental Illness? (P)

As I’ve demonstrated here, in a large portion of my patients there is some underlying genetic, endocrine, or fetal exposure factor in the development of their gender dysphoria. Gender dysphoria occurs in the general population on average at approximately the same rate as green eyes or red hair (0.3%).

MRI imaging studies have confirmed the structural differences present in dysphoric brains.

In short, gender dysphoria is not a psychiatric illness. It is the phenotypic expression of multiple underlying factors which results in permanent structural changes to the affected person’s neural architecture.

Had we the ability to fix these improperly wired pathways, I think the vast majority of transgender patients would elect to take a drug or have a surgery which would suddenly eliminate all their dysphoria rather than transition. This however does not exist, and the best that we can do is to make their external appearance congruent with their neural architecture.
Hormonal therapy and sex reassignment: A systematic review and meta-analysis of quality of life and psychosocial outcomes

**Results:** We identified 28 eligible studies. These studies enrolled 1833 participants with GID (1093 male-to-female, 801 female-to-male) who underwent sex reassignment that included hormonal therapies. All the studies were observational and most lacked controls. Pooling across studies shows that after sex reassignment, 80% of individuals with GID reported significant improvement in gender dysphoria (95% CI = 68-89%; 8 studies; $I^2 = 82%$); 78% reported significant improvement in psychological symptoms (95% CI = 56-94%; 7 studies; $I^2 = 86%$); 80% reported significant improvement in quality of life (95% CI = 72-88%; 16 studies; $I^2 = 78%$); and 72% reported significant improvement in sexual function (95% CI = 60-81%; 15 studies; $I^2 = 78%$).


Incidence and prevalence of applications in Sweden for legal and surgical sex reassignment were examined over a 50-year period (1960-2010), including the legal and surgical reversal applications. A total of 767 people (289 natal females and 478 natal males) applied for legal and surgical sex reassignment. Out of these, 89 % (252 female-to-males [FM] and 429 male-to-females [MF]) received a new legal gender and underwent sex reassignment surgery (SRS). A total of 25 individuals (7 natal females and 18 natal males), equaling 3.3 %, were denied a new legal gender and SRS. The remaining withdrew their application, were on a waiting list for surgery, or were granted partial treatment.

The incidence of applications was calculated and stratified over four periods between 1972 and 2010. The incidence increased significantly from 0.16 to 0.42/100,000/year (FM) and from 0.23 to 0.73/100,000/year (MF). The most pronounced increase occurred after 2000. The proportion of FM individuals 30 years or older at the time of application remained stable around 30 %. In contrast, the proportion of MF individuals 30 years or older increased from 37 % in the first decade to 60 % in the latter three decades. The point prevalence at December 2010 for individuals who applied for a new legal gender was for FM 1:13,120 and for MF 1:7,750. The FM:MF sex ratio fluctuated but was 1:1.66 for the whole study period. **There were 15 (5 FTM and 10 MTF) regret applications corresponding to a 2.2 % regret rate for both sexes.** There was a significant decline of regrets over the time period. **For context, the regret rate for Lasik eye surgery is about 5% or more than double the rate here.**
Part 2:

Transitioning - Why, How, And Sometimes Why Not.
How Is It Done?

- All my patients undergo some form of psychiatric evaluation prior to the initiation of hormone therapy.

- Most have a WPATH letter (World Professional Association for Transgender Health) which is written by a therapist who knows the patient well and certifies this therapy is in their best interest.

- Those that do not, (and who are mentally sound adults) undergo informed consent counseling and complete training with certain charity organizations (Such as Transcend the Binary whom I work with) where they meet with medical professionals who volunteer to perform these evaluations and make sure the patient is mentally sound and understands the risks and benefits of the therapy.

- All patients undergo physical examination, pre-hormone labs, and complete informed consent documents on top of this psychiatric evaluation.
Informed Consent

> Informed consent protocol is allowing the patient themselves to decide what they want to do with their own body.
> They are informed of all of the potential risks and benefits of the therapy.
> They are evaluated to make sure they are mentally capable of giving informed consent. Do they truly understand the risks? Are they of sound mind and mentally well enough to make important medical decisions.
> In nearly all cases, the answer to this is yes, and the patient can sign certain forms specifying the risks/benefits and their understanding of this.
> This can stand in place of formal counseling and a WPATH letter as a requirement for the initiation of the therapy.
> Informed consent is a relatively new protocol, but has been gaining momentum over the past 5 years with it becoming considerably more accepted by providers.
> Informed consent is also the ONLY way some patients can get access to care when they are fiscally incapable to pay out of pocket for years of counseling sessions to obtain a WPATH letter.
> I accept informed consent in my practice. If patients can tattoo their whole body, drink alcohol, smoke, or engage in high risk activities like skydiving, I feel they can make decisions about their own body and health as long as they are able to rationalize the risks and make a true informed consent decision.
Female to Male

- **Child FTM** - Leuprolein (Lupron) A GnRH analogue is used in some cases to delay puberty until the correct time to initiate hormone therapy. We NEVER give hormones to pre-pubertal children. We arrest puberty to allow for more cognitive development and persistence of dysphoria to be determined. (Histrelin implant can also be used instead of Lupron). I prescribe Leupron 3 month depo ped. I also only treat teenagers, anyone younger is send to Peds endo.

- Lupron is also used to stop menstruation in Trans Men who continue having breakthrough periods despite Testosterone Therapy. (which is very rare). I currently use Anastrazole (Aromatase Inhibitor) for this purpose (or FTM with endometriosis) when Lupron is not approved by insurance coverage. Progesterone injection can also be used for this purpose, as well as Mirena IUD, though with less effectiveness and the drawbacks of progesterone exposure.

- **Adult FTM** - Testosterone in all its forms. Generally about 80-120mg weekly when given via IM injection. There are also testosterone secreting implants, topical testosterone, and even Oral testosterone (Undecanoate) which is only available outside of the US.

- Testosterone OTC precursors (DHEA, ect) should generally be avoided. In a person with XX chromosomes or one desiring transition from a feminine to masculine phenotype these are often metabolized into estrogen and actually work against the desired changes that the patient seeks. Estrogen levels need to be monitored while on Testosterone as some patients heavily aromatize their injected dose to Estrogens.
Testosterone therapy results in rather rapid changes but can take years to realize their full potential.

**Permanent:**
- Increased musculature and decreased body fat
- The development of facial and body hair
- Deepening of the voice
- Male-pattern baldness (in some individuals)
- Enlargement of the clitoris
- Growth spurt and closure of growth plates if given before the end of puberty
- Breast atrophy - possible shrinking and/or softening of breasts

**Temporary:**
- Increased libido
- Redistribution of body fat
- Cessation of ovulation and menstruation
- Further muscle development (especially upper body)
- Increased sweat and changes in body odor
- Prominence of veins and coarser skin
- Acne (especially in the first few years of therapy)
- Alterations in blood lipids (cholesterol and triglycerides)
- Increased red blood cell count
Minoxidil 5% topical can be applied to the face to accelerate the transformation of vellus hair to terminal hair.

This accelerates facial hair development. It takes approximately 6 months to see significant benefit and should generally be avoided until month 3 due to poor patient compliance with a therapy that doesn’t function well until there is “something to work with”. Look for fuzzy vellus hairs on the face before prescribing.

It can also be used to prevent or reverse male pattern hair loss due to testosterone exposure in patients of any gender.
Topical Testosterone can be used applied directly to the clitoral region in FTM patients anticipating metoidioplasty. I use 10% compounded topical testosterone applied directly to the clitoris daily. This can typically double or even triple the size of the clitoris which is used to craft the neophallus in surgery prior to any surgical intervention.

Direct topical application of the drug results in significant clitoromegaly which provides additional tissue to be utilized surgically.
Male to Female

Child MTF - Lupron is again used to delay or arrest puberty until hormones can be started at the appropriate time. (Histrelin implants again can be used but are expensive if uninsured or if insurance will not cover). Lupron is almost always covered.

MTF- A multitude of hormones and blockers can be used depending on the patient. There is significant debate about the “optimal” treatment. I’m not a huge proponent of blockers and attempt to get my patients regulated without using them or using a minimal amount.
Male to Female

Feminization therapy takes a minimum of 5 years to reach full potential.

