 Gender Affirming Hormone Therapy Guidelines

What is TransLine?
- Modeled after the National Clinician Consultation Center for HIV at UCSF, TransLine is a national e-consultation service aiming to increase provider competence and confidence in caring for transgender patients by providing an easily accessible online clinical support tool. All consultation questions are answered by a vetted expert in transgender health within two business days.
- Log on at https://transline.zendesk.com

Who is TransLine?
- Launched in 2012 by Lyon-Martin Health Services (San Francisco), TransLine established a collaborative partnership with trans health experts at Fenway Health (Boston), Mazzoni Center (Philadelphia), and Baystate Health (Northampton) in late 2013. Additional providers from Chase Brexton (Baltimore) and Howard Brown (Chicago) were on-boarded in 2017. All partnering providers participate on a rotating “on-call” schedule to answer incoming e-consultation requests.
- Lyon-Martin remains the organizational lead and clearing-house for all consultation requests, routing questions to the appropriate on-call provider and ensuring quality and timeliness of responses.

Why create hormone therapy prescriber guidelines?
- We sought to create a national standardized guideline of best practices in hormone therapy provision as a reference to achieve uniformity in our answers because we observed that even experts in trans care provided different responses to similar questions posed. This is largely due to the disparate recommendations given in each clinic’s protocol and the general lack of research supporting hard and fast rules when it comes to hormone prescribing for gender transition. We reconciled all the different protocols published to date and sought input from other nationally acclaimed experts in transgender care to contribute to our guidelines. Due to the lack of research on the long-term effects of hormone therapy in transgender people, many of our suggestions are based on low-level evidence in cis-gender populations and our aggregated collective knowledge derived from clinical practice and experience. Acknowledging that gaps in evidence exist, differences in practice will continue to be reasonable and expected until hard evidence provides answers.
- Our first meeting on hormone protocol standardization took place at The Inaugural USPATH Conference in 2017 and included additional expert clinicians from Callen-Lorde Community Health Center (New York City), The LA LGBT Center (Los Angeles), Whitman-Walker (Washington DC), Apiha Community Health Center (New York City), API Wellness Center (San Francisco), Legacy Community Health (Houston), and Care Resource (Miami). Since then we have continued to meet via conference call to create this guideline to inform our answers to TransLine consultation requests.

A special thank you to all who contributed to this document:

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- Jennifer Feldmann, MD, Legacy Community Health
- Sheryl Zayas, MD, Care Resource
# Trans Masculine: Exogenous Testosterone Dosing

