



Trans Care

Gender transition

Hormones: A Guide for FTMs

While there are some health risks involved with hormone therapy, it can have positive and important effects on trans people's quality of life. Knowing what you can expect will help you work with your health care providers to maximize the benefits and minimize the risks.

The purpose of this booklet is to:

- explain how hormones work
- describe the changes to expect from testosterone
- outline possible risks and side effects of testosterone
- give you information about how to maximize the benefits and minimize the risks

Already sure you want to start testosterone? The booklet *Getting Hormones*, available from the Transgender Health Program (see last page), explains the process.

This booklet is written specifically for people in the FTM¹ spectrum who are considering taking testosterone. It may also be a helpful resource

1 We use "FTM" as shorthand for a spectrum that includes not just transsexuals, but anyone who was assigned "female" at birth and who identifies as male, masculine, or a man some or all of the time. Some non-transsexuals in the FTM spectrum (androgynous people, butches, drag kings, bi-gender and multi-gender people, etc.) may also want hormone therapy, and may not identify or live as men. For this reason we use the term FTM instead of "trans men".

for partners, family, and friends who are wondering how testosterone works and what it does. For health professionals who are involved in prescribing testosterone or care of an FTM who is taking testosterone, there is a detailed set of guidelines available from the Transgender Health Program (see last page).

How Hormones Work

Hormones are chemical messengers produced by one part of the body to tell cells in another part of the body 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 and storage, blood sugar and cholesterol levels, and reproduction.

Sex hormones regulate the development of sex characteristics – including the sex organs that develop before we are born (genitals, ovaries/testicles, etc.) and also the secondary sex characteristics that typically develop at puberty (facial/body hair, bone growth, breast growth, voice changes, etc.). The three categories of sex hormones that naturally occur in the body are:

- androgens: testosterone, dehydroepiandrosterone (DHEA), dihydrotestosterone (DHT)
- estrogens: estradiol, estriol, estrone
- progestagens: progesterone

Generally, “males”² tend to have higher androgen levels, and “females”² tend to have higher levels of estrogens and progestagens.

There are various types of medication that can be taken to change the levels of sex steroids in the body. Changing these levels will affect hair growth, voice pitch, fat distribution, muscle mass, and other features that are associated with sex and gender. For FTMs this can help make the body look and feel less “feminine” and more “masculine” – making your body more closely match your identity.

2 The binary terms “male,” “female,” “masculine,” “feminine,” “masculinizing,” and “feminizing” don’t accurately reflect the diversity of trans people’s bodies or identities. But in understanding how hormones work for trans people, it is helpful to understand how testosterone works in “typical” (non-intersex, non-trans) men’s bodies, and how estrogen and progesterone works in “typical” women’s bodies. We keep these terms in quotes to emphasize that they are artificial and imperfect concepts.

What Medications Are Involved in FTM Hormone Therapy?

Testosterone (sometimes called “T”) is the main hormone responsible for promoting “male” physical traits, and is usually used for hormonal “masculinization” in FTMs. Testosterone works directly on tissues in your body (e.g., stimulating clitoral growth) and also indirectly by suppressing estrogen production. If your menstrual periods don’t stop within three months of taking testosterone, Depo-Provera® (a type of progestagen) can be injected every 3 months until the testosterone kicks in.

FTMs who have androgen insensitivity syndrome (AIS) won’t get any effects from taking testosterone. In AIS, the body’s receptors don’t respond to testosterone (whether produced naturally by the body or taken externally). Speech therapy, chest surgery, and genital surgery can still be used by FTMs with AIS.

Testosterone can be taken in different ways:

- injection (*intramuscular application*)
- skin patch or cream/gel (*transdermal application*)
- pill (*oral application*)

The way you take testosterone seems to affect how rapidly the changes happen. Transdermal application (patch, cream, or gel) causes the same degree of “masculinization” as injection testosterone, but transdermal testosterone takes slightly longer to make menstrual periods stop and to make facial/body hair grow. Oral testosterone (e.g., Andriol®) is the least effective in stopping menstrual periods, so it is typically not used.

The daily dosing of transdermal testosterone means a more steady blood level of testosterone. With injection there is a peak right after injecting and a dip at the end of the injection cycle that can increase side effects at both ends of the cycle (e.g., aggression when testosterone peaks, and fatigue/irritability when testosterone dips). This can be reduced by injecting once a week instead of every two weeks, or by switching to transdermal or oral testosterone.