**Permanent:**
- Breast Development
- Adipose distribution in a feminine pattern (semi permanent)
- Testicular Atrophy
- Possible Infertility
- Penile Atrophy
- Growth spurt and closure of growth plates if given before the end of puberty

**Temporary:**
- Decreased Libido (sometimes)
- Muscular Atrophy
- Decreased erectile function (usually)
- Decreased Body Hair, regeneration of lost hair on head (sometimes)
- Less prominent veins, smoother skin
- Reduction in acne (if present before)
- Alterations in blood lipids (cholesterol and triglycerides)
- Decreased red blood cell count
- Loss of bone mineral density (mild)
Estrogen - I start all patients on either 2mg of estradiol BID or TID depending on body mass. (< 70kg>). After one month I draw labs and determine whether the patient has a poor E2:E1 ratio (worse than 1:3). I used to immediately switch poor ratio patients to injections, but I now allow them to be maintained until tanner 2 on oral medication in order to replicate the early adrenal wave of estrone in pre-pubertal cis girls involved in thelarche. Once achieved, the determination of a switch to injections is determined by this ratio.

This is administered ideally buccally (inside inner lip against gum line) or sublingual if buccal is not tolerated due to improved E2:E1 Ratio. (P) (E2= EstraDIOL E1 = EstrONE)

 Estradiol should not be swallowed in patients who have achieved tanner 2. This results in a decrease in half life from approximately 12 hours SL to 4 hours PO. This also increases the conversion of Estradiol to Estrone, a much weaker form of estrogen implicated in Thrombin generation and breast cancer. Estrone may be essential to early breast development, but after achieving tanner 2, most cis-women note a serum shift overwhelmingly to estradiol over estrone.  Estrogen should not be dosed QD and instead better dosed multiple times per day

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Figure 1. Serum concentrations of estradiol (mean ± standard deviation) during a 24-hour period after single oral (PO) or sublingual (SL) dosing with micronized 17β-estradiol.
The Estrone Problem (P)

Estrone is approximately 4-8% (depending on the study) as efficacious in its effects when bound to the estrogen receptor compared to Estradiol. It is additionally implicated in the development of cancer and DVT.

Therefore a patient can have the following labs:

> Estradiol 100pg/ml  (Too low, Transitioning ideal for me is 300pg/ml to 1000pg/ml, receptor sat. is maxed around 300pg/ml in vitro, in humans this is theorized to be much higher than 300pg/ml as pregnancy values can approach 8000pg/ml)

> Estrone 500pg/ml  (Too high, most Cis-women range around 100)

> Total Estrogen 600pg/ml (Just right)

Depending on what test you ordered, you would come to one of three different conclusions. Obviously all three of these conclusions cannot be correct. In reality, 5% estrogen receptors is bound with Estrone, which competes with Estradiol for effect.
The Estrone Problem (P)

This means the effective estradiol level is actually much lower than 100pg/ml, resulting in significantly delayed effect.

The relative speed of the 17 beta-Hydroxysteroid oxidoreductase and 17β-Hydroxysteroid dehydrogenase enzymes that convert Estrone <-> Estradiol varies considerably from person to person.

Anecdotally I’ve noted a shift toward estrone in tall/thin transwomen and towards estradiol in shorter obese transwomen. I theorize this may be related to sulfation of E1 in the peripheral adipose tissue. Therefore, even if seemingly at goal, levels could actually be poor intracellularly. This means that a MTF obese person with good lab values who is failing to achieve significant feminization after 6-12 months should consider a switch to non-oral formulations.

Strangely, I have found elevated estrone levels pre-hormones in these same transwomen who turn out to have poor ratios on oral estrogen. I’m currently looking into this as a possible underlying mutation related to the development of gender dysphoria. I have yet to find an elevated estrone on a pre-hrt cis female and have only 1 cis female patient with an elevated estrone on oral HRT (Cis-female lesbian with hx of severe endometriosis now s/p hysto-oopho).
The Estrone Problem (P)

While previously I have spoken completely against estrone and been very outspoken about the risks and dangers it causes, I am currently exploring whether or not it may be important in early breast bud formation and for the progression from tanner 4 to tanner 5. Estrone levels are higher in cis-girls early in development (alongside dhea), and rise before the onset of estradiol. This estrone originates primarily in the adrenal glands and is present from Tanner 1-2.

Anecdotally, I have had patients seemingly reach “maximal” development on a maxed out dose of injectable estrogen, and adding back a single dose of oral estradiol daily alongside injections seems to resume breast development. I theorize this may be related to peripheral sulfation of the estrone in the breast tissue itself, and that lab measurements of the serum levels would not likely be useful.

Regardless, this is currently the cutting edge of what I am exploring, and I anticipate a publication on it from me in 2019.

At this time I will be starting all new MTF patients naïve to HRT on oral pills at first for at least 6-12 months as well as DHEA supplementation to replicate this early estrone rise in breast bud formation. Once tanner 2 is achieved, they will be transferred to injectable estrogen to shift the E1:E2 ratio in favor of E2 via evading first pass metabolism of estradiol by the liver. (Except for those patients on sublingual E2 who have E1:E2 ratios better than 3:1, 1:1 or lower is ideal)
The Estrone Problem (P)

So what do I do about this?

> I start all my patients on 2mg BID/TID buccal/SL for one month. After this month, I fractionate the estrogen into Estrone/Estradiol/Total Estrogen. I tend to do this even if I intend to later use shots, just so I’m aware of the polymorphism’s presence as there is no genetic test for it currently.

> If the E1 to E2 ratio is poor, I switch these patients to injectable medications or concentrated transdermal compounds.

> If the E1 to E2 ratio is good, they can be maintained on buccal/SL E2 dosing, or switch to injections if they would prefer to do so.

I find on average about ⅓ to ¼ patients need to be switched off of the tablet formulation to something else.

In a patient that prefers injections, I allow them to do this. Poor estrogen fractionation is a not a prerequisite to the usage of injectable estrogen.

A comparison of the pharmacokinetic properties of three estradiol esters.
Transdermal / Implants

So what about transdermal estrogen or implants?

> I rarely use transdermal estrogen patches or gel except in patients who have poor e1:e2 ratios but cannot or refuse to tolerate injectable estrogen. When I do prescribe them, I tend to use the week duration patches at 0.1mg per patch, typically 2-3 patches simultaneously to achieve injection level effects.

> Estrogen pellets are a kind of implant (similar to testosterone testopel) which can be obtained from compounding pharmacies and placed in the gluteal area in a small surgery done in the office. They last 4-6 months on average. I rarely do them as these patients have to be maintained on HRT for life, and over 30 years that’s almost 100 surgical procedures. However, some patients do really want them and I am willing to do it in certain cases.
My Neurodevelopmental Estrone Theory

My Theory: Absorption of Mom’s estradiol in utero and its rapid conversion to estrone results in the buildup of an estrone reservoir which thereby exerts effect on the developing neural architecture despite normal serum estradiol levels. I believe this happens due to 17β-Hydroxysteroid-Dehydrogenase 2 polymorphisms resulting in a shunting of E2 to E1.

If a transwoman as an adult has an estradiol of 100pg/ml and estrone of 2500pg/ml, clearly even normal pregnancy levels of E2 could produce very high levels of E1.

This would also be consistent with “normal” hormones in the developing child despite the verbal expression of gender dysphoria, which is typically found. The bizarrely high estrone levels would not be clearly exhibited again until a supply of circulating estradiol was again provided. However, due to the exposure of the fetus’ brain to these very high levels of estrone during pregnancy, the neural architecture is effectively laid down “pink” instead of “blue” and these changes seem to be irreversible.
Case Study: The Estrone Problem

An example MTF patient who is 10 years on HRT with oral estrogen

Estradiol 78pg/ml Estrone 2100 pg/ml total estrogen 2210 pg/ml

Their prior doctor had only been checking an estradiol level per WPATH guidelines. This ranged from 80pg/ml to 150pg/ml on most labs with a few outlying labs with estradiol levels 200-300pg/ml

4 months after correction of the ratio, the patient physically looked quite different and has noted increased feminization facially as well as much better breast development and adipose redistribution. Estradiol levels were approximately 150-250pg/ml on injections.

Full disclosure, this was my real patient. After discovering this seemingly “rare” syndrome I have discovered it present in approx 1/3 of my transgender women. I have subsequently corrected approx. 100 patients with this abnormality with amazing results. I will be publishing my findings as soon as I’m confident about the effect that HIV boosters such as norvir and cobicistat have on this enzyme. (They seem to make this problem worse)
As early as 2005 it was known that varied routes of administration could affect the way in which estrogen medications are absorbed and processed. In detail, this study also delineates the significantly weaker effects of estrone, considering it only 4% as efficacious for the receptor compared to estradiol.