<table>
<thead>
<tr>
<th>Medication</th>
<th>Start/Usual Dose</th>
<th>Typical Max Dose</th>
<th>Frequency</th>
<th>Pros</th>
<th>Cons</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intramuscular or Subcutaneous</strong></td>
<td><strong>Testosterone</strong> (Testosterone Cypionate or Testosterone Enanthate)</td>
<td><strong>50mg – 60mg</strong></td>
<td><strong>100mg</strong></td>
<td>• Less frequent administration compared with transdermal</td>
<td>• Peak/through fluctuation effect</td>
<td>• Cypionate formulated in cottonseed oil (use if allergic to sesame)</td>
</tr>
<tr>
<td></td>
<td><strong>(0.25mL - 0.4mL of 200mg/mL solution or 0.5mL - 1.0mL of 100mg/mL solution)</strong></td>
<td></td>
<td><strong>Weekly</strong></td>
<td>• Peak of injectable may better suppress endogenous hormone production</td>
<td>• Self-injection or frequent in-office injections</td>
<td>• Enanthate formulated in sesame oil (use if allergic to cypionate)</td>
</tr>
<tr>
<td></td>
<td><strong>100mg</strong></td>
<td></td>
<td></td>
<td>• Needle use</td>
<td>• Slower to stop menopause and may not fully stop at lower doses</td>
<td>• Enanthate has slightly shorter half-life than cypionate</td>
</tr>
<tr>
<td><strong>Transdermal Testosterone</strong></td>
<td><strong>Topical Gel</strong> (Androgel, Axiron, Testim)</td>
<td><strong>20mg – 62.5mg</strong></td>
<td><strong>8mg</strong></td>
<td>• No needle use</td>
<td>• Slower to stop menopause and may not fully stop at lower doses</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>(1-3x 2mg patches)</strong></td>
<td><strong>(2x 4mg patches)</strong></td>
<td><strong>Daily</strong></td>
<td>• Good for more gradual effects</td>
<td>• Adhesive irritation, can fall off with sweat*</td>
<td></td>
</tr>
<tr>
<td><strong>Transdermal Testosterone</strong></td>
<td><strong>Patch</strong> (Androderm)</td>
<td><strong>2mg – 6mg</strong></td>
<td><strong>6mg</strong></td>
<td>• No needle use</td>
<td>• Slower to stop menopause and may not fully stop at lower doses</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>(1 - 3x 2mg patches)</strong></td>
<td><strong>(2x 4mg patches)</strong></td>
<td><strong>Daily</strong></td>
<td>• Good for more gradual effects</td>
<td>• Adhesive irritation, can fall off with sweat*</td>
<td></td>
</tr>
<tr>
<td><strong>Testosterone Pellets</strong></td>
<td><strong>(Testopel)</strong></td>
<td><strong>450mg – 600mg</strong></td>
<td><strong>750mg</strong></td>
<td>• No needle use</td>
<td>• Slower to stop menopause and may not fully stop at lower doses</td>
<td>• Lab draw frequency: Baseline draw prior to starting, once at 1 month, then at 3 months prior to next insertion</td>
</tr>
<tr>
<td></td>
<td><strong>(6 - 8x 75mg pellets)</strong></td>
<td><strong>(10x 75 mg pellets)</strong></td>
<td><strong>Every 3-4 months</strong></td>
<td>• Less frequent administration</td>
<td>• Adhesive irritation, can fall off with sweat*</td>
<td></td>
</tr>
<tr>
<td><strong>Testosterone Undecanoate</strong></td>
<td><strong>IM</strong> (Avoveel)</td>
<td><strong>750mg</strong></td>
<td><strong>N/A</strong></td>
<td>• Less frequent injection</td>
<td>• Pulmonary oil embolism risk</td>
<td>• Formulated in castor oil</td>
</tr>
<tr>
<td></td>
<td><strong>(3mL of 750mg/3mL solution)</strong></td>
<td></td>
<td></td>
<td>• Less fluctuation in levels</td>
<td>• PCP and facility need registration</td>
<td></td>
</tr>
<tr>
<td><strong>Testosterone Undecanoate</strong></td>
<td><strong>Oral</strong> (Jatenzo)</td>
<td><strong>315mg – 474mg</strong></td>
<td><strong>750mg</strong></td>
<td>• No needle use</td>
<td>• First pass metabolism</td>
<td>• Recommend divided doses (BID) to decrease first pass effect and hepatotoxicity</td>
</tr>
<tr>
<td></td>
<td><strong>(1x 158mg capsules BID 1x 158mg capsules BID 1x 237mg capsules BID)</strong></td>
<td><strong>(1x 158mg + 1x 237mg capsules BID)</strong></td>
<td><strong>Daily</strong></td>
<td>• Less fluctuation in levels</td>
<td>• Daily dose</td>
<td>• Starting dose 237mg BID, then adjust dose to min of 158mg BID, with a max of 395mg BID</td>
</tr>
<tr>
<td><strong>Testosterone Nasal Gel</strong></td>
<td><strong>(Natesto)</strong></td>
<td><strong>33mg</strong></td>
<td><strong>N/A</strong></td>
<td>• No needle use</td>
<td>• Administration three times per day</td>
<td>• Not recommended for use with other nasally administered drugs other than sympathomimetic decongestants</td>
</tr>
<tr>
<td></td>
<td><strong>(2 pump actuations, one 5.5mg actuation per nostril = 11mg, TID)</strong></td>
<td></td>
<td></td>
<td>• Less fluctuation in levels</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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1. Testosterone Cypionate/Enanthate and Estradiol Valerate/Cypionate are FDA approved for delivery only through intramuscular injections. However, for many patients, subcutaneous injection serves as a safe and effective alternative option due to decreased pain with injection. There are limited studies supporting subcutaneous delivery, but anecdotally, some patients and providers prefer this method. There is a caveat that hormone level may be more variable due to variable absorption, and, for those with thicker adipose tissue, it may take a longer time to achieve steady state.

