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Precocious puberty

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Precocious puberty is when a child's body begins changing into that of an adult (puberty) too soon. **When puberty begins before age 8 in girls and before age 9 in boys, it is considered precocious puberty.**

Puberty includes rapid growth of bones and muscles, changes in body shape and size, and development of the body's ability to reproduce.

The cause of precocious puberty often can't be found. Rarely, certain conditions, such as infections, hormone disorders, tumors, brain abnormalities or injuries, may cause precocious puberty. Treatment for precocious puberty typically includes medication to delay further development.

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Symptoms

Precocious puberty signs and symptoms include development of the following before age 8 in girls and before age 9 in boys.

- Breast growth and first period in girls
- Enlarged testicles and penis, facial hair and deepening voice in boys
- Pubic or underarm hair

- Rapid growth
- Acne
- Adult body odor

When to see a doctor

Make an appointment with your child's doctor for an evaluation if your child has any of the signs or symptoms of precocious puberty.

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Causes

To understand what causes precocious puberty in some children, it's helpful to know what causes puberty to begin. The brain starts the process with the production of a hormone called gonadotropin-releasing hormone (GnRH).

When this hormone reaches the pituitary gland — a small bean-shaped gland at the base of your brain — it leads to the production of more hormones in the ovaries for females (estrogen) and the testicles for males (testosterone).

Estrogen is involved in the growth and development of female sexual characteristics. Testosterone is responsible for the growth and development of male sexual characteristics.

Why this process begins early in some children depends on whether they have central precocious puberty or peripheral precocious puberty.

Central precocious puberty

The cause for this type of precocious puberty often can't be identified.

In central precocious puberty, the puberty process starts too soon. The pattern and timing of the steps in the process are otherwise normal. For the majority of children with this condition, there's no underlying medical problem and no identifiable reason for the early puberty.

In rare cases, central precocious puberty may be caused by:

- A tumor in the brain or spinal cord (central nervous system)
- A defect in the brain present at birth, such as excess fluid buildup (hydrocephalus) or a noncancerous tumor (hamartoma)
- Radiation to the brain or spinal cord

- Injury to the brain or spinal cord
- McCune-Albright syndrome — a rare genetic disease that affects bones and skin color and causes hormonal problems
- Congenital adrenal hyperplasia — a group of genetic disorders involving abnormal hormone production by the adrenal glands
- Hypothyroidism — a condition in which the thyroid gland doesn't produce enough hormones

Peripheral precocious puberty

Estrogen or testosterone in your child's body causes this type of precocious puberty.

The less common peripheral precocious puberty occurs without the involvement of the hormone in your brain (GnRH) that normally triggers the start of puberty. Instead, the cause is release of estrogen or testosterone into the body because of problems with the ovaries, testicles, adrenal glands or pituitary gland.

In both girls and boys, the following may lead to peripheral precocious puberty:

- A tumor in the adrenal glands or in the pituitary gland that releases estrogen or testosterone
- McCune-Albright syndrome, a rare genetic disorder that affects the skin color and bones and causes hormonal problems
- Exposure to external sources of estrogen or testosterone, such as creams or ointments

In girls, peripheral precocious puberty may also be associated with:

- Ovarian cysts
- Ovarian tumors

In boys, peripheral precocious puberty may also be caused by:

- A tumor in the cells that make sperm (germ cells) or in the cells that make testosterone (Leydig cells).
- A rare disorder called gonadotropin-independent familial sexual precocity, which is caused by a defect in a gene, can result in the early production of testosterone in boys, usually between ages 1 and 4.

Risk factors

Factors that increase a child's risk of precocious puberty include:

- **Being a girl.** Girls are much more likely to develop precocious puberty.
- **Being African-American.** Precocious puberty appears to affect African-Americans more often than children of other races.
- **Being obese.** Children who are significantly overweight have a higher risk of developing precocious puberty.
- **Being exposed to sex hormones.** Coming in contact with an estrogen or testosterone cream or ointment, or other substances that contain these hormones (such as an adult's medication or dietary supplements), can increase your child's risk of developing precocious puberty.
- **Having other medical conditions.** Precocious puberty may be a complication of McCune-Albright syndrome or congenital adrenal hyperplasia — conditions that involve abnormal production of the male hormones (androgens). In rare cases, precocious puberty may also be associated with hypothyroidism.
- **Having received radiation therapy of the central nervous system.** Radiation treatment for tumors, leukemia or other conditions can increase the risk of precocious puberty.

Complications

Possible complications of precocious puberty include:

- **Short height.** Children with precocious puberty may grow quickly at first and be tall, compared with their peers. But, because their bones mature more quickly than normal, they often stop growing earlier than usual. This can cause them to be shorter than average as adults. Early treatment of precocious puberty, especially when it occurs in very young children, can help them grow taller than they would without treatment.
- **Social and emotional problems.** Girls and boys who begin puberty long before their peers may be extremely self-conscious about the changes occurring in their bodies. This may affect self-esteem and increase the risk of depression or substance abuse.

Prevention

Some of the risk factors for precocious puberty, such as sex and race, can't be avoided. But, there are things you can do to reduce your child's chances of developing precocious puberty, including:

- Keeping your child away from external sources of estrogen and testosterone — such as prescription medications for adults in the house or dietary supplements containing estrogen or testosterone

- Encouraging your child to maintain a healthy weight

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