What's a Typical Dose?

Clinical protocols for testosterone therapy vary greatly. There is no one right type or dose that is best to use. Deciding what to take depends on your health (each type has different risks and side effects), what is available locally, and what you can afford. It also depends on how your body reacts when you start taking testosterone – everyone's body is different and sometimes people have a negative reaction to a specific kind of brand or formulation.

The right dose or type of testosterone for you may not be the same as for another FTM. It is a good idea to discuss the advantages and disadvantages of different options with a medical professional who has trans health training and experience with hormones. If you have any concerns about being able to take the testosterone, or about the side effects, costs, or health risks, let them know – it's important that your needs and concerns be taken into account when planning your hormone therapy.

The table on page 5 summarizes the forms of testosterone most commonly used by FTMs in BC, and gives the range of starting doses recommended by the Transgender Health Program. Your health provider may start you on a lower dose if you have chronic health problems, are at risk for specific side effects, or have had your ovaries removed. If you have been prescribed a dose that is quite a bit higher or lower than the doses outlined in the table on page 5, talk with your health care provider about their reasons for suggesting the dose you have been prescribed (and get a second opinion if you want one).

	Forms of testosterone commonly used by FTMs in BC			
	Intramuscular injection		Skin gel	Skin patch
Chemical	Testosterone cypionate	Testosterone enanthate	Dissolved testosterone crystals	
Brand name	Depo-Testosterone®	Delatestryl®	AndroGel®	Androderm®
Typical starting dose	Typical starting dose is 50-80 mg every two weeks (or 25-40 mg every week), gradually increased each month until blood testosterone is within the average "male" range or there are visible changes. Typical maintenance dose is 100-200 mg every two weeks (or 50-100 mg every week).		5-10 g per day if no physical or mental health concerns; start with 2.5 g per day if there are psychiatric problems or other health concerns.	
	If your ovaries have been removed, your dose will be cut by at least 50%.			
Typical cost (as of 2005)	150 mg every two weeks: ~\$10/month*		5 g per day: ~\$120/month*	
Pros	Changes happen more rapidly. Much cheaper than gel/patch.		More stable daily dose – less ups and downs than with injection.	
Cons	Fluctuating dose with injection cycle means more extreme side effects at start/end of injection cycle. Risk of injection problems (e.g., abscess).		Changes take longer to happen when first starting. Much more expensive than injectable.	

* Plus the dispensing fee set by each pharmacy and billed each time a prescription is refilled. In BC this averaged \$9.25 in 2005. Compounding pharmacies may charge significantly more.

Every person is different in terms of how their body absorbs, processes, and responds to sex hormones. Some people have more changes than others; changes happen more quickly for some people than others. Taking more testosterone than the dose you were prescribed – or taking another kind of steroid as well as testosterone (sometimes called "stacking") – is **not** a good way to try to speed up changes. Taking a higher dose can actually slow down the changes you want: extra testosterone in the body can be converted to estrogen by an enzyme called aromatase. Taking more

than your prescribed dose also greatly increases your health risks. If you think your dose is too low, talk with a health care professional who has trans health training to discuss options. It may be better to try a different type of medication or a different combination of medications, rather than increasing the dose.

If you have your ovaries removed (see FTM surgery booklet) your body will be producing a much smaller amount of estrogen, so the dosage of testosterone is usually reduced. However, you will need to stay on testosterone or another form of medication for the rest of your life to preserve bone strength (see the booklet *Trans people and osteoporosis*). Your doctor may also suggest that you take calcium and Vitamin D supplements to protect your bones.

What Changes Can I Expect, and How Soon? (Benefits)

“Masculinizing” hormone therapy has important psychological benefits. Bringing the mind and body closer together eases gender dysphoria and can help trans people feel better about their bodies. People who have had gender dysphoria often describe being less anxious, less depressed, calmer, and happier when they start taking hormones. For some people this psychological change happens as soon as they start taking hormones, and for others it happens as physical changes progress.

The degree and rate of change depends on factors that are different for every person, including your age, the number of hormone receptors in your body, and how sensitive your body is to testosterone. There is no way of knowing how your body will respond before you start hormones.

