



The binary terms “male,” “female,” “masculine,” “feminine,” “masculinizing” and “feminizing” do not accurately reflect the diversity of people’s bodies or identities. To describe how hormones work, it is helpful to know how testosterone works in non-intersex, nontrans men’s bodies, and how estrogen and progesterone works in non-intersex, nontrans women’s bodies. We keep these binary terms in quotes to emphasize that they do not fit everyone’s identity and they are imperfect concepts.

A Guide to Feminizing Hormones

Hormone therapy is an option that can help transgender and gender-diverse people feel more comfortable in their bodies. Like other medical treatments, there are benefits and risks. Knowing what to expect will help us work together to maximize the benefits and minimize the risks.

What are hormones?

Hormones are chemical messengers that tell the body’s cells how to function, when to grow, when to divide, and when to die. They regulate many functions, including growth, sex drive, hunger, thirst, digestion, metabolism, fat burning & storage, blood sugar, cholesterol levels, and reproduction.

What are sex hormones?

Sex hormones regulate the development of sex characteristics, including the sex organs such as genitals and ovaries/testicles. Sex hormones also affect the secondary sex characteristics that typically develop at puberty, like facial and body hair, bone growth, breast growth, and voice changes. There are three categories of sex hormones in the body:

- **Androgens:** testosterone, dehydroepiandrosterone (DHEA), dihydrotestosterone (DHT)
- **Estrogens:** estradiol, estriol, estrone
- **Progestin:** progesterone

Generally, “males” tend to have higher androgen levels, and “females” tend to have higher levels of estrogens and progestogens.

What is hormone therapy?

Hormone therapy is taking medicine to change the levels of sex hormones in your body. Changing these levels will affect your hair growth, voice pitch, fat distribution, muscle mass, and other features associated with sex and gender. Feminizing hormone therapy can help make the body look and feel less “masculine” and more “feminine” — making your body more closely match your identity.

What medicines are involved?

There are different kinds of medicines used to change the levels of sex hormones in your body. These medicines work by affecting:

- the part of your brain that stimulates sex hormone production
- your testicles (which produce testosterone)
- the cells in your body that respond to sex hormones

Typically, feminizing hormone therapy involves:

- Estrogen
- A medicine to block testosterone
- A combination of estrogen and medicine to block testosterone
- Sometimes adding progestin to the mix

Estrogen

Estrogen is the primary hormone responsible for promoting “female” physical traits. It works directly on tissues in your body (making breasts develop, for example.) Estrogen also indirectly suppresses testosterone. Estrogen can be taken by:

- Pill (oral)
- Injection (intramuscular)
- Skin patch or gel (transdermal)
- Under the tongue (sublingual)

There are different formulations of estrogen. Your healthcare provider will talk to you about the different kinds and what is right for you.

Androgen blockers

Androgen-blockers work by blocking testosterone. They are also known as anti-androgens or androgen antagonists. They reduce “male” physical traits and have a mildly “feminizing” effect. For example, they will help slow “male” pattern baldness, reduce facial hair growth, and stop spontaneous/morning erections.

There are different types of androgen blockers. The one most typically prescribed is spironolactone. Androgen blockers are often prescribed in addition to estrogen because they have effects that complement each other. Taking androgen blockers reduces the amount of estrogen you need to get the same impact, which minimizes the health risks associated with estrogen. Androgen blockers can be prescribed alone for people who want to reduce “masculine” characteristics for a more androgynous appearance because it is less “feminizing” than estrogen.

What is a typical dose?

Feminization hormone therapy varies significantly from person to person. There is no right hormone combination, type, or dose for everyone. Deciding what to take depends on your health because each hormone therapy has different risks and side effects. The doctor will prescribe what is right for your body, and your insurance coverage may also affect what can be prescribed.

Your dose can change based on how your body reacts when you start taking hormones. Everyone’s body is different, and sometimes people have an adverse reaction to a specific kind of medicine.

We will assist you in navigating your insurance coverage and other resources that may be helpful to you. Please ask for information about our financial aid program.