2. For injectable can alter dose to every 10 or 14 day regimen if preferred.

3. To diminish irritation, apply 1% hydrocortisone to patch area for 1 hour duration before, then clean area, prior to patch application. Tincture of benzoin applied to patch area will promote adhesion.
# Gender Affirming Hormone Therapy Guidelines

## Testosterone Formulations: Approximate Dose Equivalent Chart

<table>
<thead>
<tr>
<th>Injection</th>
<th>Transdermal Patch</th>
<th>Transdermal Gel</th>
<th>Pellets</th>
</tr>
</thead>
<tbody>
<tr>
<td>50mg weekly (0.25mL of 200mg/mL solution weekly)</td>
<td>2-4mg</td>
<td>20-50mg</td>
<td>375mg (5x 75mg pellets)</td>
</tr>
<tr>
<td>80mg weekly (0.4mL of 200mg/mL, solution weekly)</td>
<td>6mg</td>
<td>50-75mg</td>
<td>525mg (7x 75mg pellets)</td>
</tr>
<tr>
<td>100mg weekly (0.5mL of 200mg/mL, solution weekly)</td>
<td>8mg</td>
<td>75-100mg</td>
<td>750mg (10x 75mg pellets)</td>
</tr>
<tr>
<td>125mg weekly (1mL of 250mg/mL, solution)</td>
<td>10mg</td>
<td>125-150mg</td>
<td>900mg (12x 75mg pellets)</td>
</tr>
</tbody>
</table>

