



ESTROGEN, PROGESTERONE, AND T BLOCKER THERAPY INFORMATION

When you are considering gender-affirming medical treatments, it is important to learn about some of the risks, expectations, long-term considerations, and medications associated with transition from a testosterone predominant hormonal milieu to an estrogen/progesterone predominant hormonal milieu.

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

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

^B Estimates represent published and unpublished clinical observations.

^C Significantly dependent on amount of exercise.

^D Complete removal of male facial and body hair requires electrolysis, laser treatment, or both.

It is very important to remember that everyone is different, and that the extent and rate at which your changes take place depend on many factors. These factors include your genetics, the age at which you start taking hormones, and your overall state of health.

It is also important to remember that because everyone is different, your medicines or dosages may vary widely from those of your friends, or what you may have read in books or online. Many people are eager for changes to take place rapidly. Please remember that you are going through a second puberty, and puberty normally takes several years for the full effects to be seen. Taking higher doses of hormones will not necessarily make things move more quickly—it may, however, endanger your health.



1) Physical Changes:

Skin:

The first changes you will probably notice are that your skin will become a bit drier and thinner. Your pores will become smaller, and there will be less oil production. You may become more prone to bruising or cuts. You may notice that you perceive pain or temperature differently, or that things just “feel different” when you touch them. You will probably notice skin changes within a few weeks. In these first few weeks you will notice that the odors of your sweat and urine will change, and that you may sweat less overall.

Breasts:

You will also notice small “buds” developing beneath your nipples within a few weeks of starting your treatment. These may be slightly painful (especially to the touch) and uneven between the right and left side. This is normal, and is the normal course of breast development. The pain will diminish somewhat over the course of several months. Breast development is quite variable from person to person. Not everyone develops at the same rate, and most people can expect to develop breasts based on their pre-existing genetics and duration of exposure to testosterone. Like the breasts of ciswomen, the breasts of people vary in shape and size, and are sometimes different sizes or shapes between the right and the left.

Weight:

Weight will begin to redistribute around your body. Fat will begin to collect around your hips and thighs, and the fat under your skin throughout your body will become a bit thicker, giving your arms and legs less muscle definition and a smoother appearance. Hormones will not have a significant effect on the fat in your abdomen. Your muscle mass will decrease, as will your strength (though you should continue to exercise to maintain your muscle tone as well as your general health). Depending on your diet, lifestyle, genetics, and starting weight and muscle mass, you may gain or lose weight once you begin HT (Hormone Therapy).

The fat under the skin in your face will increase and shift around to give your eyes and face in general a softer, fuller appearance. Please note that your bone structure (including your hips, arms, hands, legs and feet) will not change if you have completed your endogenous (or first) puberty. The facial changes can take up to 2 years or more to see the final result; it is usually a good idea to wait at least 2 years after beginning HT before considering any gender affirming surgical facial procedures.

Hair:

The hair you may have on your body, such as your chest, back and arms will often decrease in thickness and may grow at a slower rate. It usually does not all go away, however, and most people need electrolysis or laser to help reduce unwanted body hair. Your facial hair may thin a bit and grow a bit slower; however, it will rarely go away completely without electrolysis or laser treatments. If you have had any scalp balding, this should slow or stop, though the amount that will grow back is variable.



2) Emotional Changes:

Your overall emotional state may or may not change and this varies from person to person. Puberty is a roller coaster of emotions and the second puberty that you will experience during your transition is no exception. You may find that you have access to a wider range of emotions or feelings, or have different interests, tastes or pastimes, or behave differently in relationships with other people. While psychotherapy is not for everyone, most people would benefit from a course of supportive psychotherapy while in transition to help you explore these new thoughts and feelings, and get to know your new self. Most studies show a significant improvement in overall well being after gender affirming hormone therapy has begun. This is most likely due to better alignment of the physical body with the psychological gender identity.

3) Sexuality:

Soon after beginning hormone treatment, you will notice a decrease in the number of erections that you have. When you do have an erection, it will be less firm, and will not last as long. You may lose the ability to penetrate. You will still have erotic sensation and will still be able to orgasm. However, when you do orgasm, it may be “dry”. Sex may feel different. You may find that there are different sex acts or different parts of your body that bring you erotic pleasure. Your orgasms will feel different, possibly with more of a “whole body” experience, less peak intensity, and longer duration. It is recommended that you explore and experiment with your new sexuality through masturbation, using sex toys such as dildos or vibrators, and involve your sexual partner(s).

Your testicles will shrink to less than half their original size, or less. In nearly all cases, this does not affect the amount of scrotal skin available for future genital surgery, if desired.