In addition, the right dose or type of medicine for you might not be the same as for someone else. It is a good idea to discuss the advantages and disadvantages of different options with us. If you have any concerns about taking the medicines — or about the side effects, costs, or health risks — let us know so we can help you navigate this new path.

In prescribing a specific medicine and dose, we consider your overall health, including any other medications you are taking. Every person is different — each body absorbs, processes, and responds to sex hormones differently. Some people show more changes than others. Changes happen more quickly for some than others. Taking more hormones than your doctor prescribed will not speed up changes. Taking more than your prescribed dose also dramatically increases your health risks.

Benefits and risks

What changes can I expect?

Feminizing hormone therapy has essential physical and psychological benefits. Bringing mind and body closer together eases gender dysphoria and can help you feel better about your body. There is no way to know how your body will respond before you start hormones.

Each person changes differently. How quickly changes appear for you depend on:

- Your age
- The number of hormones receptors in your body
- The way your body responds to the medication

Androgen blocker (spironolactone) without estrogen Taking spironolactone (the most common androgen blocker) without estrogen has small effects. The changes are caused by the treatment blocking the effect of testosterone in your body. Most of the changes are reversible, which means if you stop taking it, your body will go back to how it was before you started taking the medication. Androgen blockers affect the whole body. You cannot pick the changes you want.

Estrogen

Taking estrogen has a stronger physical “feminizing” effect. These changes are caused by the estrogen’s effects on cells in your body that have estrogen receptors. Taking estrogen also has an indirect impact of suppressing testosterone production. Like androgen blockers, estrogen affects the whole body. You cannot pick the changes you want.

Average timeline	Effect
After 1 to 3 months	<ul style="list-style-type: none"> • Softening of skin • Less muscle mass and more body fat • Redistribution of body fat to be more on breasts and hips • Possible decrease in sex drive • Fewer instances of waking up with an erection or spontaneously having an erection. Some people also have difficulty getting an erection even when they are sexually aroused. • Decreased ability to make sperm and ejaculatory fluid
Gradual changes (maximum changes after 1 to 2 years)	<ul style="list-style-type: none"> • Nipple and breast growth • Slower growth of facial and body hair • Slowed or stopped “male” pattern balding • Smaller testicles

Are the changes permanent?

Most of the changes you will notice from the feminizing hormone therapy are not permanent. If you stop taking the medication, most of the changes will stop and your body will return to how it was before you started the hormones.

There are 2 types of changes that may be permanent:

- Breast growth
- Fertility

Breast growth

If you are taking the androgen blocker called spironolactone without estrogen because you do not want visible changes, you might see some breast growth. This growth happens slowly, so you can stop taking it if you do not want breast growth. Breast growth from spironolactone is usually small and reversible. But in some people, the breast tissue remains even after the spironolactone is stopped. Estrogen causes permanent nipple development and breast growth. Even if you stop taking estrogen, the breast tissue will not go away.

Fertility

Both androgen blockers and estrogen affect your production of sperm, which means you may have trouble having a baby after taking them. We do not fully understand the long-term effects on fertility. If you stop taking the medication, your ability to make sperm may or may not come back.

We recommend that you talk about options for sperm banking before starting hormone therapy. Although androgen blockers and estrogen affect sperm production, there may still be a chance you could make someone pregnant after starting hormone therapy. **Depending on how you have sex, you may need to use birth control.** Hormone therapy does not lower the risk of HIV and other sexually transmitted infections.

What are the risks?

The medical effects and safety of feminizing hormone therapy are not fully understood. Most of the studies on hormone therapy involve different doses than are used for gender-affirming care. There may be long-term risks that are not known yet.

We can lower many of the known risks of feminizing hormone therapy by creating a hormone combination just for you. There are also actions you can take to reduce the risks, including:

- Not smoking. Adhering to not smoking is the number one thing you can do to reduce your risk of blood clots and heart disease. Even the occasional smoker is at an increased risk. Being a non-smoker increases the amount of estrogen that we can prescribe safely.
- Having your blood tested as recommended by your doctor.

