

Delayed puberty: late bloomer or medical condition?

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Puberty is said to be delayed when your sexual maturational body changes, which signal the beginnings of development towards adulthood and reproductive capacity, start at a later age than most (98%) of your peers.

[Dr Helen Spoudeas](#) is a highly-experienced paediatric and adolescent endocrinologist who specialises in treating children with delayed onset, arrested or absent puberty. In this article, she explains the signs and symptoms, the possible causes and what she can do to help you if you are facing this problem.



At what age do boys and girls start puberty?

Girls on average begin puberty with a growth spurt at 11 and menstruate at 13. Boys, on the other hand, begin their growth spurt at 14 and start growing a beard around 17. Therefore, until the age of 11, boys and girls in school are very similar in height. Thereafter, however, their growth curves diverge and individual differences in the timing of the onset of puberty can further influence perceived height differences at this critical adolescent time when children transition to secondary school.

Sexual maturation is a continuous and gradually amplified hormonal process which occurs over several (2-5) years. It affects not only the reproductive organs but also the skeleton and the developing brain.

- **Girls**

In girls, the first signs of puberty are usually the growth of breasts and pubic hair beginning at any point between the ages of 8 and 13, with periods occurring not less than 2 and often 3-5 years later.

- **Boys**

For boys, the first signs of puberty are much more subtle, with enlargement of the penis and testicles at any point between 9 and 14 years old, an obvious growth and muscular spurt, voice deepening and beard growth occurring 2-5 years later.

What are the signs of late puberty and when should I see a specialist?

Delayed puberty in a girl is defined if there are no secondary sex characteristics (such as breast budding and pubic hair) after the age of 12 to 13 or no periods by her 16th birthday.

Delayed puberty in a boy is considered if there is no testicular enlargement or pubic hair by their 14th birthday or haven't shown signs of beard growth (typically signalling the end of growth and puberty) by their 18th birthday.

If you are aged 13 or more and feel left behind by your peers because either you feel short or have stopped growing, or feel generally underdeveloped, then it may well be due to late puberty and you may want to consider seeking advice from a doctor.

What are the causes of late puberty?

The timing of puberty onset is genetically determined, with identical twins starting within 6 months of each other. We also know late puberty occurs more often in boys, especially if there is a family history of it.

Medical causes of delayed puberty may be:

- **Chronic ill-health** — having a long-term illness can delay the onset of puberty. Examples of long-term illnesses include [diabetes](#), [cystic fibrosis](#), [asthma](#), [coeliac disease](#) or even [long-term stress](#).
- **Malnutrition** — more commonly seen in girls, delayed puberty can be caused by an [eating disorder](#), which in turn, leads to malnutrition and weight loss. I often say to my patients, ‘growth and fertility are luxuries nature can only afford if you are well’. Therefore, to reach your full, reproductive potential, your health **can’t be compromised by inadequate nutrition**.
- **Hypothalamus and pituitary gland dysfunction** — while it is rare, delayed or even absent puberty can be caused by a problem within the [hypothalamus-pituitary gland](#); a small central region of the deep mid-brain that controls many vital functions including maturation and reproduction. If this area is maldeveloped, the body and reproductive glands may not be receiving the right hormonal signals from this area of the brain to start puberty.
- **Genetic causes** — conditions such as Kallmann syndrome can specifically affect the pubertal signalling message.
- **Problems with the testes or ovaries** — in boys, problems affecting the function of the testes such as [cryptorchidism](#) (undescended testes), testicular torsion, some cancer therapies and the genetic condition, Klinefelter’s syndrome can delay puberty or compromise fertility. In girls, the absence of ovarian development, Turner syndrome or premature ovarian insufficiency can cause an absence of puberty or pubertal arrest.

How are children tested for delayed puberty?

Most boys seen in endocrine clinics with pubertal delay have a simple familial delay which is easily diagnosed with a **physical examination** and a **bone age XR**. They are then treated for a year or so to '**kick start puberty**'.

At this stage, we cannot differentiate between **simple delay** and a much rarer true **pituitary deficiency**. What we can check is only whether there is a problem within the gonads (ovaries or testes) by measuring the levels of gonadotropin hormones (LH and FSH) in the blood. These hormones stimulate the production of the sex hormones (estradiol and testosterone); if there is a gonadal problem, the LH and FSH will be high.

Other tests may include a [pelvic ultrasound](#) (especially in a girl) or a pituitary [MRI scan](#) and further hormonal stimulation tests to check for any issues with your glands or organs.

Can delayed puberty be treated?

Delayed puberty doesn't always require treatment, especially if there are early signs that it is progressing. However, if a child is seeking help, it usually means that it is already having a **negative psychological impact** which merits treatment, either to promote a growth spurt at an earlier stage than it would otherwise occur or to kick-start puberty with a graduated increase in sex steroids. These may involve tablets or injections at gradually increasing doses over at least a year to trigger and then mimic the normal pace of puberty.

If there is an underlying health reason, then this will also need to be treated and you will be referred to the correct specialist to help.

How long is treatment generally needed for?

If there is no underlying abnormality, then we can provide you with the right hormones until the body takes over, which can take an average of a year or two. These do not affect your future fertility or adult height.

Delayed puberty doesn't usually cause any longterm problems with fertility. However, if there is concern about an underlying pathology then it's more likely you will need to undergo a fertility assessment and take specific sex steroid replacement therapy for the rest of your life. If you were to have

reduced fertility, then there are treatment options to help you when you want to have children such as [assisted reproductive therapy](#) (ART).