

## TESTOSTERONE THERAPY FOR GENDER AFFIRMATION

The use of hormone therapy for gender affirmation (sometimes referred to as “transition”) is based on many years of experience in treating transgender and gender-diverse persons. Research on hormone therapy is continually providing us with more information on the safety and effectiveness of hormone therapy, but all of the long-term impacts of hormone therapy may not be fully understood yet.

This information is meant to help you consider the expected benefits and possible side effects of hormone therapy so that you can decide, with your healthcare provider, if hormone therapy is right for you.

Testosterone is used to masculinize the body. Your healthcare provider will help you determine the form of testosterone (for instance, shots, gels or patches) and the dose that is best for you based on your personal needs and wishes, as well as any health conditions you might have. Each individual person responds to testosterone differently, and this can be difficult to predict. This is why your specific therapy may be different from other people’s. Taking higher levels of testosterone may not lead to faster changes but could endanger your health. It is important to take testosterone only as prescribed and to discuss your treatment with your doctor before making any changes.

We look forward to partnering with you to achieve your desired goals.

### The Expected Effects of Testosterone Therapy

The masculinizing changes in your body may take several months to become noticeable and usually take 3 to 5 years to be complete. Some changes are permanent, and others may be reversible if you stop testosterone. Remember that the degree to which you experience each change is difficult to predict. Please see **Table 1** for a summary and expected timeline of changes.

Changes that will not go away, even if you decide to stop testosterone treatment include:

- Deepening of your voice
- Increased growth and thickening of body and facial hair
- Scalp hair loss. This does not affect everyone, but it is difficult to predict who will experience this. There are treatments that may reduce hair loss.
- Increase in the size of the clitoris (“bottom growth”). Some people find that the way they experience orgasm or sexual pleasure changes.

Changes that will likely reverse if testosterone treatment is stopped include:

- Skin becomes oilier and coarser.
- Increase in muscle mass and strength. This also depends on your diet and exercise.
- A decrease in fat especially around the hips and pelvis, which leads to a change in your body shape.
- An increase in sex drive.
- Mood changes. Depression and anxiety typically improve. People often report fewer mood swings, and a feeling of being more “removed” from emotions. Some people notice more

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irritability and are more easily annoyed. Occasionally people find these changes bothersome. Overall, most people have an improvement in mood as a result of the treatment.

- Genital dryness. This may cause some discomfort with penetrative sex, and occasionally even without penetration. There are treatment options if this is bothersome.
- Periods stop within several months of starting testosterone for most people. This can depend on the dose and type of testosterone.

The following are NOT affected by testosterone treatment. If they create discomfort for you, please notify your healthcare provider so that effective treatments can be discussed:

- Overall chest size, though the shape or feeling of the chest may change somewhat
- Bone structure, including the face. It is possible that some people in their late adolescence may see some mild changes.

### Possible Risks of Testosterone Treatment

Having any of the following health conditions could make testosterone unsafe for you. Please let your healthcare provider know if you have any of these health conditions:

- Polycythemia (abnormally high blood count)
- Estrogen-sensitive cancer (like breast cancer)
- Severe liver disease
- Severe, complicated migraines (for instance, with neurological symptoms)
- Active blood clot, including deep venous thrombosis (DVT) or pulmonary embolism (PE)

Risks of testosterone therapy may include:

- **Thickening of your blood** (“polycythemia”), which in other populations has been shown to increase the risk for dangerous blood clots. However, current research does not show an increased risk of blood clots in people taking testosterone for gender affirmation.
- **Acne**, which can be treated with topical or oral medications if needed.
- **Obstructive sleep apnea**. Research is mixed on whether testosterone increases risk of sleep apnea (a sleep disorder in which breathing repeatedly stops and starts). Let your healthcare provider know if you develop daytime sleepiness, or anyone notices you snoring loudly or having pauses in your breathing during sleep.
- Research is mixed, but there may be a small increased risk of **heart attack or stroke**. All people, regardless of hormone treatment, should talk with their healthcare providers about ways to reduce heart attack and stroke risk.
- Change in your **cholesterol levels**. Specifically, the good cholesterol, or “HDL cholesterol,” may decrease. There is no clear evidence that this worsens health risks.
- **Weight gain** and increased appetite.
- **Blood pressure** may increase a small amount. There is no clear evidence that this worsens health risks.
- **Pelvic pain** may occur. In some cases, a cause can be identified and treated. However, for others the pain may persist, and it is unknown why. Some people find that this pain resolves with hysterectomy or removal of the uterus.
- **Irregular menstrual bleeding** may occur and should be reported to your healthcare provider.