Liver health

The liver processes the medicines for hormone therapy. There is a chance that taking hormones over a long period of time can put a strain on the liver, which could lead to liver disease. It is usually recommended that people taking feminizing hormone therapy get their liver enzyme levels checked regularly to monitor their liver's health. This is important if you:

- Have hepatitis B or C
- Drink alcohol more than three days a week or in large quantities
- Are otherwise at risk for liver disease

Social repercussions

Some people experience violence, harassment, and discrimination, while others have lost the support of loved ones. If you are worried about how others might react to the changes that come with hormone therapy, counseling can be useful.

Blood clots

Taking estrogen increases the risk of blood clots. Blood clots can cause death, permanent lung damage (clot in the lungs), permanent brain damage (stroke), heart attack, or chronic problems with veins in your legs. The risk of blood clots is much higher for if you smoke.

The danger is so high that some doctors will not prescribe estrogen if you smoke, even occasionally. Most healthcare providers will prescribe you only a low dose of estrogen until you stop smoking altogether. The risk of blood clots can be made lower by:

- Taking estrogen by skin patch or gel (transdermal)
- Taking estrogen under the tongue (sublingual)

- Using a lower dose of estrogen

Taking estrogen changes the way your body uses and stores fat. Taking estrogen can increase deposits of fat around your internal organs. This type of fat is associated with an increased risk for diabetes and heart disease. Estrogen also increases the risk of gallstones, which can block your gallbladder. See a medical professional **right away** if you have these symptoms of gallstones:

- Chest, leg, or abdominal pain
- Any swelling (edema) in your legs

If you have the following symptoms for more than a couple of days, call a healthcare professional:

- Nausea and vomiting
- Frequent headaches or migraines, if the pain is unusually bad or if you are vomiting

High blood pressure

Estrogen can also cause an increase in blood pressure. This can be avoided by taking estrogen with an androgen blocker medicine (spironolactone) that lowers blood pressure. If you cannot take spironolactone, you can make other changes to reduce your risk. This includes other types of medicine, exercise, not smoking, and changes to your diet.

Galactorrhea and prolactinoma

With breast growth, there is often an increase in milky discharge from the nipples. This is called *galactorrhea*. This condition is caused by the estrogen stimulating the hormone prolactin production, which stimulates breast ducts to make milk. We do not know if milk production increases the risk of noncancerous tumors (prolactinoma) of the pituitary gland. Although prolactinoma is not usually life-threatening, it can damage your vision and cause headaches. For this reason, your doctor will watch your blood levels of prolactin regularly for at least three years after you start taking estrogen. More tests can be ordered if your prolactin level is high, or if prolactinoma is suspected.

Breast cancer

It is not known if estrogen causes an increased risk of breast cancer. There have been cases of people who have developed breast cancer after hormone therapy for gender-affirming care.

Kidney health

The spironolactone (the most common androgen blocker) affects water and salt balance in the kidneys. If the amount of water and salt gets out of balance, you may experience low blood pressure. Rarely, this imbalance can lead to high potassium levels in your body, which can cause life-threatening changes in heart rhythm. Your blood tests will check your potassium levels and kidney function on a regular basis. This is especially important if you:

- Have a history of kidney problems
- Are taking medications that can raise blood potassium (ask your doctor or pharmacist)
- Are taking ACE-inhibitors (commonly prescribed for people with high blood pressure or heart problems)

If you receive care from another healthcare provider, tell them you are on hormone therapy, so you do not take these kinds of medicines unknowingly.

Skin rash

The skin patch (transdermal application) of estrogen can sometimes cause a skin rash. The androgen blocker spironolactone can also cause a skin rash. If this happens, contact us.

How do I get the most benefit and minimize risks?