Typical changes from testosterone (vary from person to person)	
Average timeline	Effect of testosterone
1–3 months after starting testosterone	<ul style="list-style-type: none"> • increased sex drive • vaginal dryness • growth of your clitoris (typically 1–3 cm) • increased growth, coarseness, and thickness of hairs on arms, legs, chest, back, & abdomen • oilier skin and increased acne • increased muscle mass and upper body strength • redistribution of body fat to a more “masculine” pattern (more fat around the waist, less around the hips)
1–6 months after starting testosterone	<ul style="list-style-type: none"> • menstrual periods stop
3–6 months after starting testosterone	<ul style="list-style-type: none"> • voice starts to crack and drop within first 3–6 months, but can take a year to finish changing
1 year or more after starting testosterone	<ul style="list-style-type: none"> • gradual growth of facial hair (usually 1–4 years to reach full growth) • possible “male”-pattern balding
<p>Testosterone affects the entire body. It’s not possible to pick some changes and not others.</p>	

Most of the effects of hormones happen in the first two years. During this time, to check if the hormones are working as they should be, the doctor who prescribes your testosterone will want to see you one month after starting hormones or changing your dose, then 3–4 times in the next year, then every six months. At appointments in the first two years, your doctor will likely:

- look at your facial/body hair and, if you shave, ask how quickly your hair grows back
- ask about changes to your sex drive, clitoris, or other sexual changes; menstrual period; skin; and voice
- order a blood test to see what your hormone levels are
- ask how you feel about the changes that have happened thus far

After two years have passed, you will likely just be asked if you notice any further changes from the hormones.

Are These Changes Permanent?

Most of the noticeable changes brought on by testosterone are not fully reversible even if you stop taking testosterone:

- irreversible: deeper voice, “male”-pattern baldness
- may or may not reverse: clitoral growth; body and facial hair will decrease but usually does not completely disappear
- reversible: menstrual periods will return and fat/muscle/skin changes will reverse

The long-term effects of testosterone on fertility are not fully understood. You may become permanently sterile: in other words, the ability to get pregnant may or may not come back even if you stop taking testosterone.

What Won't Change?

1. Hormone therapy won't solve all body image problems.

The point of hormone therapy is to feel more comfortable with your body by bringing physical characteristics closer to your internal sense of self. This relief can increase self-esteem and make you feel more confident and attractive. However, you will find that there are also attractiveness standards after hormone therapy, and you may not fit them.

It can be hard to separate out gender dysphoria from body image problems. Professional and peer counselling can be helpful to sort out your expectations about your appearance, and to work towards greater self-acceptance.

2. Hormone therapy won't make you into somebody else.

Many people experience positive emotional changes with hormone therapy. But you'll likely find, after the excitement wears off and you've incorporated the changes into your day-to-day life, that if you were shy you're still shy, if you didn't like your laugh you still don't, and you're still afraid of spiders. Whatever things you think of as your strengths and weaknesses will still be there. Hopefully, you will be happier, and that is good for anyone. Hormone therapy may help you to be more accepting of

yourself. But if you are expecting that all your problems will pass away, and that everything is going to be easy emotionally and socially from here on in, you're probably going to be disappointed.

This extends to mental health concerns as well. Trans people who were depressed because of gender dysphoria may find that taking hormones greatly alleviates their depression. However, if you have depression caused by biological factors, the stresses of transphobia, or unresolved personal issues, you may still be depressed after you start hormones. Likewise, if you are having problems with drugs or alcohol, hormones will not necessarily get rid of those problems.

3. Hormone therapy won't provide you with a perfect community.

For some trans people, hormone therapy is a ritual affirming that they are who they say they are. Making physical changes is a way to bring who you are to the rest of the world so other people can see it. This process of self-emergence can be very liberating. But it does not guarantee that you will find acceptance or understanding.

Some FTMs hope that after they make physical changes they will be validated as “real” men, or feel more accepted by the trans community. But the idea that trans people aren't “real” unless they've changed their bodies is transphobic, and communities or groups that have this belief are not likely to be fully respectful in terms of trans people's identities and bodies.

During the various stages of transition, it's common to dream about finding an ideal community of trans people. When starting hormones there can be a particular drive to find other people who have gone through similar experiences. There are a lot of very cool trans people to talk with about hormones. But having taken hormones doesn't automatically make trans people welcoming, approachable, or sensitive to the needs of others, and despite having some experiences in common you will likely find that no trans person will exactly mirror your personal experiences, identity, and beliefs. Being realistic about the likelihood that you will at times feel lonely and alone after you start taking hormones is part of emotionally preparing for hormone therapy.