## Trans Masculine: Medications to Supplement Testosterone

<table>
<thead>
<tr>
<th>Medication</th>
<th>Start/Usual</th>
<th>Typical Max</th>
<th>Frequency</th>
<th>Pros</th>
<th>Cons</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finasteride Oral (Proscar, Propecia)</td>
<td>1mg (¼ of 5 mg pill or 1 x 1mg pill)</td>
<td>5mg (1 x 5mg pill)</td>
<td>Daily</td>
<td>Prevent or slow balding due to androgenic alopecia</td>
<td>• May slow other DHT-dependent changes like secondary hair growth and clitoral growth; so this should be discussed with patients, especially if considering using at the beginning of testosterone use, unless they are deliberately trying to prevent above mentioned changes</td>
<td>5mg are cheaper than 1mg, can split 5 mg into quarters</td>
</tr>
<tr>
<td>Dutasteride Oral (Avodart)</td>
<td>0.5mg (1 x 0.5mg tablet)</td>
<td>0.5mg (1 x 0.5mg tablet)</td>
<td>Every 3 days</td>
<td>Slows and prevents balding due to androgenic alopecia; Can take every 3 days rather than every day with Finasteride</td>
<td>Same as Finasteride Cons</td>
<td></td>
</tr>
<tr>
<td>Compounded Testosterone Cream (applied to genitals)</td>
<td>12.5mg–50mg (0.25g–1g of 2.5% cream)</td>
<td>100mg (2g of 5% cream or 1g of 10% cream)</td>
<td>Daily</td>
<td>Clitoral enlargement; Can also be used as cheaper transdermal alternative to Androgel</td>
<td>May worsen balding due to androgenic alopecia</td>
<td>Some surgeons may suggest the topical application of testosterone to the clitoris as an adjunct to growth. There is no definitive evidence for this practice, however if undertaken, the applied dose should be subtracted from the client's total testosterone dosage (if it is used in addition to another formulation of T). Contact compounding pharmacy to determine equivalent amount to be subtracted from total dose, as equivalency depends greatly on what chemicals testosterone is compounded with. Long-term efficacy is not well established.</td>
</tr>
<tr>
<td>Compounded Dihydrotestosterone (DHT) Cream (applied to genitals)</td>
<td>5mg over course of day 20mg of 10% cream</td>
<td>6mg over course of day 20mg of 10% cream</td>
<td>Apply 2mg 3x per day</td>
<td>Clitoral enlargement</td>
<td>May worsen balding due to androgenic alopecia</td>
<td>Same as Compounded Testosterone Cream Notes</td>
</tr>
<tr>
<td>Leuprolide Acetate IM (Lupron, Eligard)</td>
<td>11.25mg (1 IM shot of 11.25mg/1.5mL diluant)</td>
<td>22.5mg (2 IM shots of 11.25mg/1.5mL diluant)</td>
<td>Every 3 months</td>
<td>GnRH receptor agonist, very effective to suppress endogenous hormone production; Typically only used for teens for puberty suppression; can use either alone or with exogenous hormones</td>
<td>May be expensive if not covered by insurance; Not ideal for long-term use due to bone density loss³</td>
<td>Not sold or FDA approved in the US, very expensive, and illegal to import due to being a schedule III drug. Overseas this is available as an alcohol-based gel, which, when used on mucous membranes can result in a burning sensation after topical application.</td>
</tr>
<tr>
<td>Vaginal Estradiol (Estroace, Premarin, Estrin, Vagifem)</td>
<td>N/A</td>
<td>N/A</td>
<td>Dosing same as post-menopausal cis-women</td>
<td>Treats vaginal atrophy, pain with penetration and unsatisfactory cytology result on pap smear</td>
<td>If just used in preparation for vaginal exam and/or pap smear, short two week course prior can help with pain during exam as well as obtaining satisfactory cytology; Approach discussion with sensitivity as some may not feel comfortable using estrogen due to gender dysphoria</td>
<td></td>
</tr>
</tbody>
</table>

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* Dosing depends on compounded formulation. Consult with pharmacy to determine usual cis-gender male replacement dose and start at approximately 25-50% of that dose.
## Gender Affirming Hormone Therapy Guidelines

### TransMasculine: Exogenous Testosterone Monitoring

This is in addition to any PCP visits or lab work indicated to monitor other health risks, disease states or standard medical screening.

<table>
<thead>
<tr>
<th>Baseline</th>
<th>Once A menstruational cycle (or 2-3 months after start)</th>
<th>After change in dose (1-3 months after change)</th>
<th>6 months after first achieving maintenance dose (optional, esp if otherwise young and healthy)</th>
<th>12 months after achieving stable maintenance dose (unless other concerns)</th>
<th>When to draw testosterone?</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBC, CMP</td>
<td>Testosterone (total)</td>
<td>Testosterone (total)</td>
<td>CBC, Testosterone (total)</td>
<td>CBC, Testosterone (total), CMP*, Lipids**</td>
<td>Injectable: One week after injection$^7$</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Transdermal: Trough (don’t apply it on the day of the draw, or wear gloves when administering on day of draw to avoid contaminating sample)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Oral: 6 hours after morning dose at least 7 days after starting or adjusting dose</td>
</tr>
<tr>
<td>PCP exam, BP, U/P$^*$</td>
<td>PCP check-in &amp; BP</td>
<td>PCP check-in &amp; BP</td>
<td>PCP check-in &amp; BP</td>
<td>PCP check-in &amp; BP</td>
<td></td>
</tr>
</tbody>
</table>

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### Transline Medical Consultation Service

