



Precocious (Early) Puberty

WHAT IS PUBERTY?

Puberty is the time of life when a child develops into an adult. It usually begins as early as age 7½ to 8 and as late as age 13 in girls, and between ages 9 and 14 in boys. African American and Hispanic children tend to start puberty about six months earlier than white children.

At puberty, the gonads—ovaries in girls and testes in boys—start to function. Puberty includes these physical changes:

- Development of secondary sex characteristics (growth of underarm and pubic hair, breast development, and growth of the penis and testicles)
- Growth spurts of bones and muscles, leading to rapid increase in height
- Changes in body shape and size

Puberty occurs when a part of the brain called the hypothalamus releases gonadotropin-releasing hormone (GnRH). This hormone stimulates the pituitary gland (a small gland at the base of the brain) to release two other hormones: luteinizing hormone (LH) and follicle-stimulating hormone (FSH). LH and FSH then stimulate the gonads to produce sex hormones—estrogen in girls and testosterone in boys. This leads to the physical changes of puberty.

The adrenal glands (two small glands located above the kidneys) also play a role in producing sex steroids. Their role, though, is usually less important than that of the gonads.

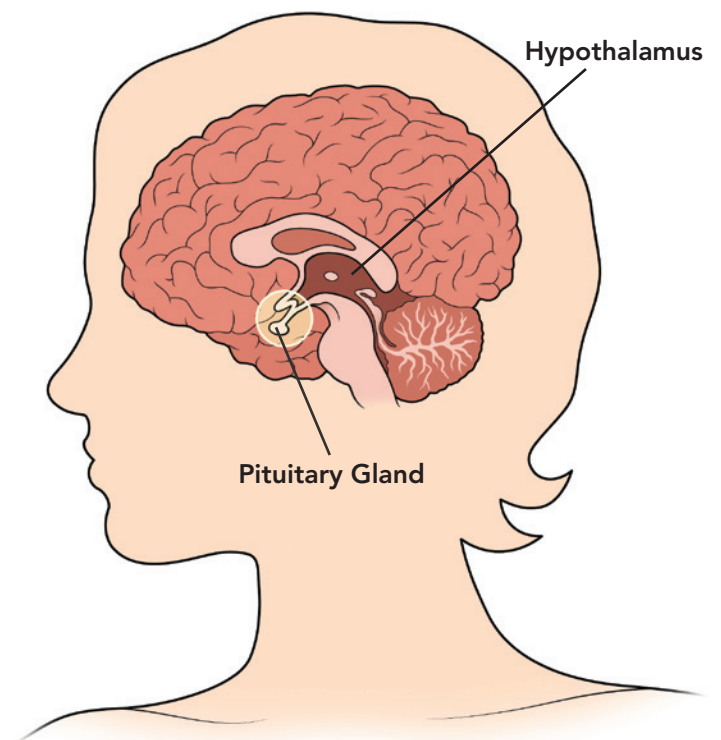
DID YOU KNOW?

Most children who have “precocious” (early) puberty do not have a health problem. But, they should see a doctor to make sure they do not.

WHAT IS PRECOCIOUS PUBERTY?

Precocious puberty is the appearance of any sign of secondary sex characteristics in boys younger than age 9 and in girls younger than 7½ or 8. In the United States, precocious puberty affects about 1 to 2 percent of children. Yet, in most of these children, early puberty is a variation of normal, and no medical problem is present.

[Many children who go through puberty early or late have other family members who went through puberty early or late. Just as there are differences in the age at which puberty starts, there are also differences in the rate at which a child goes through puberty.]



SIGNS OF PRECOCIOUS PUBERTY

Girls:

- Breast development
- Vaginal bleeding

Boys:

- Enlargement of the testicles and penis
- Facial hair
- Deepening voice

Both Boys and Girls:

- Pubic or underarm hair
- Rapid height growth—a growth “spurt”
- Acne
- Adult body odor

Near the end of puberty, growth in height stops. Because the bones of children with precocious puberty mature and stop growing earlier than normal, these children can be shorter than expected as adults. Precocious puberty can also cause emotional and social problems for children who are ahead of their peers in terms of sexual maturity.

WHAT CAUSES PRECOCIOUS PUBERTY?

Many forms of precocious puberty are simply variants of normal. For instance, breast development in very young girls and pubic or underarm hair in young children, without other signs of puberty, usually do not signal an underlying medical problem.

Two main types of precocious puberty are abnormal. The first is called central precocious puberty (CPP) and the second is peripheral precocious puberty (PPP).

CPP occurs when the hypothalamus releases GnRH and activates puberty early. In most girls with CPP, there is no underlying medical problem. In boys, the condition is less common and is more likely to have a link to a medical problem. Such problems include a tumor, brain trauma (such as a blow to the head, brain surgery, or radiation treatment to the head), or inflammation (such as meningitis).

PPP is rarer than CPP. It results from early production of sex hormones due to problems with the ovaries, testicles, or adrenal glands. Another cause can be external exposure to sex hormones (such as coming into contact with an estrogen or testosterone cream).

HOW IS PRECOCIOUS PUBERTY DIAGNOSED?

To make a diagnosis, your child’s doctor will take a medical history and perform a physical exam. Blood tests may be done to measure hormone levels. The doctor may order an x-ray of the hand to see if the child’s bones are maturing too fast. Sometimes a CT scan or MRI is ordered to check for a tumor.

Rarely, blood might be sent to a lab to look for a change in a gene (genetic mutation) that could result in an uncommon type of precocious puberty.

If your child has any sign of precocious puberty, visit a pediatric endocrinologist. This doctor is an expert in the treatment of hormone-related conditions in children. Precocious puberty requires tests to ensure there is no underlying medical cause. Your doctor will work with you to decide the best treatment option.

HOW IS PRECOCIOUS PUBERTY TREATED?

If your child has CPP, there are medications to prevent further pubertal development. If the problem is PPP, the treatment will depend on the underlying cause. It could involve medications, surgery (if there is a tumor), or removing the external source of the hormones (such as estrogen cream).

Questions to ask your doctor

- Is my child going through early puberty?
- If so, what is the cause of the early puberty?
- Does my child need medicine?
- What should I tell my child about these physical changes?
- Should we see a pediatric endocrinologist?

RESOURCES

- Find-an-Endocrinologist: www.hormone.org or call 1-800-HORMONE (1-800-467-6667)
- Magic Foundation: www.magicfoundation.org
- Mayo Clinic: www.mayoclinic.com/health/precocious-puberty/DS00883
- Medline Plus (National Institutes of Health): www.nlm.nih.gov/medlineplus
- KidsHealth.org (The Nemours Foundation): www.kidshealth.org

EDITORS

Erica A. Eugster, MD
Mark R. Palmert, MD, PhD

The Hormone Health Network offers free, online resources based on the most advanced clinical and scientific knowledge from The Endocrine Society (www.endo-society.org). The Network’s goal is to move patients from educated to engaged, from informed to active partners in their health care. This fact sheet is also available in Spanish at www.hormone.org/Spanish.

