Hormones 101

Liliana Garcia-Vargas, MD
Amanda Swenson, MD MSPH
April 27, 2019

- Diagnosis of gender dysphoria can be done by transgender knowledgeable providers or counselors.
- **Letter is no longer required to the physician prescribing hormones**

First steps

Starting the transition..

- Real-life experience: not always practical, not required
- Informed consent model

Initial visit

- Meeting for the first time—ask preferred name and pronouns
- Review medical and psychosocial history
- Discuss goals of transition that may include hormone therapy
- Review fertility issues and consider egg or sperm preservation if desired
- Discuss contraception if needed

Next steps

- Getting informed consent for gender affirming hormone therapy is the next step

Informed consent

- Review consent process. Can be done verbally or with a consent form. Important to review risks and benefits and document in chart.
- Some centers believe that elimination of consent forms helps to demystify and destigmatize hormone therapy.

Follow-up schedule

- Patients initiating hormones: follow up at 3 months, 6 months and every 6-12 months thereafter (more frequently if other problems arise).
- Monitor BP, side effects, emotional changes, sexuality, weight, and quality of life (risk behaviors if indicated).
- Clinical progress should be monitored through assessment of subjective and objective physical and emotional changes.

Hormones

- Few contraindications for hormone therapy for gender transition. Some of these contraindications are suicidality, psychosis, pregnancy, estrogen positive cancer
- Lower age limit is 18 years old to give informed consent.
- No set upper age limit for hormonal therapy. Patients beginning hormones after age 40 generally will progress more slowly.
- Upper age limits might limit some surgical options. Anticipated recovery times may be longer.

Lea-T

Feminizing hormone therapy

- Anti-androgen therapy
- Estrogen therapy
- Progesterone

Anti-androgens

- Anti-androgens: Spironolactone most common
- Initial dose of spironolactone is 100mg daily in a single or divided dose, with titration to a typical dose of 200mg daily (with occasional patients -- especially larger or younger -- requiring as much as 400mg daily).

Spironolactone

- ***Gender-Related Effects***
  - Suppression of testosterone production/activity
  - Decreased facial and body hair growth
  - Decreased progression of male pattern baldness
  - Decreased libido
  - Decreased erections
  - Mild breast growth
  - Decreased BPH

Contraindications
- Renal insufficiency
- Serum potassium greater than 5.5 meq/L

Adverse Effects
- Adverse effects rare
- Mild diuretic
- Hyperkalemia
- Impotence/decreased libido

Drug Interactions
- Avoid using concomitantly with digoxin, ACE inhibitors, potassium-sparing diuretics, AT II receptor antagonists.

Monitoring Labs
- **Check potassium**.
- Baseline: Electrolytes, BUN, and creatinine

Spironolactone

Finasteride
- Another androgen blocker
- May be used alone or in combination with spironolactone.
- In larger doses, 5 mg, used as second line therapy for patients intolerant to spironolactone.
- In smaller doses, 1 mg, used for improving male pattern baldness.

Finasteride

Janet Mock

Estrogen

Most commonly used forms:

- Estradiol tablets (Estradiol)
- Estrogen transdermal (Estroderm, Climara, Alora, Vivelle)
- Estradiol valerate injection (Delestrogen)

Estrogen

Expected Gender-Related Effects

- Breast development
- Redistribution of body fat
- Softening of skin
- Suppression of testosterone production
- Possible improved mood/improved impulse control
- Shrinkage of testes/testicular atrophy
- Decreased libido

Progesterone

- Progesterone
  - Some patients and providers have found it to have positive effects on the nipple, areola and libido.
- Different progesterone regimens
  - Medroxyprogesterone 5 to 10mg orally daily
  - Prometrium 100-200mg daily
  - Depo-Provera 150mg IM every 3 months

Table 1. Hormone preparations and dosing (Grading: T O M)

Hormone	Initial-low[b]	Initial	Maximum[c]	Comments
Estrogen				
Estradiol oral/sublingual	1mg/day	2-4mg/day	8mg/day	if >2mg recommend divided bid dosing
Estradiol transdermal	50mcg	100mcg	100-400 mcg	Max single patch dose available is 100mcg. Frequency of change is brand/product dependent. More than 2 patches at a time may be cumbersome for patients
Estradiol valerate IM[a]	<20mg IM q 2 wk	20mg IM q 2 wk	40mg IM q 2wk	May divide dose into weekly injections for cyclical symptoms
Estradiol cypionate IM	<2mg q 2wk	2mg IM q 2 wk	5mg IM q 2 wk	May divide dose into weekly injections for cyclical symptoms
Progestagen				
Medroxyprogesterone acetate (Provera)	2.5mg qhs		5-10mg qhs	
Micronized progesterone			100-200mg qhs	
Androgen blocker				
Spironolactone	25mg qd	50mg bid	200mg bid	
Finasteride	1mg qd		5mg qd	
Dutasteride			0.5mg qd	

