



# Fact Sheet

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The Patient Education Website of the American Society for Reproductive Medicine

## Normal and Abnormal Puberty in Females

### **What is puberty?**

Puberty refers to the specific physical changes that happen as a child develops into an adult. Though they happen in different areas of the body, these changes are all related to each other.

Some of these changes include bone growth, increase in height, production of hormones by the adrenal gland and by the ovary, development of pubic hair, breast development, and the start of menstrual cycles.

During puberty, the brain starts to send signals to the ovaries and adrenal glands. In response, the ovaries produce the hormones estrogen and progesterone which lead to the physical changes of breast development, pubic and axillary hair growth and menstrual cycles.

### **How can puberty be measured?**

In the most general sense, puberty can be measured in 3 ways:

1. Timing – age at which it starts
2. Sequence – stage of puberty
3. Tempo – how fast or slow changes occur

### **What is normal timing of puberty?**

In girls, normal puberty can start as early as seven years of age. African-American girls may begin normal puberty as early as age six. Puberty before that age is considered early and deserves evaluation by a healthcare provider.

The onset of puberty can be influenced by certain factors. Body weight can affect the timing of puberty. Girls with increased body weight may experience signs of early puberty, and those with decreased body weight may experience a delay. Exposure to certain chemicals and medications can also increase the likelihood of early puberty.

Girls who do not have menstrual cycles or any signs of breast development by age 13-14, or girls who have breast development but no menstrual cycles by age 14-15, may need evaluation for delayed onset of puberty.

### **What is the normal sequence of puberty in girls?**

There is a tremendous amount of variation in the sequence of events in puberty. Generally, the first major signs of puberty are the beginning of breast development

and first changes in height. Rapid changes in height occur later. Pubic hair often appears next, followed by the onset of menstrual periods, full breast maturation, and ovulation. The beginning of menstruation is a late event in normal puberty.

### **How fast should puberty occur?**

Usually the sequence of events from the beginning to end of puberty takes several years. If these changes occur over several months instead of several years, this may be a sign of abnormal puberty and should be evaluated. If girls do not have menstrual cycles within five years of beginning puberty, this may be a sign of delay.

### **Are there psychological changes that occur during puberty?**

For most girls, puberty causes some stress. Puberty may be accompanied by changes in self-esteem, independence, and sexuality. Some girls may feel depressed or nervous during this time. Girls that have earlier puberty may be more mature physically than they are emotionally, cognitively, or sexually. With the increase in estrogen that accompanies puberty, girls have increased interest in boys and dating.

### **What are the causes of early or late puberty?**

There are many different causes. In many girls, no specific cause is found. Other causes may be genetic, hormonal, exposure to medications, anatomic, or related to the patient's weight.

### **How can a diagnosis of early or delayed puberty be made?**

This diagnosis is generally made by a reproductive or pediatric endocrinologist after a careful history and physical examination, often with additional blood or radiological tests. The cause may or may not be serious.

### **What is the treatment for abnormal puberty?**

Girls who enter puberty early may receive treatment aimed at delaying puberty until the appropriate time. Treatment for delayed puberty is highly dependent on the cause. In both cases, treatment is individualized.

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