“"Estrone is a weak estrogen which has only 4% of the estrogenic activity of estradiol…“”
Anecdotally, I’ve found an interaction
Between HIV boosters (Cobicistat/Norvir)
And serum estrone levels.

Early anecdotal research done by me seems to show that these two drugs tend to
Shift the ratio of estrone to estradiol in the wrong direction (increasing estrone). The
interaction between cobicistat and birth control/estrogens is already well known and
documented extensively.

Regardless, if I do have an HIV patient taking a boosted regimen who is also MtF, I
switch them from oral estradiol to injectable to avoid this issue.
Estrone is also probably bad in other ways:

- Association of serum estrone levels with estrogen receptor-positive breast cancer risk in postmenopausal Japanese women. ([Clin Cancer Res.](https://clincancerres.aacrjournals.org/content/9/6/2229) 2003 Jun;9(6):2229-33.)

- Relationship of serum estrogens and estrogen metabolites to postmenopausal breast cancer risk: a nested case-control study (Breast Cancer Research 2013)

- Estrone sulfate promotes human breast cancer cell replication and nuclear uptake of estradiol in MCF-7 cell cultures (Experimental Cancer 1993)


Note, these are associations, not definitive proof, as there are many confounding variables. However there is a mounting level of evidence against estrone.
Blockers

- In a transwoman who has not had an orchiectomy performed (testicle removal) it is occasionally necessary to block the effects of testosterone with medications other than estradiol/progesterone to achieve the desired feminization.

- Some patients are able to achieve sufficient reductions in androgens over time with the usage of E2 alone. A greater percentage can do this with the combination of E2 and Progesterone, which has some GNRH effect. To be clear, Estrogen itself has anti-gonadotrophin effects.

- Most of my patients are completely controlled on the usage of only injectable estradiol and progesterone. I have never been able to get a patient totally off blockers using oral estrogen and progesterone to control their testosterone. Injectable estrogen is always required to suppress LH and FSH.

- I find that the GNRH agonist effects and LH/FSH suppression benefits of progesterone (bioidentical micronized) are maximized when the progesterone is used as a suppository. This helps offset its short half life by causing its slow absorption in the distal rectum where it also does not drain to portal circulation but rather to systemic circulation, avoiding first pass metabolism.
I will no longer prescribe Spironolactone. The evidence against it continues to get worse annually.

In patients who choose to use blockers, or whom cannot achieve andogen reduction with E and P alone, the most typical and baseline drug is alactone (spironolactone) which is a potassium sparing diuretic. It’s very important to monitor the patient for elevated potassium levels and renal function as these can be (extremely rare) but fatal side effects via arrhythmia.

Anecdotally I’ve found issues with depression, visceral adiposity (long term) and other problems with Spiro. Spiro is proven to increase serum cortisol levels which is likely the mechanism for the visceral adiposity.

Predictive Markers for Mammoplasty and a Comparison of Side Effect Profiles in Transwomen Taking Various Hormonal Regimens

https://academic.oup.com/jcem/article/97/12/4422/2536439

The above study showed that patients who had a regimen that included spironolactone were significantly more likely to seek surgical breast augmentation. Further studies are needed to determine if it truly does interfere with full breast development.
Blockers

- I target testosterone levels based on desire for erectile function. If desired, T targeted for 50ng/dl, if not, 15ng/dl. Do not bring T to absolute zero, as this can have cognitive side effects. Cisgender women have testosterone, typically 5-50ng/dl (P)

- Again, I no longer use any actual blockers except for bicalutamide simply due to the lack of need for them with proper Estrogen/Progesterone usage.

- WPATH recommends T 30-100ng/dl and E2 < 200 pg/ml
Other Blockers

5-a-reductase inhibitors - Finasteride/Dutasteride, Originally designed to treat prostate cancer, these drugs can often bring DHT levels to near zero. However, this often causes decreased libido and erectile dysfunction in Transwomen. They also have cognitive effects and depression as a side effect. Due to being 5AR drugs, they deplete neuroallopregnenolone in the brain which is a proposed mechanism for their induction of depression.

Dutasteride can be used topically with minoxidil for hair regrowth. There is ZERO reason to use a 5ARI drug in a patient with a low T. If a patient has a T of 10ng/dl, there is hardly any T to prevent converting to DHT, and therefore, little benefit in exposing the patient to the side effects of these drugs. Do not use them unless T is not at goal and patient is unable to achieve T suppression due to other extenuating circumstances. I almost NEVER prescribe these drugs. 5ARI drugs do not lower testosterone, only prevent its conversion to DHT. I will only prescribe them at a low dose and if the patient has severe hair loss or severe acne, and only briefly to help prevent further issues while controlling T via other means. I would never keep a patient on them long term, cis or trans.
Other Blockers

- Non-steroidal antiandrogens - Flutamide is the most common. It is quite effective, but its use generally avoided except in extreme cases due to hepatotoxicity. I prefer Bicalutamide as it is cheaper and causes less hepatic issues. It is my first line drug when I need to use a blocker, which is only occasionally.

- Bicalutamide does not lower T levels, it simply blocks the receptor, causes gynecomastia/elevated estradiol when used in monotherapy due to peripheral aromatization of circulating androgens (this happens to cis men on bicalutamide for prostate cancer). It can be expensive, but goodRX.com typically has a good coupon for under $20 a month. Bicalutamide can be used in the place of other blockers to control T, or to do a “test withdrawal” when blockers are pulled to see if T will stay down on the usage of Estradiol and Progesterone alone without exposing the patient to the risk of re-masculinization in the event that T does spike back up without blockade. Bicalutamide acts as a backup in the event things don’t go as planned. Start the Bicalutamide at least a 2-3 weeks before stopping blockers due to its long half life and time to reach steady state concentration. (P)

- In the hundreds of patients I have placed on Bicalutamide, I have never seen a hepatic transaminase elevation even once. I really do think it has been given a bad name due to its cousin Flutamide’s behavior. (P)
Other Blockers

- Steroidal antiandrogens - Cyproterone and Megestrol Acetate - Cyproterone is not available in the USA, and is known for causing increased prolactin and galactorrhea (milk production). Despite it being quite effective, as I practice in the USA, I will not address it in this lecture, but it is commonly used worldwide. Do not miss a prolactinoma because you assume the elevated prolactin is due to the drug. There is also a developing association between the usage of the drug and benign meningiomas.

- Megestrol is not commonly used due to weight gain and other side effects. Sometimes Megestrol is however used deliberately to this effect in transwomen with cachexia/low BMI. I do commonly do this for patients who aren’t achieving sufficient feminization due to having such a low body fat percentage. Its anti-androgen benefits are a pleasant side effect in that case. I also use mirtazapine for this purpose though it has no anti-androgenic effects.

- Others - Cimetidine (Tagamet) an OTC antacid. This is a weak anti-androgen at high doses. It has significant drug interaction problems. It is rarely prescribed but commonly used by Transgender DIY (Do it yourself) patients. Be aware that its out there and that it has significant Cytochrome P450 interactions as some patients may be taking it OTC without telling you or without thinking its relevant. It also seems to interact in some way with the 17 Hydroxylase enzyme family, but I have little anecdotal data to offer on it as I have not encountered any patients starting or stopping it for its intended usage while on HRT and I cannot justify its usage over ranitidine for H2 blockade.
**Blockers**

**Progestrone**
This hormone is commonly debated in the community. I am on the Pro-Progestrone team. I’ve personally seen huge benefits.