You can help make hormone therapy as effective and as safe as possible. Here are steps you can take:

- **Be informed.** Understanding how hormones work, what to expect, and possible side effects and risks will give you the tools to oversee your health and make informed decisions. Do your research and ask questions.
- **If you smoke, stop, or cut down.** Any smoking greatly increases the risks of hormone therapy. If you are a smoker, your estrogen level may be kept low. If you need help to quit smoking, we can help you develop a plan or direct you to resources. If you are not quite ready to quit, consider cutting down. Every little bit helps.
- **Deal with problems early on.** If caught early enough, you can deal with most of the problems that can result from hormone therapy in a creative way that does not involve stopping hormone therapy. Waiting to talk with your provider can make the problem worse.
- **Do not change medicine on your own.** Check with your healthcare provider if you want to start, stop, or change your medicines' doses. Taking medicine more often or at a higher dose than prescribed increases health risks and can slow down the changes you want. If you want to change your medicine, talk with your provider first.
- **Take a holistic approach to your health.** Health involves more than just hormone levels; taking hormones is only one way to improve your quality of life. Building a circle of care that includes health professionals, friends, partners, and other people who care about you will help you to deal with problems as they come up. This support will help you build the identity you want to be seen by the world.
- **Know where to go for help.** The Mary Bridge Gender Health Clinic can help you find information on health and transition issues. We can also help you connect with support groups and community resources.

What will not change?

Body Image

Many people experience an increase in self-esteem and confidence as their body changes with hormones. You might find that there are also unrealistic societal standards after hormone therapy. It can be hard to separate gender dysphoria from body image concerns. Professional and peer counseling can help you sort through your expectations about your appearance and work toward self-acceptance.

Mental Health

Hormone therapy might help you become more accepting of yourself, but life can still present emotional and social challenges. Biological factors, stresses of transphobia, and unresolved personal issues can also affect your mental health. It is important to continue to access counseling, medication, and other supports as needed for your mental health.

Your Community

Some people hope that they will find greater acceptance after they make physical changes. Seek support from people and communities who accept and respect you as your body, gender identity, and expression evolve. It can be helpful to connect with other transgender people, while remembering that no one will exactly mirror your own experience, identity, and beliefs. It can be common to feel lonely and alone after starting hormone therapy. Having a support network to turn to can help.

Your Body

Hormone therapy can make facial and body hair grow more slowly and be less noticeable, but hair will not go away completely. Some people choose laser treatment or electrolysis to get rid of facial hair. Laser hair removal works best if you have light skin and dark hair. Electrolysis works for all people by destroying the hair follicle, resulting in permanent hair removal.

While “male” pattern baldness may slow down or stop, bald areas will not grow hair again. Feminizing hormone therapy does not change how high or low your voice is, or the pitch. Hormone therapy will not change your speech patterns. Speech therapy can help change pitch and other aspects of speech associated with gender. Once your bones have stopped growing after puberty, feminizing hormone therapy cannot change your bones’ size or shape.

What to expect

How often do I need to come in for appointments?

You need regular physical exams and lab tests to monitor your overall health while you’re on hormone therapy. Follow our doctor’s recommendations for follow up visits and any recommendations the doctor may have. Attending your appointments ensures your body is safe, and helps you stay up to date on your hormones and prescriptions. When you are 18 years old, you will transition to a medical provider who can continue your treatments as an adult. Our social worker will help with this transition and provide names of gender-affirming doctors.

What will happen at appointments?

At every appointment, we will:

- Ask questions about your overall health
- Check your blood pressure, check your weight, and listen to your lungs
- Examine your arms, legs, hands, and feet to check your overall circulation and look for any signs of swelling, fluid retention, or pain
- Check for early warning signs of health problems that can be caused by HRT
- Recommend other tests (such as bone scans, heart stress function tests)
- Our social worker will check-in with you to say hello, touch base, and provide any additional support you may need and/or want.



Mary Bridge Children's Gender Health Clinic follows the World Professional Association for Transgender Healthcare. Although the information in this handout is based on evidence-based practice, each patient's needs are unique. Before you act or rely on this information, talk with our doctor, other medical care professionals, and conduct your research in addition to this handout.