

## About Hormone Replacement (MTF)

All humans normally make all three of the major sex hormones: *estrogen, testosterone, and progesterone*.

These hormones are naturally made by the male and female gonads, and are also produced by the adrenal glands and elsewhere in the body. The body naturally converts one hormone to another, and back again, as needed. Varying proportions of these hormones contribute to a person's relative butch- or femme-ness.

You can take medications to modulate the relative amounts of these hormones in your body, if you want to. It is not mandatory or required for transitioning, however!

Possible risks and side effects of these medications are elaborated in the Informed Consent information. This handout is about how the medications are intended to work, and what you might expect if you use them.



Masculine characteristics can be reduced by using "anti-androgens," specifically spironolactone and finasteride.

- **Spironolactone** ("spy-RO-no-LACK-tone") is an oral medication that reduces the amount of testosterone made by the adrenal glands. It also blocks testosterone receptors in their target tissues, so that circulating testosterone has less effect.
- **Finasteride** ("fin-AST-er-ide") is an oral medication that blocks the conversion of testosterone to its much more potent form, called DHT, di-hydro-testosterone. DHT mainly acts on the scalp and prostate gland. Finasteride reduces hair loss, and it also shrinks the prostate gland, so you make less seminal fluid.

A lower level of testosterone in the system, and lower sensitivity to testosterone, reduces the hardness of muscle tissue and the thick roughness of the skin, and slows or stops male-pattern balding. It also reduces libido (and fertility) and aggressive tendencies.



Feminine characteristics can be enhanced by using "hormone replacement," with bio-identical estrogen and progesterone. ("Bio-identical" means they are the same molecules that are normally produced by the body.)

- **Estradiol** ("EST-ra-DYE-ol"): There are three kinds of estrogen made by the body naturally; estradiol is the one mainly made by ovaries. It is a transdermal cream that releases directly into the bloodstream through the skin. This is similar to the way the ovaries release it into the bloodstream, and is likely safer than swallowing it as a pill and sending it through the digestive system and liver. Estrogen directly promotes feminine physical characteristics.

Higher levels of estrogen in the body promote body fat redistribution as "curves," and softens the skin and body hair. It may increase emotional sensitivity and reduce libido. Estrogen also makes bones stronger and helps to prevent osteoporosis.

- **Progesterone** ("pro-JEST-er-own") is a hormone that may be taken as a pill or added to the transdermal cream with the estrogen. It is normally made by adrenal glands (and ovaries). It is used to promote breast development.

Many women consider progesterone a "calming" hormone which can even be sedating at higher doses.



What to expect if you use these four medications:

*The first six months:*

Gradual redistribution of body fat ("curves") and softening of skin. Slowing of scalp hair loss, and development of finer body hair. Breast bud development behind the nipples, which may become tender and sensitive. Less body odor (a different smell of the sweat). Lower libido, and less erectile function. More emotional sensitivity - feelings can be closer to the surface.

*The first couple of years:*

Breast and nipple growth. Smaller genitals and loss of fertility. Thickening of scalp hair. (Hormones can't re-grow hair follicles that have been permanently lost to male pattern baldness, unfortunately.)

*Beyond the first two years:*

Facial and body hair is reduced, and becomes softer and finer. Breasts have reached the individual's full size, and genitals have reached their final size.

Women who undergo orchiectomy ("OR-key-ECK-tuh-me") or gonad removal) can lower their dosages of medications by 50% or more. This is because, without the gonads producing testosterone, all hormone replacement effects are directed toward feminizing characteristics. In fact, many women add some low-dose testosterone to their hormone creams after orchi, to maintain muscle mass and libido - the same way natal females might do, after menopause.

## Hormone Replacement Program (MTF) - The First Year

### Visit 1:

1. Evaluation, medical history.
2. Homework: "Trans Questions" and "Informed Consent for Hormone Treatment."
3. **Lab tests** (approximately \$50 out of pocket):
  - Complete blood count.
  - Complete metabolic panel (kidney and liver function, electrolytes and fasting blood sugar).
  - Fasting lipid panel (cholesterol).

### Visit 1, part 2:

1. Review lab results.
2. Review "Trans Questions" and "Informed Consent for Hormone Treatment."
3. **Physical exam**, including prostate check if over age 50 or symptomatic of a prostate condition.
4. Prescriptions (total cost range \$50-100+/month out of pocket):
  - **Transdermal hormone cream**: 1 mg estradiol/20 mg progesterone/dose: Apply one dose to thin skin daily. (Compounded by the pharmacy - individually made, rather than mass-produced. This dosage is approximately equal to the usual dosage for postmenopausal natal females. \$24-45/month.)
  - **Spironolactone** 200 mg/day: Slowly increase to the full dosage over 6 weeks. *Start with 25 mg daily for week 1; then 25 mg twice a day for week 2; then 25 mg three times a day for week 3; then 50 mg twice a day for week 4; then 50 mg three times a day for week 5; then 100 mg twice a day for week 6. May switch to 200 mg once daily thereafter, if this is well tolerated.* (\$13-37/month.)
  - **Finasteride** 5 mg/day: One a day. (\$9-25/month.)

### Visit 2, four weeks after starting hormone replacement:

1. Brief exam.
2. Continue prescriptions:
  - Transdermal hormone cream, 1 mg estradiol/20 mg progesterone/dose.
  - Spironolactone 200mg/day.
  - Finasteride 5mg/day.

### Visit 3, eight weeks after starting hormone replacement:

1. Brief exam.
2. Continue spironolactone 200mg/day, finasteride 5mg/day.
3. **Consider dosage increase**: transdermal hormone cream, 2mg estradiol/40mg progesterone/dose.

### Visit 4, twelve weeks after starting hormone replacement:

1. Brief exam, adjust dosages as needed.
2. **Lab tests**: fasting basic metabolic panel (checks potassium and blood sugar), \$15.  
(Other lab tests may be needed, depending on the individual. For example, if there is a concern for high blood sugar, you may need a glucose tolerance test [\$30]; if there is concern for thyroid or other abnormalities, they may need to be done; previously abnormal labs may need to be repeated.)
3. Continue spironolactone 200mg/day, finasteride 5mg/day, transdermal hormone cream.

### 6 months:

1. Brief exam.
2. Continue spironolactone 200mg/day, finasteride 5mg/day.
3. **Consider dosage increase**: transdermal hormone cream, 3mg estradiol/60mg progesterone/dose.

### 9 months:

1. Brief exam.
2. Continue spironolactone 200mg/day, finasteride 5mg/day, transdermal hormone cream.

### 12 months:

1. **Physical exam**.
2. **Lab tests**: Blood count, complete metabolic panel, and fasting lipid panel = \$50, and others as needed.
3. Continue spironolactone 200mg/day, finasteride 5mg/day.
4. **Consider dosage increase**: transdermal hormone cream, 4mg estradiol/80mg progesterone/dose.

### References:

Veteran's Administration guidelines, 2012: <http://bit.ly/MwccicA> ↻ University of California guidelines, 2011: <http://bit.ly/OTGlpy>  
Endocrine Society guidelines, 2009: <http://bit.ly/unnYp> ↻ Canadian (British Columbia) guidelines, 2006: <http://bit.ly/99izNW>

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