4) Reproduction/ Fertility:

You must assume that within a few months of beginning hormone therapy, you will become permanently and irreversibly sterile. While some people may be able to maintain a sperm count on hormone therapy, or have their sperm count return after stopping hormone therapy, you must assume that this will not be the case for you. If you think that there might be any chance that in the future you may want to parent a child using your own sperm, you should speak to the doctor about preserving your sperm in a sperm bank. This process generally takes 2-4 weeks and is rarely covered by health insurance. You should store your sperm before beginning any hormone therapy. All that said many people stop hormones and go on to make biological children; there is just no way to know if you would be able to do that.

However, even if you are on hormones, if you are having penetrative vaginal sex with a person who is able to become pregnant, you should always continue to use a birth control method to prevent unwanted pregnancy.



Many of the effects of hormone therapy are reversible if you stop taking them. The degree to which they can be reversed depends on how long you have been taking them. Breast growth, and possibly sterility, are not reversible. If you have an orchiectomy (which is removal of the testicles) or genital reassignment surgery, you will probably be able to take a lower dose of hormones and may not need testosterone blockers. However, it is important to remain on at least a low dose of hormones post-op until at least age 50 years old, to prevent a weakening of the bones, otherwise known as osteoporosis.

5) Medications used in Hormone Therapy

Hormone therapy for people may include three different kinds of medicines: estrogen, testosterone blockers, and progesterone.

Estrogen:

Estradiol is the hormone responsible for softer skin and curvier body shapes. It causes the physical changes of transition, as well as many of the emotional changes. Estrogen may be given as a pill, by injection, or by a number of preparations applied to the skin, such as a cream, a gel, a spray or a patch.

Pills are convenient, cheap and effective, but they are less safe after age 35 or if you smoke. Oral estradiol is more likely to cause blood clots. Generally, it is preferable to let the pill dissolve under your tongue (sublingual) in order to avoid directly digesting the pill through your liver.

Patches can be very effective and safe but sometimes they may irritate your skin. Creams, sprays and gels are effective and safe and absorb quickly into your skin. These are more expensive and generally not covered by most insurance plans.

Topical compounded estradiol cream is not covered by insurance. It costs approximately \$25/ month.

Estrogen Related Health Risks:

Risks associated with estrogen include high blood pressure, blood clots, liver problems, stroke, and perhaps diabetes. Also, there are potential unknown risks since there are not many long-term studies on the use of estrogen in people. It is possible that in the future we may learn about more risks or side effects, particularly when using estrogen for many years. Contrary to what many may believe, a very small amount of estrogen is needed to deliver the maximum effect. Taking very high doses of estrogen does not make changes happen more quickly, and it can be dangerous and harmful to your health.

There is not much scientific evidence about the risks of cancer in people taking gender affirming hormone therapy. We believe that your risk of prostate cancer will go down, but we are not sure, and therefore you will still need to be tested for that cancer when appropriate. Your risk of breast cancer may increase slightly, though it



will still be less than in a ciswoman. Breast cancer screening with mammograms is recommended to begin between ages 40 and 50, for people who have been on hormones for more than 3 years.

If you have genital surgery or an orchiectomy (removal of the testicles), your estrogen dose can be lowered. If you have your testicles removed, you usually need very little estrogen to maintain your softer, curvier characteristics.

Estrogen can make your liver work too hard, causing damage. Your doctor will periodically check your liver functions, cholesterol, and perform a diabetes screening test to monitor your health while on estrogen therapy.

Testosterone blockers:

There are a number of medicines which can be used to block testosterone. Some of these drugs block the action of testosterone in your body and some of them also prevent the production of testosterone. Most of the testosterone blockers are very safe. The three most commonly used in the United States are spironolactone, finasteride, and bicalutamide. To learn more about testosterone blocking medications (or anti-androgens), please see our other handout.

Progesterone:

Progesterone is a source of constant debate. Progesterone has a number of reported benefits, such as improved mood, energy, or libido, better breast development, or better body fat redistribution and “curves”. There is very little scientific evidence to support these claims. However, some people do prefer to take progesterone and have seen some of these benefits. When you take a natural form of progesterone, your risk of things like blood clots, stroke, or cancer are less, but still may be increased. There simply is not enough research in this area to make an accurate prediction of your risk. Progesterone may be given by a pill or by a cream.

The usual blood test schedule is approximately every 3 months for one year then every 6 months for one year then yearly.

Taking more hormones will not make your changes progress more quickly and can be unsafe. It is important to be patient and remember that this puberty can take years to develop all of its changes, just like the first one did.