I give my patients the choice about using P but I do advise it. I have personally noted greatest benefit when used by slender transwomen with a narrow chest, as it seems to provide a modest benefit to breast development. In trans women who develop “cone” shaped breasts, progesterone tends to round them to allow for progression from tanner 4 to tanner 5 development. (P)

Additional hormones carry additional risk, and so this decision is up to the provider and patient. Progestrone does slightly increase the probability of a thrombotic event, but additionally very slightly reduces the risk of breast cancer. (Provera does not) Progestrone also has moderate anti-androgen benefits due to its effects in blocking gonadotrophins. This effect is amplified when the capsule is used as a suppository at bedtime rather than oral (Similar to lupron)

**Medoxyprogesterone (provera)**
Cheap, synthetic, doesn’t seem to provide anti-cancer benefit. I generally avoid this. Anecdotally patients say they feel depressed on it. Usual dose is 5mg SL BID

**Micronized Oral Progesterone**
Minor gaba agonist so it has anxiolytic effects. I titrate to around 12-24 ng/ml. Usual dose is 200mg SL or rectal QHS. I’ve been using rectal dosing and found superior levels to SL or Oral. Typically triples hormone level with the switch from oral to suppository. Half life is short so lab must be drawn within 12-24 hours of dosing if you want an accurate measurement. (P)

**Topical Progesterone**
I have this compounded for my patients, they apply 200mg to alternating breasts daily and once weekly to the face for adipose redistribution and facial feminization. I’ve had OVERWHELMINGLY positive results with this, but it’s quite expensive to compound. Same dose as oral. Never covered. About $60 monthly. Used safely in post-menopausal women for decades.
Why doesn’t WPATH like Progesterone?:

Progestins With the exception of cyproterone, the inclusion of progestins in feminizing hormone therapy is controversial (Oriel, 2000). Because progestins play a role in mammary development on a cellular level, some clinicians believe that these agents are necessary for full breast development (Basson & Prior, 1998; Oriel, 2000). However, a clinical comparison of feminization regimens with and without progestins found that the addition of progestins neither enhanced breast growth nor lowered serum levels of free testosterone (Meyer III et al., 1986). There are concerns regarding potential adverse effects of progestins, including depression, weight gain, and lipid changes (Meyer III et al., 1986; Tangpricha et al., 2003). Progestins (especially medroxyprogesterone) are also suspected to increase breast cancer risk and cardiovascular risk in women (Rossouw et al., 2002). Micronized progesterone may be better tolerated and have a more favorable impact on the lipid profile than medroxyprogesterone does (de Lignières, 1999; Fitzpatrick, Pace, & Wiita, 2000).

I have personally seen patients stuck at tanner 4 for decades progress to tanner 5 with the usage of progesterone, even temporarily.

Additionally, I have found that the usage of bioidentical progesterone when administered in a way that avoids portal circulation DOES lower serum testosterone levels by blocking FSH and LH function. However, I ONLY prescribe bioidentical progesterone. I.E. Prometrium rectal capsule dosing or the very rare patient who injects progesterone. If they do choose to use injections, I recommend this being done daily or every other day due to the short half life. I have found rectal progesterone non-inferior anecdotally to injectable, but some patients still prefer it.
Support For Natural Progesterone:

In clinical trials and randomized controlled trials evaluating micronized progesterone, mentioned in Prometrium's product monograph, not one single case of thrombosis or altered coagulation factors is mentioned. 
Climacteric. 2012 Apr;15 Suppl 1:11-7

"Micronized progesterone has also been shown not to increase the risk of venous thromboembolism"
Menopause. 2010 Nov-Dec;17(6):1122-7

"recent data have shown that norpregnane derivatives but not micronized progesterone increase venous thromboembolism risk among transdermal estrogens users."
"there was no significant change in APC sensitivity among women who used transdermal estrogens combined with micronized progesterone compared with nonusers."

“it appears that transdermal estradiol alone or combined with natural progesterone does not increase thrombotic risk.”
“progesterone does not carry the risk of thromboembolism, prolactinoma, and myocardial infarction.”
Climacteric. 2003 Dec;6(4):293-301.

That second to last one really supports my estrone theory in that the cause of the thrombotic events associated with estrogen therapy are caused by estrone and other metabolites but not the 17-b-estradiol itself. Transdermal therapy avoids hepatic first pass like injections do.
Support For Natural Progesterone:

“In both peripheral and cerebral vasculature, synthetic progestins caused endothelial disruption, accumulation of monocytes in the vessel wall, platelet activation and clot formation, which are early events in atherosclerosis, inflammation and thrombosis. Natural progesterone or estrogens did not show such toxicity.”

“When taken with oral or transdermal estrogens, no significant association of venous thromboembolism (VTE) with concomitant micronized progesterone”

"With respect to the different pharmacological classes of progestogens, there is evidence for a deleterious effect of medroxyprogesterone acetate on VTE risk. In addition, observational studies showed that norpregnane derivatives were significantly associated with an increased VTE risk whereas micronized progesterone could be safe with respect to thrombotic risk."

“The French E3N cohort study found that the association of estrogen – progestin combinations with breast cancer risk varied significantly according to the type of progestin: the relative risk was 1.00 (95% CI 0.83 – 1.22) for estrogen –progesterone”
“Α systematic review and meta-analysis.”
“A total of 14 studies were included in our study.”
“(…) the breast cancer risk varies according to the type of progestogen. Estradiol therapy combined with medroxyprogesterone, norethisterone and levonorgestrel related to an increased risk of breast cancer, estradiol therapy combined with dydrogesterone and progesterone carries no risk.”
Breast Asymmetry

**Progesterone**

I have two cases of patients with asymmetrical breasts using the topical Progesterone only on the smaller breast to create unilateral hypertrophy.

Both cases reported increased bilateral breast size (likely due to systemic absorption), but some improvement in the discordance between the two breasts.

This is very much a (P) case. I need more data and patient examples before I can firmly support topical bioidentical Progesterone for this indication.
MTF Testosterone Issues

In MTF who have undergone full gender affirming surgery, orchiectomy, or who have had a successful androgen blockade, sometimes testosterone will drop to or near zero. They simply cannot generate enough T via the adrenals to be in normal female ranges. These patients report fatigue, decreased libido, and in pre-surgical patients, issues with penile atrophy and erectile function.

I have found that weekly or bi-weekly topical administration of testosterone to the penis in pre-surgical patients can restore the tissue and increase erectile function. This is sometimes helpful in phimosis caused by atrophy or skin fragility of the penis. I now ALWAYS prescribe it in the months leading up to surgical gender assignment due to the benefits it has on the tissues being utilized to perform the surgery (easier to make penile tissue into a vaginal canal when you have more to work with). This can be done without increasing systemic levels or causing re-masculinization.

Even in post-surgery patients, the benefit of low dose testosterone on well being, bone density, and other factors is not to be ignored. Consider its usage in select patients.
Are you being safe?

- **Patients need continuous follow up with their doctor** with lab monitoring and physical examinations at regular interviews both during the transition process and in the post-transition maintenance period. (CBC, CMP, Lipids, Levels, Ect)

- I cannot stress this enough. Just because someone has ‘been fine for years’ does not mean that some other change in their health has not occurred and could affect these hormones or their metabolism. Additionally this population has a high level of mental illness and is at risk for depression/suicidality. **PHQ2 or 9 at EVERY visit.**

- In addition, Transgender patients need special attention in regards to preventative medicine (addressed later in the lecture)
Metoidoplasty

Testosterone replacement therapy gradually enlarges the clitoris to an average size of 4-5 cm (as the clitoris and the penis are developmentally homologous). Topical testosterone to the clitoris is something I’ve found very effective prior to metoidioplasty or simply for patient preference (P).

In a metoidioplasty, a surgeon separates the enlarged clitoris from the labia minora, and severs its suspensory ligament in order to lower it to the approximate position of the penis. Because the clitoris' erectile tissue functions normally, a prosthesis is unnecessary for erection (although the clitoris might not become as rigid as a penile erection). In nearly all cases, metoidioplasty patients can continue to have clitoral orgasms after surgery. I recommend topical testosterone applied to the clitoris in the months leading up to this surgery.
Surgeries – Phalloplasty

Phalloplasty:

In a phalloplasty, the surgeon fabricates a neopenis by grafting tissue from a donor site. There are generally 4 common variants of this graft, which are often from the forearm, leg, abdomen, and pubic tissue. Following the creation of the neopenis, a second surgery is held to implant an erectile prosthesis.

The results of this surgery are considerably better cosmetically than that of metoidoplasty in regards to appearance and size, though the patient is left with a typically large scar from skin grafting and orgasmic ability is variable. However, it's very rare that the patient lacks tactile sensation. The clitoris is buried at the base of the penis, and a vaginectomy and urethral re-routing is performed to make the penis capable of urination while standing.
Types of Phalloplasty

(Credit to Phallo.net for information and images in this section.)

Phalloplasty:

**ALT Free Flap Phalloplasty** uses an ALT flap that is completely detached from the donor site. Blood supply must be re-established by microsurgically connecting the arteries and veins of the flap and recipient site.

**Pedicled ALT Phalloplasty** uses an ALT flap that is left attached to the donor site at one end, while the other end is rotated to the recipient site, preserving blood supply. Microsurgical connection of blood supply is therefore not required, lowering costs and more importantly, reducing the risks of flap failure and necrosis.

**Advantages of ALT Phalloplasty:**
- Less obvious donor site, concealable with clothing;
- Decreased surgical time with Pedicled ALT;
- Good sensation;
- Good potential for urethroplasty;
- Good skin color match;
- Larger girth than RFF Phalloplasty;
- Some natural rigidity.