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1. **Depo-Provera**
   - 150mg (1ml of 150mg/mL solution)
   - Every 3 months
   - Stops persistent vaginal bleeding on T
   - Contraception
   - 3 month course, then re-evaluate

2. **Provera**
   - 5mg (1.5mg tablet daily)
   - Daily
   - Stops persistent vaginal bleeding on T
   - Short 7-10 day course to as long as a 3 month course

3. **Arimidex**
   - 1mg
   - Daily
   - Stops persistent vaginal bleeding on T
   - Not ideal for long-term use due to bone density loss
   - 3 month course
   - May cause menopausal symptoms

### Levonorgestrel Intrauterine Device
- Mirena lasts 5 years
- Skylla lasts 3 years
- Kyleena lasts 4 years

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**Total Testosterone Reference Range:**
- Use Depo-Provera male suggested reference range. Reference ranges may vary depending on lab.
- The goal is to be around or below mid-normal range for a cisgender male, but also it depends on transition goals of the client.
- If testosterone is supraphysiologic, before making major adjustments, review administration technique to ensure correct dosing and re-check level. If persistently supraphysiologic, decrease dose and re-check again.
- Recommended mid-cycle draw reference ranges vary:
  - Ferrasy: 300-700ng/dl
  - Endocrine Society: 400-700ng/dl
  - UCSF’s 350-1100ng/dl (unless in setting of symptoms like migraines, pelvic cramping or mood swings in which case recommends peak and trough draw may be helpful. If supraphysiologic, consider change to transdermal or decreasing injection interval)

**Secondary Polyphymia:**
- Use CBC reference range for cisgender men
- Hematocrit >54 is ideal
- >54 indicates polyphymia, which increases the risk of hypertension and thrombosis
- First rule out pulmonary disease cause such as asthma, smoking, COPD, etc. or JAK2 mutation. EPO level can also be checked to determine if it’s primary or secondary polyphymia.
- If polyphymia is continually secondary to testosterone use, there are a few treatment options to choose from other than just decreasing the dose. Since H/F elevation is often due to high peaks of testosterone with injectable, consider:
  - Changing to weekly injection schedule if currently on an every other week injection schedule
  - Re-check labs for normalization 1-3 months after change is made

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$^*$ First rule out if testosterone usage has been variable. If T level to high (and aromatizing to E) or T level too low. Persistent vaginal bleeding with or without intercourse requires work-up if >12 months amenorrheic

$^7$ If using Androgel or Leuprolide Acetate. In the presence of other risk factors for osteoporosis, consider DEXA scan after 2 years of use

Level will be higher if on every 10 or 14 day dosing than on every 7 day dosing. Doesn’t really matter when you draw testosterone, just need to know if it’s trough, mid-level, or peak so can determine if the result is where expected to be.

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**Transline Medical Consultation Service**
Gender Affirming Hormone Therapy Guidelines

