

Stepping into puberty: What to expect?

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What does normal puberty look like?

Puberty happens when your child's body starts to change into an adult. Puberty is marked by physical and emotional/intellectual changes. It involves the onset of sexuality and the ability to reproduce and, in girls, the ability to get pregnant. Normal puberty starts when brain hormones stimulate the ovaries in girls and the testicles in boys. Ovaries produce the hormones estrogen and progesterone and testicles produce the male hormone testosterone.

Puberty in girls

The age when puberty starts is unique for each child. Usually the physical changes begin around eight to 13 years old. By 15 or 16, a girl's body will reach adult proportions. Most girls begin getting their period about two years after their breasts start to enlarge.

Here are some changes to expect during this time:

- Breast start to form
- Development of pubic hair and underarm hair
- First menstrual period
- Nipples and areolae and nipples darken
- Hips widen, thighs may become thicker

On average, girls get their first menstrual period when they are about 12 or 13 years old. Some girls get their first period as early as eight or nine. Others may not get it until their mid-teens.

- Girls are born with all their eggs, which are stored in the ovaries. When a girl reaches puberty, an egg ripens once a month. The egg then leaves one of the two ovaries (ovulation). This cycle is controlled by the brain hormones.
- During the ovulation cycle, the ovaries also release hormones. These create a thick and cushioned uterus lining (endometrium).
- Around the time of ovulation, the uterus is ready for a possible pregnancy. If the pregnancy does not happen, the uterus flushes away the extra tissue lining which flows out of the vagina (menstrual period).

Puberty in boys:

Most boys begin to notice changes when they are around nine to 14 years old. The initial change is usually the enlargement of the scrotum and testes. Penis enlargement begins usually a year later. Here are some of the average ages when other changes may occur:

- Age 13: Pubic hair may start to grow. The initial growth produces long, soft hair. This hair becomes darker and coarser.
- Age 14: The male testis begins to produce sperm. Semen, which is composed of sperm and other bodily fluids, may be released during an erection. This is called ejaculation.
- Age 15: Hair starts to grow under the arms and on the face. His voice may change and deepen.

When puberty is delayed

Puberty is delayed if the above changes do not happen in girls by the age 13 and boys by the age of 14. Often times delayed puberty is due to “constitutional delay of growth.” This means that there is a little variation from normal puberty – but it does not always mean there is a medical problem. In constitutional delay of growth, girls and boys enter puberty later than normal. Once puberty begins, the process continues as it should. Often these kids have a parent who also had late puberty.

In some cases, delayed puberty is actually due to a medical problem. In general these issues can be due to problems with ovaries in girls and or testicles in boys; OR there can be issues in producing the hormone in the brain, in either girls or boys. Let’s look at these two issues in more detail:

1. Problems with the ovaries in girls or the testicles in boys

In this case, the brain is stimulating the ovaries or testicles, but they fail to produce the hormones. Causes include:

- Genetic problems
- Autoimmune problems
- Side effects of medications
- Infections
- Trauma to ovaries or testicles
- Genetic causes, even with normal testicles or ovaries, the tissue of the body may not respond to the hormones.

2. Problems with the brain in girls or boys

In these cases, the brain is not able to make the hormones that are needed to start puberty. The ovaries/testicles have the ability to work normally, but they never receive the signals from the brain to start making the puberty hormones.

Causes

- Genetic problems
- Chronic illness
- Abnormalities of the brain

Testing

Blood tests may be needed to find the cause of delayed puberty. X-rays of the bones are also used to assess the growth in relation to puberty.

Precocious puberty

In precocious puberty, pubertal changes begin early — before age 8 in girls and before age 9 in boys. Although early puberty can be a normal variation, it can sometimes be a sign of an underlying health problem.

Bone growth may stop prematurely in precocious puberty, resulting in short stature.

Emotional problems are also common.

Signs of precocious puberty:

In girls:

- Breast development
- Onset of menstruation (periods)

In boys:

- Enlargement of the testicles or penis
- Facial and genital hair development
- Voice changes

Causes of precocious puberty

Precocious puberty is generally caused by early and excessive production of sex hormones. The source of these hormones may be the brain, ovaries or testicles. In rare cases the hormones could be produced by a tumour. Sometimes the cause of precocious puberty may not be known. Also being overweight can contribute to early maturation of body development.

How is precocious puberty diagnosed?

After a physical exam, the following tests may also be needed:

- An X-ray of the hand and wrist to determine the level of maturation of the growth centers
- Blood tests to measure hormone levels
- An ultrasound of the adrenal glands or the ovaries or testes
- An MRI scan to take detailed images of structures within the body or brain
- A hormone stimulation test to determine the form of precocious puberty

The treatment of this condition depends on the cause.