**Disadvantages of ALT Phalloplasty:**
- More difficult in patients with thicker skin and more subcutaneous thigh fat;
- In some patients, girth can be excessive;
- Less predictable perforator layout adds complexity;
- Sensation is reportedly less than RFF Phalloplasty (Monstrey et al., 2008);
- Reportedly higher urethral complication rate vs. RFF Phalloplasty (Ascha et al., 2017).
Types of Phalloplasty

Radial Forearm Flap:

Radial forearm flap is the most common type of FTM phalloplasty. The donor site is thin and supple allowing the flap to be easily tubed and shaped into a penis, and the relatively hairless skin provides erogenous sensation and allows urethral reconstruction in a single stage.
The radial forearm donor site can be closed using a split thickness unmeshed skin graft harvested from the thigh or a full thickness graft from the buttocks.
A Foley catheter is left in place for at least 2 weeks to reduce the risk of stricture and fistula formation while the neo-urethra is healing.

Aesthetics can be refined with glansplasty: the creation of a corona using a local flap and full thickness skin graft. Tattooing of the corona to match the color of the areola can be done 3 months before sensation returns.
Erectile function can be achieved using a penile prosthesis inserted at a second procedure 10 to 12 months later after tactile sensation has been restored.
Disadvantages: Donor site can be difficult to conceal.
Possible complications: Partial skin graft loss, decreased sensitivity, swelling, less range of hand motion (resolved with hand therapy), decreased grip strength.
**Less Common Phalloplasties:**

**Musculocutaneous latissimus dorsi (MLD) flap:**
utilizes part of a back muscle and includes the thoracodorsal vessels and nerve. The blood supply is connected to the femoral artery and saphenous vein or the deep inferior epigastric artery and vein, while the nerve is connected to the ilioinguinal nerve.

Only a thin strip of muscle around the pedicle is harvested. The scar is a long, mostly linear scar that runs from under the arm, slightly curved, down to the lower back. In most cases, the donor site can be closed primarily with the incision; sometimes a split thickness skin graft is needed. This technique yields a penis that is 13-16cm in length and 10-12cm in girth.

**Free Fibula Flap:**
Dr. Sadove et al were the first surgical team to use the free fibula flap for phalloplasty in 1992. Free fibula flap (FFF) phalloplasty is a good alternative to the radial forearm phalloplasty for patients who do not want a forearm scar. FFF phalloplasty presents several benefits:
Less prominent scarring, Natural rigidity of the free fibula flap, Length of the flap's vascular pedicle.
Nerve Innervation / Erection

Tactile sensation in the dorsal aspect of the neo-phallus (and some of the ventral aspect) is provided by re-innervating the flap with the lateral sural cutaneous nerve (LSCN In the case of fibular phallo).

The LCSN (or other donor nerve) may be connected to one of the two dorsal clitoral nerves. While some patients claim erotic sensation, this is not the expected result, and for this reason the contralateral clitoral dorsal nerve and the clitoris should be left untouched in FTM transsexuals to preserve erogenous sensation. In this case, if the nerve graft is successful, the patient can experience erogenous sensation as the neural input from the graft will be connected directly to nerves designed for erotic pleasure (dorsal clitoral nerve). However, if the nerve graft fails, at least one branch of the clitoral nerves remain untouched and preserved for erogenous sensation at the base of the penis.

Once the phallus has fully healed, an implant can be placed to allow for erectile function. Typically, the synthetic corpora cavernosa are filled with a fluid which collects into a reservoir in a synthetic testicle. Squeezing this testicle pumps the fluid into the corpora creating an erection. Once coitus is complete, a pressure release valve in the neo-scrotum is pressed and the fluid returns to the testicular reservoir. These devices are designed to last for the lifetime of the patient.
Penis Transplant: This surgery is currently only performed on Cis-gendered men who have lost their penis due to cancer or an accident. It has been successfully performed only a few times, and is still in the experimental stage. It has been postulated that in the future, it may be performed on trans-men. Recently deceased rabbit penises have been skeletonized in an acid bath, then treated with donor stem cells from another rabbit. This grows a new MHC matched penis on the donor scaffold which has been successfully transplanted. The transplanted male rabbits functioned well enough to impregnate female rabbits with their donor penis with no rejection. This may become a viable option for Trans-Men in the future.

However, it need be noted that this person would have to take anti-rejection medications for life to preserve the transplanted organ if it was not generated from scaffold and their own stem cells.
Surgeries – Top Surgery

> Trans men with moderate to large breasts usually require a formal bilateral mastectomy with grafting and reconstruction of the nipple-areola. This will result in two horizontal scars on the lower edge of the pectoralis muscle, but allows for easier resizing of the nipple and placement in a typically male position. This is known as “Double incision”.

> For trans men with smaller breasts, a peri-areolar or "keyhole" procedure may be done where the mastectomy is performed through an incision made around the areola. This avoids the larger scars of a traditional mastectomy, but the nipples may be larger and may not be in a perfectly male orientation on the chest wall. In addition, there is less denervation (damage to the nerves supplying the skin) of the chest wall with a peri-areolar mastectomy, and less time is required for sensation to return.

> As the scars from these surgeries are very “telling” on a patient who otherwise be undetectable as transgender in society (passing), many patients are very dysphoric about them. I recommend topical silicone lubricant/sheets on the scars immediately post op, and eventual retinol therapy once sufficiently healed. Sunscreen and sun avoidance is essential in the first two years. Laser resurfacing can also be performed to help erase the scarring.
Surgeries - Vaginoplasty

> **Penile Inversion Vaginoplasty** - Orchiectomy is performed (testicles are removed), and the skin of foreskin and penis is usually inverted, as a flap preserving blood and nerve supplies (a technique pioneered by Sir Harold Gillies in 1951), to form a fully sensitive vagina (vaginoplasty). A clitoris fully supplied with nerve endings (innervated) can be formed from part of the glans of the penis. If the patient has been circumcised (removal of the foreskin), or if the surgeon's technique uses more skin in the formation of the labia minora, the pubic hair follicles are removed from some of the scrotal tissue, which is then incorporated by the surgeon within the vagina. Other scrotal tissue forms the labia majora.

> In extreme cases of shortage of skin, or when a vaginoplasty has failed, a vaginal lining can be created from skin grafts from the thighs or hips, or a section of colon may be grafted in (colovaginoplasty). This is generally avoided as a starting surgery due to its propensity for cancer development compared to the stratified squamous epithelium of penile skin.
Other Surgeries

**Facial Feminization Surgery**
Fairly straightforward, changes are made in the contouring of the face by shaving down or augmenting certain areas to “undo” prior effects caused by masculinizing endogenous hormones. (this is rarely done in the reverse for Transmen who seek a more masculine face but have not achieved this after years of Testosterone therapy).

**Voice Feminization Surgery**
Historically a surgery of ‘last resort’. This surgery while sometimes effective has the extreme risk factor of making the voice actually deeper, permanently hoarse, or unable to function at all. There is however a new technique from a Korean Surgeon Dr. Kim gaining popularity with good safety data. Minimally invasive voice feminization surgery is becoming more common and may be an option for select patients.

**Breast Augmentation**
There are many variant types; the most ideal for a particular person is dependent on their anatomy prior to surgery.

**Tracheal Shave**
A procedure to reduce the “Adam’s apple” cartilage in the neck.

**Buttock Augmentation**
Accomplished by fillers, fat transplant or implant. One of the most common “DIY” surgeries done illicitly with non-medical silicone that results in dangerous complications. Slang term is a “Pumping Party”

**Orchiectomy**
Very simply, the removal of the testicles. This makes androgen blockade unnecessary.
Is it Safe?

Should we treat transgender patients with surgery and hormones?
Lili Elbe “The Danish Girl”

Born December 28, 1882 - Died September 13, 1931

> Lili Elbe was the first known patient to undergo gender affirming surgery, it is suspected that she was intersex.

> Elbe received a uterine transplant in the era prior to anti-rejection drugs and died secondary to Sepsis related to organ rejection. (this was omitted from the film of the same name)

> The desperation of transgender patients is real. Some will do potentially life threatening things to obtain hormones and treatment including illicit procedures and medications of unknown efficacy.
The Moral of the Story…

SAFETY FIRST
YOUR LIFE DEPENDS ON IT
What Bad Things Can Happen?

> Cancer
> Heart Attack
> Stroke
> Clotting Disorders
> Liver Failure
> Kidney Failure
> Osteoporosis (fractures)
> Seizures
> And more....