- Monitor labs at baseline, at 3, 6 and 12 months and then yearly if stable.
- CMP, total testosterone, estradiol level
- Lipids, A1c if indicated
- Prolactin if symptomatic

Lab monitoring

Hormone levels

- For transgender care, The Endocrine Society recommends monitoring of the total testosterone level, with a target range of <55ng/dl. **Wanting testosterone as low as possible.**
- Serum **estradiol** should not exceed peak physiologic range for young, healthy females with **ideal levels 100-200 pg/mL.**

Masculinizing hormone therapy--testosterone

Testosterone

- Usually start with testosterone 50-200mg IM every 2 weeks
- Can change interval to every 7-10 days
- Can use shot, patch, gel

Testosterone

- Patch useful if slower progress is desired, or for ongoing maintenance after desired changes achieved
- Usual patch dose is 4-6 mg/day. Testosterone gel usual dose is 2.5-10 mg/day

Table 1. Hormone preparations and dosing (Grading: T O M)

Androgen	Initial - low dose[b]	Initial - typical	Maximum - typical[c]	Comment
Testosterone Cypionate[a]	20 mg/week IM/SQ	50mg/week IM/SQ	100mg/week IM/SQ	For q 2 wk dosing, double each dose
Testosterone Enthanate[a]	20mg/week IM/SQ	50mg/week IM/SQ	100mg/week IM/SQ	"
Testosterone topical gel 1%	12.5-25 mg Q AM	50mg Q AM	100mg Q AM	May come in pump or packet form
Testosterone topical gel 1.62%[d]	20.25mg Q AM	40.5 - 60.75mg Q AM	103.25mg Q AM	"
Testosterone patch	1-2mg Q PM	4mg Q PM	8mg Q PM	Patches come in 2mg and 4mg size. For lower doses, may cut patch
Testosterone cream[e]	10mg	50mg	100mg	
Testosterone axillary gel 2%	30mg Q AM	60mg Q AM	90-120mg Q AM	Comes in pump only, one pump = 30mg
Testosterone Undecanoate[f]	N/A	750mg IM, repeat in 4 weeks, then q 10 weeks ongoing	N/A	Requires participation in manufacturer monitored program[f]

- Monitor labs at baseline, at 3, 6 and 12 months and then yearly if stable.
- CBC, CMP, lipids, total testosterone

Lab surveillance

Testosterone

- Clinical response can be measured objectively by the presence of amenorrhea by 6 months.
- Lab reference ranges for total testosterone levels are generally very wide (roughly 350-1100ng/dl).
- Assess physical changes and satisfaction
- A **total testosterone of about 700 is ideal**

Estradiol levels

- Physiologic female estradiol ranges are wide and vary over the menstrual cycle-hard to interpret
- Levels not routinely done
- If done, estradiol levels should be less than 50.

- No reduction of testosterone required
- Ok to lower dose, as long as enough being used to maintain bone density
- May have reduced muscle mass, energy and libido if dose lowered

Post-gonadectomy

References

Center of Excellence for Transgender Health, Department of Family and Community Medicine, University of California San Francisco. Guidelines for the Primary and Gender-Affirming Care of Transgender and Gender Nonbinary People; 2nd edition. Deutsch MB, ed. June 2016. Available at www.transhealth.ucsf.edu/ guidelines .

World Professional Association for Transgender Health (WPATH). Standards of care for the health of transsexual, transgender, and gender nonconforming people, 7th Version. WPATH; 2012 [cited 2016 Mar 10].

Speck, N. Management of Transgenderism. JAMA 309(5) Feb 2013.

Hembree, W. Endocrine treatment of transsexual persons: an endocrine society clinical practice guideline. J Clin Endocrinol Metab 94(9). Sept 2009.

http://www.glaad.org/reference/transgender

Protocols for Hormonal Reassignment of Gender

Tom Waddell Health Center (San Francisco, CA). December 12, 2006.

The Health of Lesbian, Gay, Bisexual, and Transgender People: Building a Foundation for Better Understanding. Institute of Medicine Consensus Report. March 2011.

Healthy People 2020: Lesbian, Gay, Bisexual, and Transgender Health. Overview, objectives and data, and evidence-based resources from this important U.S. public health initiative. This is the first time that LGBT health has been included in the Healthy People campaign.

Perrone AM, Cerpolini S, Maria Salfi NC, Ceccarelli C, De Giorgi LB, Formelli G, et al. Effect of long-term testosterone administration on the endometrium of female-to-male (FtM) transsexuals. J Sex Med. 2009 Nov;6(11):3193-200.