

Puberty and the importance of sex hormones

What is it?

Puberty is the time when a child grows into a young adult, with many changes happening both inside and outside of the body. In most, but not all girls, it starts around 10-11 years and most boys at 11-12 years, lasting from about 2 up to 5 years – but remember that every young person is different!

The puberty path varies for everyone and sometimes help is needed along the way for the body to take steps towards a grown-up body and mind.

How does it happen?

Puberty changes are caused by hormones, tiny chemical messengers that travel through the blood and tell the body how to change and grow. Beginning in the brain, special hormones go to the pituitary gland (the master gland) and then to the gonads, or sex glands. These hormone messengers tell them to start making and releasing sex hormones.

In most, but not all girls, the gonads are ovaries that can make the sex hormones, oestrogen and progesterone. Ovaries also usually have special cells that later mature or grow into eggs.

In most, but not all boys, the gonads are testes (testicles), that can make the sex hormone testosterone, and that also have special cells that later grow into sperm.

Just to make it more complicated, we all have BOTH testosterone and oestrogen in our bodies but in different amounts or ratios. Small amounts of these sex hormones are made in different places in our bodies.

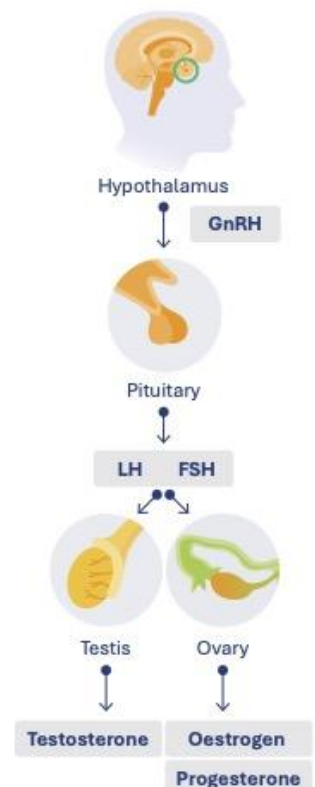
Although oestrogen and testosterone cause many of the changes we see at puberty, they are not the end of the story of puberty.

Abbreviations

GnRH = Gonadotropin-releasing hormone

LH = Luteinizing hormone

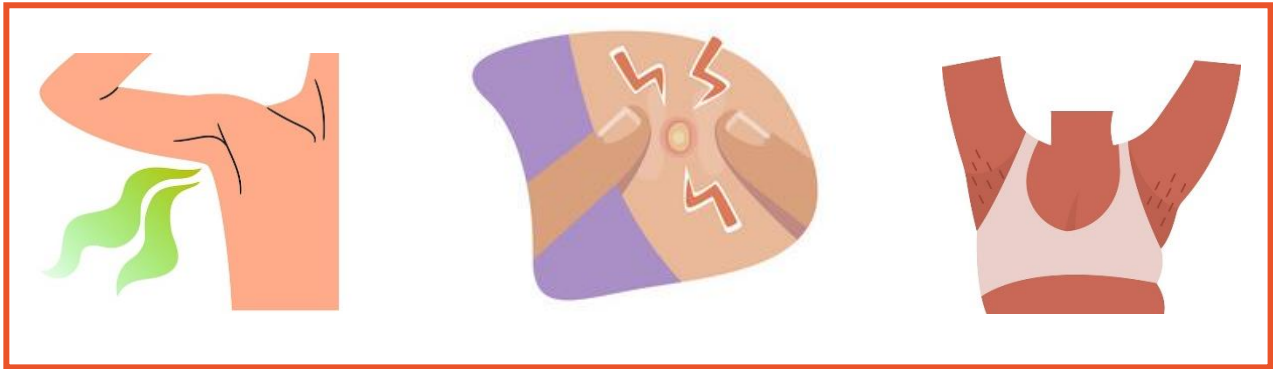
FSH = Follicle stimulating hormone



What other hormones are important for puberty?

Sex hormones cause the pituitary gland to start making a lot more **growth hormone** than during childhood and this causes the quick growth of puberty – the growth spurt!

The adrenal glands, sitting on top of the kidneys like little hats, make hormones that are very important for our body's health. At puberty they also start making sex hormones called **adrenal androgens**. These cause changes that most of us would rather not have – pubic and underarm hair (and smell!), oily skin and hair and acne – though these generally do settle down after a while.



Why are sex hormones important?

Reproductive system

Oestrogen and testosterone are very important for the maturation and growth of the reproductive or sex system. These are the parts of the body that make us able to have sex and perhaps have children one day.