But….don’t these things happen to cis-gendered people every day?

Of course! However, those are “naturally-occurring events” and are not “caused” by the therapy (or the physician directly for that matter). Again, due to this, physicians are often against the prescription of these hormones and blockers due to the risk.
How often does it go bad?
In 5 years and 1500 patients I’ve never had a single major adverse event (Stroke, MI, DVT)

I do however have a very specific rule I abide by which is “No synthetics”. I will only prescribe bio-identical hormones. That’s it. Nothing else. I do credit this to my low complication rate. I personally believe that the only cogs that should be put into the machine are ones designed for it. Synthetic estrogens and progesterone compounds are known for having higher complication/dvt rates. In short, if the cog doesn’t fit properly, the machine wont run as well as it once did. Methods that avoid first pass metabolism also have lower complication rates.

So far I have three “adverse events” in my patient pool. All of these are mild striae formation on the axillae/breasts due to extremely rapid and prolific growth in patients who had a corrected estrone ratio or who initiated progesterone therapy. None of these patients were upset about this problem, though I am cautious moving forward about rapid growth.
Is it Worth it?

> I personally inform every patient I start on hormones of these risks

> Gender Dysphoria occurs on a spectrum
  - For some people, it is so severe as to put them at very high risk of suicide.
  - For other people, that dysphoria might be mild, and might manifest itself in more subtle ways.

> Not every Transgender person needs or wants HRT or Gender Affirming Surgery. It is always a Risk/Benefit ratio decision. Being transgender does not necessitate using hormones or having surgery.
Part 3:

Transgender Preventative Medicine and Office Policies
We are ALWAYS looking for knowledgeable healthcare providers to help provide care for transgender patients. I would be thrilled to have 50 new competitors. The Trans healthcare system is utterly overwhelmed with demand. My office will survive, but many Transgender patients will not. If you have even one transgender patient, even if you won’t ever prescribe hormones, pay attention here!
Getting Connected to Care

World Professional Association for Transgender Health
- Find a provider (allows searches by specialty and location, This is where I started learning!)
- (Read the WPATH Standards of Care, free PDF)
- I no longer follow these guidelines, but they are a good starting place.

TransHealth
- Health clinics (Canada, United States, England)

UCSF Guidelines
https://transhealth.ucsf.edu
- Connect (AZ, CA, DC, FL, IL, LA, MD, MA, NM, NY, PA, VA, WA)
- I use a lot of the preventative health UCSF guidelines

Health Professionals Advancing LGBT Equality
Establishing a Safe and Sensitive Practice

> Educate yourself on LGBT issues

> Assess the office environment and be sensitive to your patient’s experience as they enter your office

> Have Relevant and appropriate health information and brochures including:
  - Cancer/HIV/AIDS
  - Screenings
  - Signs and Posters
  - Safe sex
  - HIV/AIDS
  - PrEP

> Advertise your practice as LGBT friendly
Establishing a Safe and Sensitive Practice

> Train all staff to use culturally appropriate language!

> Develop and implement appropriate intake and assessment forms (Using a blank that people can fill in is always better than checking a box)

> Provide ongoing training to staff to address basic health issues that affect LGBTQ patients

> Resource list and referral for LGBTQ health concerns
Safe Zones

Written and posted policies, including non discrimination, diversity, and non-harassment policies that explicitly include gay, lesbian, bisexual, queer sexual orientation AND gender identity.

Gender identity is **NOT** protected in Michigan and is cause to terminate someone from employment.
Intake Forms

Medical providers should have a place for patients to safely and confidentially identify themselves as transgender.

Ideally forms should have these fill-in questions:
- Gender Identity
- “Assigned Sex at Birth”
- Preferred Pronouns

In practice, simply leave a blank rather than giving two checkbox options.
Intake Forms

Good Form

Sex at birth plus space to identify additional risk factors or HRT usage

Bad Form

Gender and not sex listed. No other available qualifying space listed.
Basic Concepts

> Sex *(assigned at birth)*
  What is between this baby’s legs? What are its sex chromosomes? Male? Female? Inbetween? Intersex?

> Sexual Orientation
  Sexually attracted to men, women, both, neither, all genders? (This can be further fractured into sexual orientation vs romantic/emotional orientation)

> Gender Identity
  What is my gender? Male? Female? Something else?

> Gender Expression
  How do I express that gender? How do I dress or speak or move?
Insurance

> Policies often exclude treatments for transgender health care needs

> Some policies are beginning to offer transgender-inclusive plans (Starbucks as an employer is incredible for transgender people)

> Insurance coding often provides certain procedures for individuals of one or the other sex
  - Example: A transman is enrolled in his insurance plan as a male - he develops fibroids that require hysterectomy -- insurance will deny coverage as this procedure is only for females. Patient is legally male and underwent legal gender change 15 years ago.

> This may require that the physicians and staff contact insurance processors to insist on coverage of medically necessary treatments
Fluidity

Being Transgender does not mean that you are assigned a label or category or that you wish to conform to the gender binary.

Many people, especially younger urban transgender people, are embracing identity terms like genderqueer, gender fluid, bi-gender, tri-gender, etc. (I don’t know all of these, and when I learn a new one, I just ask what they mean by their identity term)
Transgender Etiquette

01 Always call a person by their chosen name and preferred pronoun!

02 If you do mess up a person’s preferred pronouns or name, apologize briefly and move on!

03 Odds are you are not the first person to ever mis-gender this person. You likely won’t be the last. Someday someone might misgender you. People make mistakes, and that’s okay as long as you recognize it. Apologize, correct your mistake, and continue. This is always the most appropriate response.

04 Respectfully ask someone how they would like to be addressed if you are not sure!

05 Ask appropriate questions! Such as “Which pronouns do you prefer? “How would you like to be referred to, in terms of gender?” Make sure the question you ask is appropriate and not just for your own curiosity!
As a provider, do ask about family life/support if the patient’s complaint is relevant (Ex: depression/anxiety)

Don’t assume that because someone is transgender every complaint is somehow related. Transgender people get sick, can have high blood pressure, and get the flu. Rarely is this relevant to their gender or HRT. Transgender people are surprisingly...people! People get sick. (AKA Transgender Broken Arm Syndrome, the idea that if someone breaks their arm, it’s due to hormone use or related to being transgender.)
Transgender Etiquette for Medical Providers

- Do recognize that patients will still continue to need screening labs/procedures relevant to their biological sex.
  - Trans men will need a pap every 3 years and a mammogram if they have not had top surgery and are of an appropriate age/risk profile.
  - Trans women will need a PSA if they complain of nocturia or have a strong family history of prostate cancer.
How to be an Awesome Ally and Provider

01. Remember the etiquette tips!

02. Be mindful of transgender people in office or waiting room

03. Don’t police public restrooms - provide a carry letter for transgender patients who would benefit from one!

04. Don’t ask about a transgender person’s genitals unless it is DIRECTLY relevant to the care or treatment they are seeking from you!

05. Never treat transgender people as if they are being risky with their health!

06. Remember, being transgender is not a ‘choice’

07. Remember that the medical treatment a transgender person may seek is not “cosmetic” or superfluous!
How to be an Awesome Ally and Provider

**HOMEWORK**
Be willing to do your homework! (I openly admit I’m still learning every day how to be a better trans provider)

**HIPPOCRATIC OATH**
Never deny a trans person urgent care or treatment because of your personal beliefs. You are entitled to your own beliefs, but bound by the hippocratic oath as well.

**COURTESY**
Treat transgender people with the courtesy and respect you would like to be treated with.

**INSURANCE**
Be sensitive that most transgender medical needs are not covered by insurance

**AWARENESS**
Be aware that transgender people may have a name or other info on records that may be incongruent with appearance or preferred name and pronoun.

Be aware that over 50% of transgender youth will attempt suicide by age 20 at least once. (41% for all transgender people)

- Success rate is about 20% for transgender patients.
- Gender dysphoria has the highest suicide rate of any diagnosis. (Alcoholism, schizophrenia and major depression have a rate of about 15%)
How to be an Awesome Ally and Provider

> Become an active ally for lesbian, gay, bi and trans people in your community.

> Call out trans-phobic remarks and jokes.

> Resist the urge to place others into a male box or female box. Gender stereotypes suck for everyone, not just trans people! Some transwomen can be masculine, some transmen can be feminine, just like cis-men and cis-women.

> You’ve likely assumed your lecturer as a Cis-Het-Male. If you did, why did you assign me this stereotype? Remember that stereotypes can be applied to majorities as well as minorities.

