

## Precocious Puberty: A Guide for Families

### What is precocious puberty?

Puberty is defined as the presence of secondary sexual characteristics: breast development in girls, pubic hair, and testicular and penile enlargement in boys. Precocious puberty is usually defined as onset of puberty before age 8 in girls and before age 9 in boys. It has been recognized that, on average, African American and Hispanic girls may start puberty somewhat earlier than white girls, so they may have an increased likelihood to have precocious puberty.

### What are the signs of early puberty?

**Girls:** Progressive breast development, growth acceleration, and early menses (usually 2-3 years after the appearance of breasts)

**Boys:** Penile and testicular enlargement, increase musculature and body hair, growth acceleration, deepening of the voice

### What causes precocious puberty?

Most times when puberty occurs early, it is merely a speeding up of the normal process; in other words, the alarm rings too early because the clock is running fast. Occasionally, puberty can start early because of an abnormality in the master gland (pituitary) or the portion of the brain that controls the pituitary (hypothalamus). This form of precocious puberty is called central precocious puberty, or CPP.

Rarely, puberty occurs early because the glands that make sex hormones, the ovaries in girls and the testes in boys, start working on their own, earlier than normal. This is called peripheral precocious puberty (PPP).

In both boys and girls, the adrenal glands, small glands that sit on top of the kidneys, can start producing weak male hormones called adrenal androgens at an early age, causing pubic and/or axillary hair and body odor before age 8, but this situation, called premature adrenarche, generally does not require any treatment.

Finally, exposure to estrogen- or androgen-containing creams or medication, either prescribed or over-the-counter supplements, can lead to early puberty.

### How is precocious puberty diagnosed?

When you see the doctor for concerns about early puberty, in addition to reviewing the growth chart and examining your child, certain other tests may be performed, including blood tests to check the pituitary hormones, which control puberty (luteinizing hormone, called LH, and follicle-stimulating hormone, called FSH) as well as sex hormone levels (estradiol or testosterone) and sometimes other hormones. It is possible that the doctor will give your child an injection of a synthetic hormone called leuprolide before measuring these hormones to help get a result that is easier to interpret.

An x-ray of the left hand and wrist, known as bone age, may be done to get a better idea of how far along puberty is, how quickly it is progressing, and how it may affect the height your child reaches as an adult. If the blood tests show that your child has CPP, an MRI of the brain may be performed to make sure that there is no underlying abnormality in the area of the pituitary gland.

### How is precocious puberty treated?

Your doctor may offer treatment if it is determined that your child has CPP. In CPP, the goal of treatment is to turn off the pituitary gland's production of LH and FSH, which will turn off sex steroids. This will slow down the appearance of the signs of puberty and delay the onset of periods in girls. In some, but not all cases, CPP can cause shortness as an adult by making growth stop too early, and treatment may be of benefit to allow more time to grow. Because the medication needs to be present in a continuous and sustained level, it is given as an injection either monthly or every 3 months or via an implant that releases the medication slowly over the course of a year.

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