Trans Feminine: Exogenous Estrogen Dosing

<table>
<thead>
<tr>
<th>Medication</th>
<th>Start/Usual Dose</th>
<th>Typical Max Dose</th>
<th>Frequency</th>
<th>Pros</th>
<th>Cons</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intramuscular or Subcutaneous¹</td>
<td>Valerate: 5mg - 10mg (0.25mL - 0.5mL of 20mg/mL solution)</td>
<td>Valerate: 20mg (1mL of 10mg/mL solution or 0.5mL of 40mg/mL solution)</td>
<td>Weekly²</td>
<td>• Less frequent administration • Systemic affect, avoids first pass effect on liver; however when at peak circulating levels of estrogen, amount delivered to liver may be higher than other modes of delivery • Peak of injectable may help better suppress endogenous hormone production</td>
<td>• Peak/trough fluctuation effect • Self-injection or frequent in-office injections • Needle Use</td>
<td>• Valerate formulated in castor oil (use if allergic to cottonseed) and is typically used with weekly dosing. The national shortages of the injectable formulation, especially generic Valerate, from August 2016 through the finalization of this protocol have made availability sporadic. • Cypionate is formulated in cottonseed oil (use if allergic to castor oil) and is typically a quarter of the dose of valerate and can be given at every two week intervals rather than weekly due to the longer half life.</td>
</tr>
<tr>
<td>Estradiol Patch (Virel Evo)</td>
<td>0.1mg - 0.2mg (1-2x 0.1mg patches)</td>
<td>0.4mg (4x 0.1mg patches)</td>
<td>Bi-weekly or per manufacturer recommendation</td>
<td>• No needle use • Less fluctuation in levels • No first pass metabolism</td>
<td>• Adhesive irritation, can fall off with sweat³ • Daily application • May be expensive if not covered by insurance</td>
<td>• Preferred method for those with increased risk of DVT/PE/CVD • For those who have had DVT/PE/CVD, shared clinical decision-making to resume low-dose (0.05mg) transdermal estrogen may be done, but it should be administered with continuous anticoagulation.</td>
</tr>
<tr>
<td>Estradiol Oral (Estrace)</td>
<td>2mg - 6mg (1-5x 2mg tablet)</td>
<td>8mg (4x 2mg tablets daily)</td>
<td>Daily</td>
<td>• No needle use • Less fluctuation in levels</td>
<td>• Daily dose • First pass metabolism</td>
<td>• Single or divided doses dependent on preference; if on higher dose of 6.8mg, would recommend dividing to decrease first pass and hepatotoxicity • Some providers recommend sublingual administration to attempt to bypass first pass metabolism, but it is unclear how much is actually absorbed sublingually vs. swallowed • Consider switch to injectable if not seeing results with oral</td>
</tr>
</tbody>
</table>

Estrogen Formulations: Approximate Dose Equivalent Chart

<table>
<thead>
<tr>
<th>Injectable Estradiol Valerate</th>
<th>Injectable Estradiol Cypionate</th>
<th>Transdermal Patch</th>
<th>Oral Estradiol</th>
<th>Prelarin Oral</th>
</tr>
</thead>
<tbody>
<tr>
<td>5mg weekly (0.25mL of 20mg/mL solution)</td>
<td>1.25mg weekly (0.25mL of 5mg/mL solution)</td>
<td>0.1mg</td>
<td>2mg</td>
<td>1.25mg</td>
</tr>
<tr>
<td>10mg weekly (0.5mL of 20mg/mL solution)</td>
<td>2.5mg weekly (0.5mL of 5mg/mL solution)</td>
<td>0.2mg</td>
<td>4mg</td>
<td>2.5mg</td>
</tr>
<tr>
<td>20mg weekly (0.5mL of 40mg/mL solution)</td>
<td>6mg weekly (1mL of 6mg/mL solution)</td>
<td>0.4mg</td>
<td>8mg</td>
<td>5mg</td>
</tr>
</tbody>
</table>
# Trans Feminine: Medications to Supplement Estrogen