> Learn the WPATH guidelines and offer informed consent transgender care to your patients. (WPATH.org)
Part 4:

Preventative Medicine
Preventative Medicine

> While there are guidelines, they are issued by smaller groups and there is no large nationally accepted list of guidelines. The UCSF guidelines are considered the most accepted and generally the ones used by most providers. They are given below. The language used in these guidelines isn’t quite PC, so know that they weren’t written by me.

> In the event that there is an unusual situation or the clinician seeks further guidance, preventative medicine should be applied as it would be applied by the usual guidelines to a patient whose body has the organs to which those guidelines apply. If the patient no longer has those organs, these screenings are no longer needed.

*Be forewarned, it gets pretty dry after this slide, so buckle up. That being said, this is extremely important information, so do your best to keep your brain focused for 23 more slides!*
Transwomen, Past/Current Hormone Use

> Breast cancer screening mammography in patients >50 yrs with additional risk factors
  ▪ e.g., estrogen and progestin use >5 yrs, positive family history, BMI > 35
  ▪ (In my practice I mammogram anyone over 35 on hormones for at least 2 years, or any age who has been on hormones for 10 years, we use doses vastly higher than natural estrogens)

> Prostate: PSA is falsely low in androgen-deficient setting, even in presence of cancer; only consider PSA screening in high risk patients.
  ▪ Use a digital rectal exam to evaluate the prostate in all transwomen. (Grade C)

> Pap smears in penile inversion neovaginas are NOT indicated
  ▪ Neovagina is lined with keratinized epithelium and cannot be evaluated with a Pap smear.
  ▪ Perform periodic visual inspection with a speculum, looking for genital warts, erosions, and other lesions.
  ▪ If STI is suspected, do a culture swab, not PCR.
  ▪ Neovaginal walls are usually skin, not mucosa; when it is mucosa, it is urethral or colon mucosa.

**TLDR:** Pap smear if neovagina is made of colon. PSA’s only in high risk. Mammogram at 50. (I do 35 or 10 years on HRT or based on fam history)
Transmen, Past or Current Hormone Use

Breast Cancer
Annual chest wall/axillary exam; mammography as for natal females. Not needed following chest reconstruction, but consider if only a reduction was performed.

Cervical Cancer
Following total hysterectomy. If prior history of high-grade cervical dysplasia and/or cervical cancer, do annual Pap smear of vaginal cuff until 3 normal tests are documented, then continue Pap every 2-3 years.

Cervical Cancer
(if ovaries were removed, but uterus/cervix remain intact)
Follow Pap guidelines for natal females; May defer if no history of genital sexual activity; Inform pathologist of current or prior testosterone use (cervical atrophy can mimic dysplasia)

Uterine Cancer
Evaluate spontaneous vaginal bleeding in the absence of a mitigating factor (missed testosterone doses, excessive testosterone dosing leading to increased estrogen levels, weight changes, thyroid disorders, etc.) as for post-menopausal natal females; consider hysterectomy if fertility is not an issue, patient is > 40 years, and health will not be adversely affected by surgery.

If no hysterectomy: follow current published recommended guidelines for natal females. (Grade C)

Follow standard screening recommendations for other cancers.

TLDR: If they still have the organ, screen per natal female rules.
Transgender people who have not used cross-sex hormones require the same screening criteria as persons of their natal sex. Aggressively screen and treat for known cardiovascular risk factors. Consider daily aspirin therapy in patients at high risk for CAD.

Transwomen planning to start feminizing hormones within 1-3 years: try to bring BP to ≤130/90, and bring LDL cholesterol to ≤ 135

Transwomen currently taking estrogen:

- **CAD/Cerebro-vascular disease**: closely monitor for cardiac events or symptoms, especially during the first 1-2 years of hormone therapy; in patient at high risk (including pre-existing CAD) use transdermal estrogen, reduce estrogen dose, and omit progestin from the regimen. (Grade A, C)

- **Hypertension**: monitor blood pressure every 1-3 months: goal BP ≤ 130/90; consider using spironolactone as part of antihypertensive regimen.

- **Lipids**: annual fasting lipid profile; treat high cholesterol to LDL goal of to ≤ 135 mg/dL (3.5 mmol/L) for low-moderate risk patients, and to ≤ 96 mg/dL (2.5 mmol/L) for high risk patients.
Cardiovascular Disease

- Transmen not currently taking testosterone: screen and treat hyperlipidemia as with non-transgender patients.

- Transmen planning to start masculinizing hormones within 1-3 years: try to bring systolic pressure 130/90, and bring LDL to ≤ 135

- Transmen currently taking testosterone: Same as for transwomen taking estrogen, except with respect to lipids. Annual fasting lipid profile; if hyperlipidemia, avoid supra-physiologic testosterone levels; daily topical or weekly IM testosterone regimens are preferable to biweekly IM injection. LDL goal of to ≤ 135 mg/dL (3.5 mmol/L) for low-moderate risk patients, and to ≤ 96 mg/dL (2.5 mmol/L) for high risk patients.
Diabetes Mellitus

> Transwomen currently taking estrogen: consider annual fasting glucose test, esp. if family history of diabetes and/or > 12 pounds weight gain.
  ▪ Consider glucose tolerance testing and/or A1C test if evidence of impaired glucose tolerance without diabetes.
  ▪ Treat diabetes according to guidelines for non-transgender patients; if medications are indicated, include insulin sensitizing agent. Consider decreasing estrogen if glucose is difficult to control or patient is unable to lose weight. (Grade C)

> Transmen currently taking testosterone: screen and treat as with cisgender patients. Consider screening (by patient history) for polycystic ovarian syndrome (PCOS); diabetes screening is indicated if PCOS is present. PCOS is common in Trans-Men.
Transmen who have not had top surgery may intentionally carry extra weight to obscure breast and hip appearance. Some transmen with larger breasts may be hesitant to exercise due to physical discomfort or feeling uncomfortable in tight-fitting athletic apparel. Conversely, some transmen may not realize the increased metabolic demands when taking testosterone. Patients having difficulty gaining weight or muscle mass, with fatigue or anxiety should be screened for dietary protein, calorie and micronutrient/vitamin deficits. Appropriate intake should be adjusted to appropriate male age/activity levels.

Transwomen may have eating disorders such as anorexia or may intentionally take in fewer calories than necessary in order to maintain a slight build. Some transwomen might feel that exercise is a more masculine trait and therefore avoid it. Remind transwomen that exercise does not have to involve bodybuilding and that many non-transgender women exercise regularly.

**TLDR: Being transgender is not a license to not eat well or not exercise. Bodies still need to be treated well!**
Clothing

- Transgender Men often will wear a “binder”. A type of inverse corset that crushes down the breast tissue. These can be extremely tight and cause significant MSK pathology.

- I developed the “Powers binder test” where I will place my hand with 4 fingers aligned under the axilla. If I can keep them aligned in a row, this binder is not too tight. If they collapse onto each other, it needs to be refitted. Invariably whenever a patient fails this test they also report chest pain, respiratory difficulties or other complications from wearing it.

- Transgender Men will also “pack” wearing penile prostheses. This can literally be a sock, or something more complicated like a “Stand to Pee” or STP packer. Be sure to ask if they are being properly cleaned and cared for as they are placed directly against the external vagina and are notorious for causing UTI/Candidiasis/BV

- The most complicated form of STP is a 4-1 used for “Packing, pleasure, peeing and playing” which has internals to allow it to become erect as well as to urinate.
Clothing

Transgender Women early in transition will sometimes wear “forms” which are silicone or other shaped forms which are worn under clothing to give their body a more feminine shape.

Breast forms are often very exaggerated and large and therefore heavy. This can cause significant problems with back pain and other related MSK issues to a constantly changing center of gravity when worn intermittently by the patient.
Mental Health

> Screen for depression, anxiety, bipolar disorder or history of trauma. Refer, if needed, to a mental health provider who is capable of assessing and treating transgender people without denying their gender identity.

TLDR: Being transgender isn’t a mental illness, but transgender people have mental illness more than the general population (as historically have many “second class citizens” or groups heavily discriminated against). Make sure you refer them to a welcoming provider.
Musculoskeletal Health

- Transgender people who have not used cross-sex hormones require the same screening criteria as persons of their natal sex.

- All trans patients who take cross-sex hormones and/or have had or anticipate gonadectomy are recommended to take supplemental calcium and vitamin D in accordance with current osteoporosis prevention guidelines to help maintain bone density.
  
