

INFORMATION SHEET

ESTROGEN FOR ASSIGNED MALES WITH GENDER DYSPHORIA

The BCCH Gender Clinic follows the international guidelines for treatment of trans, non-binary and gender-diverse children and youth as set out by the World Professional Association for Transgender Health's *Standards of Care 7* and the Endocrine Society's *Clinical Practice Guideline: Endocrine Treatment of Gender-Dysphoric/Gender-Incongruent Persons*.

Estrogen therapy is a common treatment for adults with gender dysphoria. Estrogen has been used in healthy youth with gender dysphoria since about 1995. However, doctors may not know all its long-term effects. Doctors only prescribe estrogen when they feel that it is in a youth's best interest to affirm their gender with hormone therapy.

The first step towards gender-affirming treatment is a hormone-readiness assessment. This will help a youth think about all the possible short- and long-term effects of taking hormones. Hormones will cause the physical change, called "transition", from a more masculine body to a more feminine body. A youth's gender team can help them find a qualified assessor to provide this readiness assessment.

Estrogen is generally started at a low dose, and the dose is slowly increased at a rate that is safe for a youth's age and size and is in keeping with their wishes. Estrogen causes a youth's body to become more feminine in appearance, and it reduces their male hormones. This means that a youth will probably not be fertile (not able to produce sperm) while taking estrogen. Estrogen therapy will not change a youth's genetic sex (chromosomes), nor will it change their external genitals (penis and testicles).

Information about taking estrogen:

1. Estrogen is generally taken as a pill swallowed or allowed to melt under the tongue once or twice a day. Patch and injectable forms are also available, but they are not covered by BC PharmaCare.
2. The feminizing effects of estrogen can take several months or longer to become noticeable. Doctors cannot fully predict the rate and amount of change for each youth. Some changes may not be complete for 2–5 years after starting estrogen.
3. People taking estrogen require blood tests every 6–12 months to check their hormone levels and to check for complications.
4. A small number of medical conditions make it dangerous to take estrogen. If the doctor suspects a youth may have one of these conditions, they will be checked for it before the decision to start or continue estrogen is made.
5. Since cisgender women go through menopause and stop making estrogen at about age 50, estrogen therapy in trans people is usually stopped at about the same time.

Physical changes from estrogen:

1. Taking estrogen will cause permanent breast growth:
 - Breasts may take several years to grow to their full size.
 - Even if estrogen is stopped, the breast tissue that has grown will not go away.
 - As soon as breasts start growing, a youth should examine their breasts every month and have a doctor or nurse examine them once a year.
 - There may be milky discharge (galactorrhea) from the nipples. This can be caused by taking estrogen or by a medical condition. If a youth notices this, they should tell their doctor, so that they can look into the cause.
 - Taking estrogen will likely increase the risk of breast cancer to that of cisgender women.
2. The following changes are usually not permanent (that is, they will likely reverse if estrogen is stopped):
 - Skin may become softer.
 - Muscle mass decreases, and there may be a decrease in upper body strength.
 - Body hair growth may become less noticeable and grow more slowly, but it may not stop completely, even after years on medication.
 - Male-pattern baldness may slow down, but it will probably not stop completely. Hair that has already been lost will likely not grow back.
 - Fat may move to different parts of the body, in a more feminine pattern (less on abdomen, more on buttocks/hips/thighs—changing from an “apple shape” to a “pear shape”).
3. The testicles will make less testosterone in a youth taking estrogen, which can affect their sexual function/fertility:
 - Sperm may not mature, leading to decreased fertility. Even if a youth stops taking estrogen, there is no guarantee that they will be able to make normal sperm in the future. The doctor will review the options for sperm banking and can coordinate a visit to a fertility clinic, if a youth desires this.
 - A youth on estrogen will still possibly be able to make someone pregnant, so they need to be aware of birth control options (as applicable). All youth need to protect themselves from sexually transmitted infections.
 - Testicles may shrink by 25–50%. Regular testicular examinations are still recommended.
 - The amount of fluid ejaculated may decrease.
 - There is usually a decrease in morning and spontaneous erections.
 - Erections may not be firm enough for penetrative sex.
 - Libido (sex drive) may decrease.
4. There are some parts of the body that likely will NOT change by taking estrogen:
 - Beard/moustache hair may grow more slowly and be less noticeable, but it will not completely go away.
 - Voice pitch will not rise, and speech patterns will not become more feminine.
 - The Adam’s apple will not shrink.

Possible side effects of estrogen:

1. Taking estrogen increases the risk of blood clots, which can cause:
 - pulmonary embolism (blood clot to the lungs), which may cause permanent lung damage or death
 - stroke (blood clot in the brain), which may cause permanent brain damage or death
 - heart attack

- Lower extremity deep vein thrombosis (blood clot usually in the lower leg). This clot can travel to other parts of the body (i.e. the lungs).

A youth on estrogen is more likely to have dangerous side-effects (especially blood clots), from taking estrogen if they:

- smoke
- are overweight
- have had a blood clot before
- have high blood pressure
- have someone in their family who has had blood clots or breast cancer

The risk of serious side-effects goes up dramatically when a person is over 40 years of age.

The danger is so high that it is **strongly recommended** that all youth stop smoking completely before starting estrogen. The doctor can help to find options for weight loss or stopping smoking. For most gender-affirming surgeries, the patient must not be smoking tobacco or vaping nicotine.

2. Taking estrogen can cause higher blood pressure. The doctor will monitor this. If a youth develops high blood pressure, the doctor will work with them to try to control it by diet, lifestyle changes, and/or medication.
3. Taking estrogen may increase the chance of having gallstones. If a youth has abdominal pain that is severe or lasts a long time, they should discuss this with their doctor.
4. Taking estrogen can cause nausea and vomiting, like morning sickness in pregnant women. If a youth has nausea/vomiting which is severe or lasts a long time, they should discuss this with their doctor.
5. Taking estrogen can cause headaches or migraines. If a youth is frequently having these, or if the pain is severe or unusual for them, they should talk with their doctor.
6. It is not known if taking estrogen increases the risk of a non-cancerous tumor of the pituitary gland in the brain (called a prolactinoma). Although a prolactinoma is typically not life-threatening, it can damage vision and cause headaches. This will be monitored for at least three years when a youth starts taking estrogen.
7. Taking estrogen can affect a youth's emotions. They may find themselves more prone to sadness or mood swings. Their doctor can help them find resources to explore and handle these changes.
8. Taking estrogen will cause changes that other people will notice. Some trans people have experienced harassment, discrimination, and violence while transitioning, while others have lost support of loved ones. A youth's gender team can assist them in finding advocacy and support resources.
9. It is strongly advised not to take more estrogen than prescribed, as this increases health risks. Taking more estrogen than prescribed will not make feminization happen more quickly or increase the amount of change.
10. Estrogen can interact with other medications (including other sources of hormones), dietary supplements, herbs, alcohol, and street drugs. Youth must be honest with their doctor about what else they are taking, to help prevent medical problems that could be life-threatening.
11. The medical effects and safety of estrogen are not fully understood. As with any medication, there may be long-term risks that are not yet known.