4. Hormone therapy won't remove all "female"/"feminine" aspects of your body

Some physical characteristics aren't changed by hormone therapy, or are only slightly changed. This includes aspects of your body that develop before birth (vagina, sex chromosomes, etc.) and also physical characteristics that developed from the increase in estrogen at puberty.

Although testosterone typically makes voice pitch drop to "male" levels, it does not change intonation and other speech patterns that are associated with gender socialization rather than hormones. Speech therapy can help change these aspects of speech (see booklet *Changing speech*). Speech therapy can also be useful if your pitch does not drop into "male" range.

Testosterone may slightly change the shape of your chest by increasing muscle mass and decreasing fat, but it does not make breast tissue go away. Chest surgery can be done to reduce or reconstruct your chest (see the booklet *Surgery: A guide for FTMs*).

Once your bones have stopped growing after puberty, testosterone won't change the size or shape of your bones. There are no treatments you can take to increase your height or the size of your hands/feet.

Although testosterone can make you permanently sterile, there may still be a chance that you could get pregnant even after starting hormone therapy. In dissection of ovaries removed from FTMs who had already been taking testosterone for two years there was evidence of continued ovulation (production of eggs). Depending on how you have sex, you may need to use birth control (e.g., condom, diaphragm and spermicide). Testosterone is toxic to a developing fetus and you can't take testosterone while pregnant.

Testosterone doesn't decrease the risks of HIV and sexually transmitted infections. Depending on how you have sex, you may need to consider condoms, gloves, or other latex barriers. Testosterone tends to make the vagina dryer and the cervix more fragile, so if you have vaginal sex you should add extra lubricant to avoid breaking latex or tearing your vaginal lining.

What are the Possible Side Effects/Risks of Testosterone?

The long-term safety of testosterone is not fully understood. Most of the studies on hormone therapy involve non-trans men taking testosterone at different doses than FTMs usually use, and FTM bodies are not exactly the same as non-trans men's bodies. There may be long-term risks that are not yet known.

1. Testosterone can increase the risk of heart disease, stroke, and diabetes.

Testosterone tends to:

- decrease good cholesterol (HDL) and increase bad cholesterol (LDL)
- increase fat deposits around internal organs and in the upper abdomen
- increase blood pressure
- decrease the body's sensitivity to insulin
- cause weight gain

These changes may increase the risk of heart disease (including heart attack), stroke, and diabetes. The risks are greater for FTMs who smoke, are overweight, or have a family history of heart disease. Many of the known contributing factors to these conditions can be reduced by creating a care plan that is tailored to your specific situation. Prevention includes periodic blood tests to keep an eye on potentially risky conditions, and minimizing contributing factors. Stopping smoking, getting healthy levels of exercise, and eating well are key steps you can take to reduce your risks.

2. Testosterone can increase red blood cells and hemoglobin.

While the increase is usually only to an average "male" range (which does not pose health risks), a high increase can cause potentially life-threatening problems such as stroke and heart attack. Blood tests should be done periodically to check red blood cell and hemoglobin levels.

3. Testosterone can cause or worsen headaches and migraines.

If you are getting frequent headaches/migraines or the pain is unusually bad, talk to a health professional.

4. It is not known if testosterone increases risks of some types of cancer.

It is not known if testosterone increases the risks of breast cancer, ovarian cancer, or uterine cancer (see the booklet *Trans people and cancer*). These types of cancer are all sensitive to estrogen, and there is evidence that in FTMs some testosterone is converted to estrogen. Risk of estrogen-dependent cancer is increased if you have a family history of estrogen-dependent cancer, are age 50+, or are overweight. Talk with your health care provider about screening tests that can be done.

5. Testosterone can negatively affect mental health.

There are often positive emotional changes from reduced gender dysphoria. However, in some FTMs testosterone can cause increased irritability, frustration, and anger. There are reports of testosterone destabilizing FTMs with bipolar disorder, schizoaffective disorder, and schizophrenia. Changing to a daily dose of transdermal testosterone can be helpful if mood swings are linked to the highs and lows of an injection cycle.

6. There can be social consequences to taking testosterone.

Being visibly trans in a transphobic society has social risks. The noticeable changes caused by testosterone can increase the risks of harassment, violence, discrimination, and loss of support from loved ones. If you are worried or stressed about these possibilities, or unsure of how to tell a loved one that you are thinking about taking or planning to take hormones, peer support and/or professional counselling can be useful.