  - Note that this may be applied to transmen at ages younger than typical starting age for osteoporosis prevention treatment due to the unknown effect of testosterone on bone density. (Grade B, C)
Musculoskeletal Health

- Transwomen currently taking estrogen: Exercise may help maintain muscle tone.

- Transwomen, pre-orchiectomy, regardless of hormone use: To prevent osteoporosis, recommend calcium and vitamin D supplementation.

- Transwomen, post-orchiectomy: To prevent osteoporosis either maintain estrogen therapy or consider combination of calcium/vitamin D supplementation and bisphosphonate; consider bone density screening for agonadal patients who have been off estrogen for over 5 years. (Grade A, B, C)

- Transmen currently taking testosterone: To avoid tendon rupture in transmen involved in strength training, increase weight load gradually, with an emphasis on repetitions rather than weight. Emphasize stretching.

**TLDR**: Got estrogen? Need D and Calcium. Got Testosterone? Stretch and bulk gradually!
Musculoskeletal Health

> Transmen taking testosterone > 5-10 years, no oophorectomy: To prevent osteoporosis, consider bone density screening if over age 50, earlier if additional risk factors are present
  ▪ The recommend supplemental calcium and vitamin D in accordance with current osteoporosis prevention guidelines to help maintain bone density.

> Transmen, past or present testosterone use, post-oophorectomy (or total hysterectomy): continue testosterone therapy to reduce risk of bone density loss; if contraindications to testosterone therapy, consider bisphosphonate. Consider bone density screening if over age 60 and taking testosterone for less than 5-10 years
  ▪ If taking testosterone for over 5-10 years, consider at age 50+, earlier if additional risk factors for osteoporosis; recommend supplemental calcium and vitamin D in accordance with current osteoporosis prevention guidelines to help maintain bone density. Note that this may be applied to transmen at ages younger than typical starting age for osteoporosis prevention treatment due to the unknown effect of testosterone on bone density. (Grade A, B, C)
Pulmonary Screening

- Screen for asthma, COPD, Tuberculosis
- Encourage smoking cessation
- Low dose CT scan for lung cancer screening
- Presence of these conditions may preclude surgical interventions
- Starting HRT is a great way to motivate someone to quit smoking
Take a detailed sexual history:

- Inquire about past and current sexual contacts/total numbers and gender(s) of partners (Men women or both?) (Top/Bottom/Both?)

- **Check for sexual orientation changes** - ask if patient is aware that sexual orientation may change as they change their gender presentation or as hormonal changes occur.

- Contraception, condom and barrier use/frequency

- STI history

- Sexual abuse history

- Potentially risky sex practices (e.g., Unsafe BDSM, etc.).

- Self-destructive behaviors may indicate need for mental health referral

*Do not assume the sexual orientation of transgender patients! Furthermore, it can change over time with HRT!*
HIV and Hepatitis B/C Screening/Prevention

> If ongoing risk behaviors for sexual or blood-borne transmission (e.g., unprotected penile-vaginal or penile-anal intercourse, history of prior STIs, sharing needles for injection of hormones or illicit drugs), consider HIV and Hepatitis B/C screening every 6-12 months; otherwise consider HIV and Hepatitis B/C screening at least once during lifetime.

  ▪ Treat STIs according to recommended guidelines for non-transgender patients; offer Hepatitis B vaccination if patient is not already immune.

> HIV is not a contraindication or precaution for any transgender treatment. Treatment with hormones is frequently an incentive for patients to address their HIV disease.

  ▪ Providers of care for transgender people should enhance their HIV expertise, and vice versa.
Considerations for Both Transwomen and Transmen

> If patient reports ongoing risk factors (recurrent STIs, unprotected sex with a partner who might be at risk, unprotected anal/vaginal sex with more than one partner, psychosocial cofactors relating to unsafe sex), screen every 6 months for gonorrhea, chlamydia, and syphilis.

- Treat all patients with STIs and their partners according to recommended guidelines.

> Internal genital exam should be based on patient's past and recent sexual history and comfort with exam, and discussion of the risks and benefit of the procedure.

- Use a gloved finger and/or an appropriate-sized speculum.
Some transgender women may seek or have sought injections of free silicone oil into their hips, buttock, thighs, breasts, lips, or face.

This may be performed by unscrupulous practitioners and may have happened abroad. Additionally, some laypersons may hold "pumping parties" where transwomen are injected using in some cases industrial grade silicone oil using minimal or absent sterile techniques.

Risks associated with these procedures include local and systemic infection, embolization, painful granuloma formation, and a systemic inflammatory syndrome that can be fatal.

Transwomen should be screened for prior or risk of future silicone injections and counseled appropriately.
Substance Use

- Assess substance abuse
- Screen for past and present use of tobacco, alcohol, and other drugs
- Refer, if needed, to a transgender-competent chemical dependency program
Thyroid Screening

- Maintain a high index of suspicion for thyroid disorders and screen appropriately.

- Use of cross-sex hormone replacement with or without gonadectomy may cause overall endocrine imbalances.
Vaccinations

Assess whether vaccinations are up to date

Most recommended vaccinations are not sex-specific and therefore are the same as for any patient

Discuss vaccinations

Both transwomen and transmen who have sex with men may have increased risk of Hepatitis A/B and Meningococcal C
Homelessness

> Assess the patient’s living situation at every visit.
> Ask deliberate questions, “Where are you living?”, “Who do you live with?”, “Do you feel safe at home?”.
> Transgender people (particularly transgender youth) are at the highest risk factor of any demographic for homelessness.

- National Transgender Discrimination Survey revealed a 19% homelessness rate
HIV screening should be offered per guidelines based on Exposures/risks.

- With a past recorded negative result it is completely reasonable to offer HIV screening with a history of any possible new exposure.
- It should also be offered at annual physicals.

Transgender women have the highest HIV rates in the country.

- A 2009 report from the NIH found that nearly 1/3 of transgender Americans had HIV, and a large percentage of this shift is due to transgender women of color who sadly have an HIV positivity rate of 56%.
Truvada, or Pre-exposure prophylaxis is a new therapy aimed at reducing the rate of new infections of HIV in high risk populations.

Truvada through mathematical modeling demonstrates a 99.9% reduction in hiv infection rate in a population exposed to HIV who have a 100% compliance rate.

In real life studies (not everyone perfectly compliant with daily dosing) it demonstrated a 92% reduction in the IPREX trial.

The drug requires renal and hepatic monitoring (CMP) every 3 months as well as HIV testing every 3 months to ensure continued negativity.

This drug can be prescribed by a family practice provider in any clinic and does not require any special certifications. Literally any licensed doctor or mid level provider can prescribe it!
For Those Who Prescribe HRT

If you’re going to prescribe hormones, prescribe them effectively. Do not allow someone to spend years stuck halfway in their transition because of gentle dosing of hormones.

This is unethical.
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About Me

Biography
B.S. U Pittsburgh 2007 - Neuroscience
U Carlos III de Madrid - W. Euro Language / Spanish
Lake Erie College of Osteopathic Med - 2013
Residency - FM - DWCHA 2016
Boarded in Family Med, Specializing in LGBT Care
HIV Care, Transgender Medicine

Organizations
Powers Family Medicine
23700 Orchard Lake Road Suite E
Farmington Hills, MI, 48336
DoctorPowers@Powersfamilymedicine.com

Check out their “furlanthropy” at @Starcats_Detroit on Instagram
Fire Safety

On November 12th 2017 I awoke to smoke alarms. My living room was a raging inferno. I couldn’t get to where our one fire extinguisher was in time. It was unfortunately on another floor. I spent as much time as I could in the blaze trying to find my cats. Ultimately I was dragged from the property by the Fire Dept, and taken to the hospital in rough shape. My 3 cats did not survive, and my wife and I lost literally everything we ever had owned in our entire lives on that day. It took me 15 months to fully recover from my injuries and return to work.

Please let me take this opportunity to let you know that it could happen to you. A massage chair decided to spontaneously burst into flames (plugged in but off). Any number of electronic devices in your home could catch fire and take away everything you hold dear. Prepare accordingly beyond smoke alarms. Multiple fire extinguishers on all floors. Practice fire drills in your home. I also recommend “fire masks” purchasable from gotimegear.com. I had one that I had bought 8 years earlier and wore it that day as I searched for the cats in the blaze. It saved my life. We lost our world record cats Arcturus and Cygnus, our lovely Bengal Sirius, and everything we ever owned but our lives. Be prepared.
Thank you!
Dr. William Powers

Phoenix Arcturus Powers (Half brother of the late Arcturus Aldebaran Powers)

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(its always pinned to the top of the page)