<table>
<thead>
<tr>
<th>Anti-Androgens</th>
<th>Start/Usual Dose</th>
<th>Typical Max Dose</th>
<th>Frequency</th>
<th>Cons</th>
<th>Notes</th>
</tr>
</thead>
</table>
| **Spironolactone Oral**   | 100mg - 300mg (1-3x 100mg tablets) | 400mg (4x 100mg tablets) | Daily     | • Inexpensive  
• Very effective to decrease endogenous testosterone levels   | • Potential risk of hyperkalemia  
• Diuretic effect can result in fatigue, dehydration side effects  
• Erectile dysfunction[^2]  
• Single or divided doses dependent on preference |
| **(Aldactone)**           |                        |                  |           |                                                                      |                                                                      |
| **Finasteride Oral**      | 5mg (1x 5mg tablet)    | 5mg (1x 5mg tablet) | Daily     | • Slows and prevents balding due to androgenic alopecia and decreases other secondary sexual hair growth in youth | • Used as adjuvant because decreases DHT but not Testosterone  
• Can use alone (without estrogen) if goal is only for partial feminization |
| **(Propecia or Proscar)** |                        |                  |           |                                                                      |                                                                      |
| As adjuvant anti-androgen |                        |                  |           |                                                                      |                                                                      |
| **Dutasteride Oral**      | 0.5mg (1x 0.5mg tablet) | 0.5mg (1x 0.5mg tablet) | Every 3 days | • Slows and prevents balding due to androgenic alopecia and decreases other secondary sexual hair growth in youth  
• Can take every 3 days rather than every day with Finasteride | • May be expensive and not typically covered by insurance  
• Same as Finasteride Notes |
| **(Avodart)**             |                        |                  |           |                                                                      |                                                                      |
| As adjuvant anti-androgen |                        |                  |           |                                                                      |                                                                      |
| **Leuprolide Acetate IM** | 11.25mg (1 IM shot of 1.25mg/1.5mL diluant) | 22.5mg (2 IM shots of 11.25mg/1.5mL diluant) | Every 3 months | • GnRH receptor agonist, very effective  
• For Teens: Best option for puberty suppression; can use either alone or with exogenous hormones  
• For Adults: Especially beneficial if can't use spironolactone and on a lower estrogen dose and/or having difficulty suppressing endogenous hormone production | • May be expensive if not covered by insurance  
• Not ideal for long-term use due to bone density loss[^3] |
| **(Lupron, Eligard)**     |                        |                  |           |                                                                      |                                                                      |
| **Histriolin Pellet**     | 50mg                   | 50mg             | Every 1 year | • See Leuprolide Acetate Pros | • More invasive, requires minor surgery to implant  
• May be expensive if not covered by insurance  
• Not ideal for long-term use due to bone density loss[^3] |
| **(Vantas)**              |                        |                  |           |                                                                      |                                                                      |

<table>
<thead>
<tr>
<th>Less Frequently Used Anti-Androgens</th>
<th>Start/Usual Dose</th>
<th>Typical Max Dose</th>
<th>Frequency</th>
<th>Pros</th>
<th>Cons</th>
<th>Notes</th>
</tr>
</thead>
</table>
| **Cyproterone Acetate Oral**       | 50mg (1x 50mg tablets) | 100mg (2x 50mg tablets) | Daily     | • Steroidal androgen receptor antagonist, blocks T & DHT very effectively  
• Also a progestin agonist | • Risk of meningoma; however, adverse effects are unlikely if using 100mg or less daily dose. | • Unavailable in the US |
| **(Androcur)**                      |                        |                  |           |                                                                      |                                                                      |-------|
| **Flutamide Oral**                 | 250mg (2x 125mg tablets) | 250mg (2x 125mg tablets) | Daily     | • Non-steroidal androgen receptor antagonist | • Potential risk of rapid onset, severe, life-threatening liver toxicity; use extreme caution and monitor closely  
• Don't use if >65y, or increased risk of methemoglobinemia (e.g. smokers); caution if other hepatotoxic drugs or alcohol. | • If utilized must check LFT at baseline, 1 mo, 2 mo, then every 6 mo for lifetime |
| **(Eulexin)**                      |                        |                  |           |                                                                      |                                                                      |-------|
| **Bicalutamide Oral**              | 50mg (1x 50mg tablet)  | 50mg             | Daily     | • Non-steroidal androgen receptor antagonist | • See Flutamide Cons; however, Bicalutamide has less hepatotoxicity, so if choosing between non-steroidal androgen antagonists, choose Bicalutamide over Flutamide | • If utilized must check LFT at baseline, 1 mo, 2 mo, then every 6 mo for lifetime |
| **(Casodex)**                      |                        |                  |           |                                                                      |                                                                      |-------|