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- Though **mental health** typically improves with gender-affirming hormone therapy, any worsening of depression, anxiety or other mental health conditions should be reported to your healthcare provider. If you have any serious mental health conditions, it is important that you remain connected with a mental health professional.

Testosterone does not appear to increase the risk of cancer to the cervix, uterus, ovaries, or breasts. It is important to discuss routine cancer screening with your healthcare provider. Your screening will depend on your anatomy as well as personal and family risk factors for cancer. Because we are still learning about the long-term health of people on testosterone for gender affirmation, you should work with your healthcare professional to reduce any potential risks and discuss the appropriate health screenings for you.

### Reproductive Health

Testosterone may reduce your ability to become pregnant, but it does not eliminate the risk of pregnancy even when periods stop. If you are having penetrative sex with someone who produces sperm, you should speak with your healthcare provider about pregnancy prevention options. There are many ways to do this that will not interfere with your masculinizing treatment. Testosterone is not safe in pregnancy. If you want to become pregnant, or if you experience an unexpected pregnancy, you should stop testosterone promptly and talk with your healthcare provider.

The effects of testosterone on fertility appear to be reversible in many people. However, it remains unknown if and how much testosterone may permanently impact fertility (ability to have biological children). If this is important to you, you may consider meeting with a fertility specialist to better understand your options about preserving eggs before starting hormones, or what your options may be later in life. Please let your healthcare provider know if you are interested in exploring this.

### How to Take Testosterone

There are different ways testosterone can be prescribed. There are pros and cons for each of these methods. These ways include:

- Testosterone injections: These are usually given subcutaneously (under the skin) once a week by you at home.
- Transdermal gel: This is applied to the skin of the upper arms and shoulders once a day. It is important to avoid skin-to-skin contact with other people after it is applied until it is washed off.
- Transdermal patches: This is also applied to the skin daily. Some people have skin reactions to the patch.

We will work with you to determine which type of testosterone treatment is best for you.

### Alternatives to Testosterone

There are other ways than hormones to masculinize your body. These may be used along with or instead of hormones. Please let us know if you would like more information at this time about any of the following treatments. You may always ask for this information in the future.

- Voice therapy to change voice pitch and/or style.

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Patient Name:

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- Voice surgery to change voice pitch: Generally not recommended until you have worked with a voice therapist first, and have been on testosterone for at least 1-2 years.
- Surgery to masculinize the chest.
- Surgery to change facial bone structure: Generally not recommended until at least 1-2 years on hormones to see what change in facial appearance you get with hormones.
- Surgery to change the appearance and function of the genitals: Generally not recommended until at least 1-2 years on hormones, to ensure you are comfortable continuing the hormones lifelong, and to see the effects of the hormones on the genitals.
- Surgery to remove the ovaries: Generally not recommended until at least 1 year on hormones, to ensure you are comfortable continuing the hormones lifelong.
- Surgery to remove the uterus: Generally not recommended until at least 1 year on hormones.
- Other body shaping procedures, like liposuction or plastic surgery.

We want to help you achieve your gender-related goals in the safest way possible. In order to do this, we need to be well-informed about your health. Please inform your healthcare provider if there are any changes to your health at any time during treatment. We will do everything we can to continue your treatment if it can be done safely, which is almost always the case.

**Table 1. Masculinizing Effects of Testosterone Treatment**

Effect	Onset†	Maximum†
Skin oiliness and possible acne	1-6 months	1-2 years
Facial and body hair growth*	6-12 months	4-5 years
Scalp hair loss*	6-12 months	ongoing
Increased muscle mass and strength	6-12 months	2-5 years
Fat redistribution: less fat around thighs, hips and buttocks	1-6 months	2-5 years
Periods stop	1-6 months	
Clitoral or “bottom” growth*	1-6 months	1-2 years
Genital dryness	1-6 months	1-2 years
Voice deepening*	6-12 months	1-2 years

*Adapted from 2017 Endocrine Society Guidelines Hembree et al.*

\* Permanent changes

† People on low-dose hormone therapy may expect slower or less pronounced changes