Brain

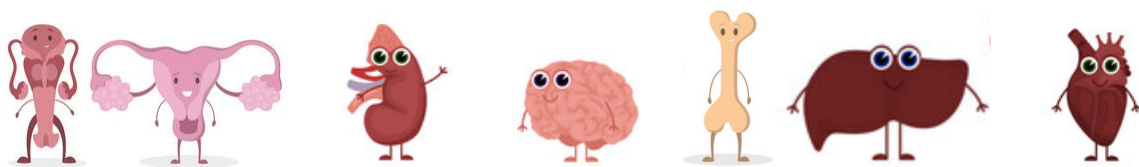
Sex hormones are especially important for parts of the brain involved in learning, sexual behaviour and processing of emotions. They change the way we think, feel and behave.

Skeleton

Many changes to the bones are driven by sex hormones. These include increasing the strength (density) of bones so that they are less likely to break as we get older. Along with growth hormone, sex hormones help with the growth spurt but also tell the growing ends of bones when to stop growing! The bone structure of our face as well as the shape and proportions of the rest of our body also change from the appearance of a child to look like an adult.

Body function

The make-up of the body changes after sex hormones are released, with oestrogen causing more fat to be stored and testosterone more muscle to form. Sex hormones are also important for the health of our heart, blood vessels, cholesterol levels, liver, kidneys and blood.



Compassion

Excellence

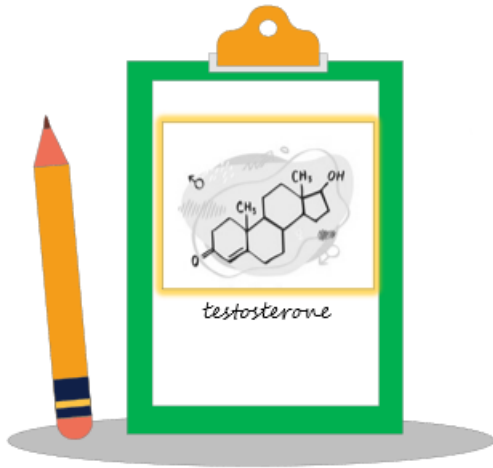
Collaboration

Accountability

Equity

Respect

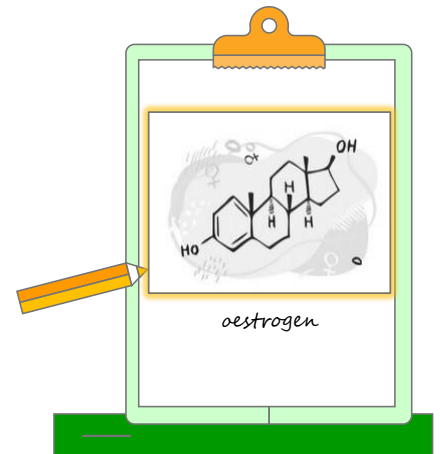
Tasks of testosterone



- Brain: thinking and emotional changes, mood swings, increased sex drive.
- Altered shape of body and face: broad shoulders and different body proportions.
- Stronger bones and increased muscle, especially in arms and shoulders.
- Facial and body hair and bigger voice box (larynx); deepening of voice.
- Increased growth of penis and scrotum, increased size of testicles.

Tasks of oestrogen

- Brain: thinking and emotional changes, mood swings.
- Altered shape of body with wider hips and increased fat storage.
- Stronger bones, breast growth and softer skin.
- Maturation of outer genitals and vagina, vaginal discharge.
- Growth of uterus and lining with periods (menstruation) later on.



The path to a grown-up body and mind

Puberty can follow different paths amongst young people. Sometimes, help is needed along the way.

Your care team is here to share what we know about puberty and sex hormones, about why your body might need some help to develop and what we can offer.

As you move towards being an adult and start making your own decisions about your body and your health, it is important for you to know and understand as much as possible. Asking questions and talking about your feelings with your family and care team are very good ways to learn and make sure that you are happy with the treatment that is being offered. Some questions that other young people have asked are given on the next page, but we are sure that you will also have your own!

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Questions

- What will puberty be like for me?
- Will I catch up or will my body not make any changes without medication?
- What treatment is available?
- Who decides whether to start treatment and when?
- Are there side-effects?
- Are there other options?
- Will I need surgery?
- How long do I have to have treatment?
- How is it given?
- What will happen to my body from the treatment?
- What happens if I miss some of my treatment?
- Will I need blood tests and examinations? Why?
- What if I'm not sure that I want the changes to happen to my body?
- Can I have more time to think about my feelings towards my body and gender?
- What happens if I want to say no to treatment?



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