[^2]: If pt would like to experience erections with endogenous testosterone suppression and does not want to decrease anti-androgen dose, consider prescription of Viagra, Cialis, or if s/p orchiectomy can consider using low dose testosterone or Estratest
### Trans Fertility: Exogenous Estrogen Monitoring

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<th>Treatment Option</th>
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<tr>
<td>Initial Estrogen</td>
<td>Baseline value</td>
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<td>Baseline value</td>
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<tr>
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<td>Monitor daily</td>
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<td>1 week</td>
<td>Monitor weekly</td>
<td>Monitor weekly</td>
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<tr>
<td>2 weeks</td>
<td>Monitor twice weekly</td>
<td>Monitor twice weekly</td>
<td>Monitor twice weekly</td>
</tr>
</tbody>
</table>

#### Estrogen Therapy

- **17β-Estradiol (Premarin)**
  - **Durations**:
    - Cycle 1: Week 1
    - Cycle 2: Week 2
  - **Dosage**:
    - Week 1: 2 tablets (1.25 mg)
    - Week 2: 2 tablets (1.25 mg)
  - **Side Effects**:
    - Hot flashes
    - Mood swings
    - Headache

- **Premarin Depot**
  - **Durations**:
    - Cycle 1: Week 1
    - Cycle 2: Week 2
  - **Dosage**:
    - Week 1: 2 tablets (1.25 mg)
    - Week 2: 2 tablets (1.25 mg)
  - **Side Effects**:
    - Hot flashes
    - Mood swings
    - Headache

#### Monitoring

- **Serum Estradiol**
  - Monitor serum estradiol levels weekly to ensure appropriate dose and response.
  - Adjustments should be made based on serum estradiol levels and clinical response.

- **Ovarian Stimulation Monitoring**
  - Monitor ultrasound and serum markers (FSH, LH, AMH) to assess ovarian response.
  - Adjust hormone therapy based on results.

#### Monitoring Tools

- **Serum Estradiol Levels**
  - Baseline: 20-50 pg/mL
  - During therapy: 100-200 pg/mL

- **Ultrasound**
  - Baseline: Normal follicular development
  - During therapy: Increased follicular development

**Notes**: Always consult with a healthcare provider for personalized advice and monitoring recommendations.
Medical Pearls

- Always keep in mind that hormone therapy dosing depends on the patient’s goals of gender transition. Please recognize that these guidelines are merely common practice parameters; it is reasonable to go outside the minimum and maximum recommendations in certain circumstances. With harm reduction in mind, we generally recommend to treat the person and their level of satisfaction over lab values with exceptions, of course, in the setting of contraindications. For those looking for minimal effects and/or for adolescents, use less than the "start/typical" dosages. For more specific hormone therapy guidelines in adolescents please refer to the Gender Joy, Callen-Lorde, Endocrine Society, or UCSF Guidelines.

- Besides patient preference, choose the mode of delivery based on co-morbidities and shared medical decision-making.

- Interval increases in dose can begin as early as one month, with a target of achieving reasonable patient-driven goals; however, there’s no evidence that starting very low and tapering up to usual dose is necessarily beneficial. Outside of the context of complex medical/psychosocial issues, it is reasonable to start prescribing at the typical dose if patient goals support that rather than tapering up.

- In addition, there’s no evidence that starting at max doses is better to achieve full effects sooner either, with the exception of stopping menses sooner for trans masculine individuals on testosterone. In the rare case that someone is above the typical maximum dose, closer monitoring clinically with lab work may be warranted. Due to the potential aromatization of testosterone to estrogen and vice versa, higher doses may actually have the reverse intended effect.

- If continuing prescriptions for someone transferring care or if someone presents with long-term “self-therapy”, providing a prescription for continued therapy at current doses may be reasonable so lab values may be checked on their current regimen.

- We recommend an informed consent model of hormone prescribing in which effects and risks, as well as fertility preservation options are discussed prior to prescribing, as is done with any other medication.