

# Premature Adrenarche: A Guide for Parents

**Premature Adrenarche (PA)** is one of the most common diagnoses made in children referred to a specialist for signs of early puberty. Its key features are:

1. Appearance of pubic and/or underarm hair in girls younger than 8 years or boys younger than 9 years
2. Adult-type underarm odor, often requiring use of deodorants
3. Absence of breast development in girls or of genital enlargement in boys (which if present often point to the diagnosis of *true precocious puberty*)
4. Many children are taller than average and they often have heights above the 95<sup>th</sup> %ile

## Hormonal basis

PA is caused by an earlier than normal increase in production of weak male-type hormones (mainly one called DHEA) from the adrenal glands, small glands which are located on top of the kidneys and are best known for producing the hormones cortisol and adrenaline. It is normal for production of these hormones to increase (something we call adrenarche) and for pubic hair to appear after age 8 in girls or 9 in boys. The reason why this increase occurs earlier in some children is not known. We do know that being overweight increases a child's chances of having PA, but many children with PA are not overweight. PA is also more likely to occur in African-American children, and in children who are born small for gestational age. It does not seem to be inherited (usually we see it in just one family member).

## Significance

The adrenal hormones which are the cause of early pubic hair are different from the ones which produce breast enlargement (estrogens coming from the ovaries) or growth of the penis (testosterone from the testes). Thus, a young girl who has only pubic hair and body odor is not on the road to having early menstrual periods, which usually do not start until at least 2 years after breast enlargement begins.

## What else besides PA can cause early pubic hair?

A small percentage of children with PA may be found to have a genetic adrenal condition called non-classical (mild) congenital adrenal hyperplasia (CAH). It is controversial whether all children with PA need to be tested for CAH. Even if this type of CAH is diagnosed, not all doctors will treat it. If treatment is suggested, the hormone medication hydrocortisone, which can suppress excess adrenal androgen production, may be used. There are very rare cases in which early pubic hair can be a sign of an adrenal or gonadal (testicular or ovarian) tumor but in those cases, very



rapid growth with enlargement of the clitoris in a girl or the penis in a boy will be a sign the child needs further testing. In addition, exposure to hormonal supplements may cause the appearance of PA.

### **Does premature adrenarche cause any harm to the child?**

There are generally no health problems caused by PA. Girls with PA may have periods a bit earlier than the average, but usually not before age 10.

It is known that girls with PA are at increased risk for developing a disorder called polycystic ovary syndrome (PCOS) in their teenage years. The signs of this problem include irregular or absent periods and sometimes increased facial hair. Because most girls with PCOS are overweight, maintaining a healthy weight with a healthy diet and plenty of exercise is the best way to lower the risk that your child will develop PCOS.

### **Is testing needed in children with PA?**

Different specialists have different opinions on this. Some doctors will obtain a hand x-ray for a bone age. Many children, especially the taller and heavier ones, have a bone age advanced by 2 or more years, and this does not seem to indicate a more serious problem which requires extensive testing or treatment. If a child has the typical features of PA noted above and is not growing too rapidly, the chances of finding evidence of a treatable condition by measuring hormones is low. Generally the only abnormal blood test is an increase in the level of DHEA-S, the major circulating adrenal androgen. Many doctors only test those children who in addition to pubic hair have very rapid growth and/or enlargement of the genitals, or breast development.

### **Treatment**

There is no treatment that will cause the pubic and/or underarm hair to go away. Medications that slow down the progression of true precocious puberty have no effect on the adrenal hormones made in children with PA. Deodorants are helpful for controlling body odor and are safe.