Health Checkups While You're Taking Testosterone

As long as you are taking testosterone (possibly for the rest of your life), you need to have regular physical exams and lab tests to monitor your overall health. The first year after starting testosterone, the doctor who prescribes your hormones will want to see you at least every 3–4 months; after that, you will have appointments at least every 6 months. At every appointment, expect your doctor to:

- ask questions about your overall health
- ask questions about mood swings
- take your blood pressure and check your weight and your heart rate
- check for early warning signs of health problems that can be caused by testosterone or made worse by testosterone (e.g., heart disease, diabetes)
- recommend blood tests to check your blood sugar, blood fats, blood cells, and liver health
- recommend other tests (e.g., bone scan, heart stress function test) as needed, depending on your health history, age, and any signs of possible health problems

To check for early signs of cancer, as part of the physical exam your doctor/nurse will do breast and cervical cancer screening tests at least every 1–2 years (more frequently if you are at high risk for these types of cancer). For more information, see the booklet on cancer.

While the Transgender Health Program's training for health care providers emphasizes the need to be creative and consider stopping hormones as a last resort (rather than a first resort), there are some health problems that make it dangerous to take testosterone (e.g., uncontrolled coronary artery disease). If your health care provider suspects you have one of these conditions, they will try to control it through medical treatment and/or changes to your diet, exercise, or other lifestyle issues. If the condition can't be controlled, you may be switched to another type of testosterone, or your dose may be reduced or stopped until your other health problems get under control.

Maximizing the Benefits, Minimizing the Risks

There are a number of things that you can do to help ensure your hormone therapy is as effective and safe as possible:

- **Be informed.** Understanding how testosterone works, what to expect, possible side effects/risks, and guidelines for care gives you the tools to be in charge of your health and to make informed decisions. Do your own research and ask questions. If you're not sure where to look, the Transgender Health Program (see last page) can help you find resources.
- **If you smoke, stop or cut down.** Smoking greatly increases the risks involved with testosterone therapy. If you are a smoker, your testosterone level may have to be kept low. If you need help to quit, your health care provider can help you develop a plan and/or direct you to further resources (or contact QuitNow, toll-free at 1-877-455-2233, <http://bc.quitnet.com>). If you aren't ready to quit, consider cutting down: every little bit helps.
- **Find a health care provider you trust and can be honest with.** To get the most from hormone therapy, you need to be able to talk openly about what you want, concerns you have, and any problems you are experiencing. You also need to be able to talk openly with your health care provider about your health history, smoking, alcohol, street drugs, dietary supplements, herbs, and any other medication you are taking. Risks associated with testosterone can be affected by all of these things, and being honest about them will help your health care provider create a hormone plan that is right for you.
- **Deal with problems early on.** If caught early enough, most of the problems that can result from testosterone can be dealt with in a creative way that doesn't involve stopping completely. Waiting can worsen your health to the point where you can't safely take testosterone at all.
- **Don't change medication on your own.** Check with your health care provider if you want to start, stop, or change the dose of any of your medication. Taking testosterone more frequently or at a higher dose than prescribed increases health risks and can slow down the

effects you want. Going against the instructions of your health care provider also erodes trust with them. If you want to change your medication, talk with your health provider first.

- **Take a holistic approach to your health.** Health involves more than just hormone levels, and taking hormones is only one way for trans people to improve quality of life. Building a circle of care that includes health professionals, friends, partners, and other people who care about you will help support you to deal with other health problems as they come up, and to heal from societal transphobia.
- **Know where to go for help.** Staff at the Transgender Health Program can help you find information on trans health and transition issues, and can also help you connect with trans groups and community resources in your region. They can help with referrals if you need assistance finding a trans-experienced medical provider, counsellor, or another type of health professional.

Questions? Contact the Transgender Health Program:

Office: #301-1290 Hornby Street, Vancouver, BC V6Z 1W2

Phone/TTY/TDD: 604-734-1514 or 1-866-999-1514 (toll-free in BC)

Email: transhealth@vch.ca

Web: <http://www.vch.ca/transhealth>

The Transgender Health Program is an anonymous and confidential free service for anyone in BC who has a trans health question or concern.

Services for trans people and loved ones include:

- information about trans advocacy, medical care, hormones, speech change, and surgery
- help finding health/social services, and help navigating the trans health system
- non-judgmental peer counselling and support
- information about trans community organizations and peer support groups



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For more copies, email the Transgender Health Program at trans.health@vch.ca or call/TTY 1-866-999-1514 (toll-free in BC) and quote Catalogue No. GA.100.H7821.