

## Growth hormone deficiency - children

### Definition

Growth hormone deficiency means the pituitary gland does not make enough growth hormone.

### Causes

The pituitary gland is located at the base of the brain. This gland controls the body's balance of hormones. It also makes growth hormone. This hormone causes a child to grow.

Growth hormone deficiency may be present at birth. Growth hormone deficiency may be the result of a medical condition. Severe brain injury may also cause growth hormone deficiency.

Children with physical defects of the face and skull, such as cleft lip or cleft palate, may have decreased growth hormone level.

Most of the time, the cause of growth hormone deficiency is unknown.

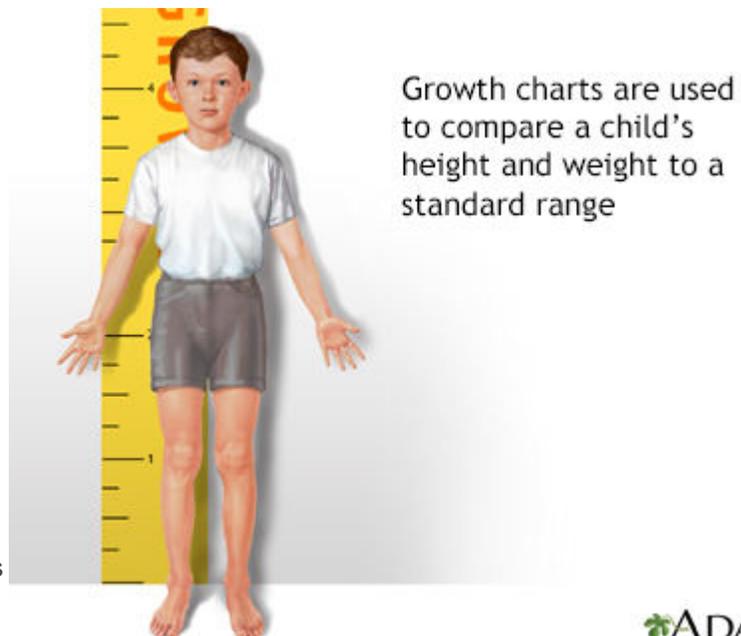
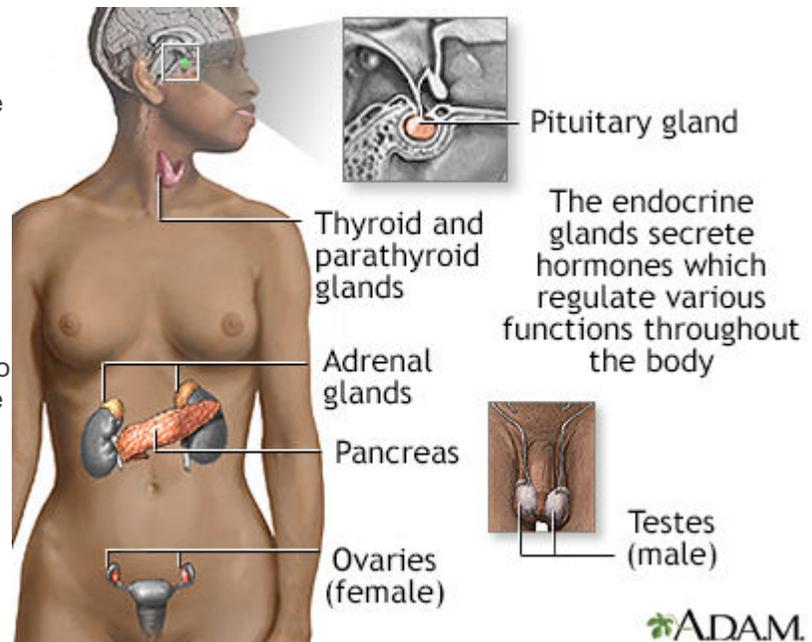
### Symptoms

Slow growth may first be noticed in infancy and continue through childhood. The pediatrician will most often draw the child's growth curve on a growth chart. Children with growth hormone deficiency have a slow or flat rate of growth. The slow growth may not show up until a child is 2 or 3 years old.

The child will be much shorter than most children of the same age and sex. The child will still have normal body proportions, but may be chubby. The child's face often looks younger than other children of the same age. The child will have normal intelligence in most cases.

In older children, puberty may come late or may not come at all, depending on the cause.

### Exams and Tests



child will not follow the normal growth curves.

A hand x-ray can determine bone age. Normally, the size and shape of bones change as a person grows. These changes can be seen on an x-ray and they most often follow a pattern as a child grows older.

Testing is most often done after the pediatrician has looked into other causes of poor growth. Tests that may be done include:

- Insulin-like growth factor 1 (IGF-1) and insulin-like growth factor binding protein 3 (IGFBP3). These are substances that growth hormones cause the body to make. Tests can measure these growth factors. Accurate growth hormone deficiency testing involves a stimulation test. This test takes several hours.
- MRI of the head can show the hypothalamus and pituitary glands.
- Tests to measure other hormone levels may be done, because a lack of growth hormone may not be the only problem.

## Treatment

Treatment involves growth hormone shots (injections) given at home. The shots are most often given once a day. Older children can often learn how to give themselves the shot.

Treatment with growth hormone is long-term, often lasting for several years. During this time, the child needs to be seen regularly by the pediatrician to ensure the treatment is working. If needed, the health care provider will change the dosage of the medicine.

Serious side effects of growth hormone treatment are rare. Common side effects include:

- Headache
- Fluid retention
- Muscle and joint aches
- Slippage of the hip bones

## Outlook (Prognosis)

The earlier the condition is treated, the better the chance that a child will grow to near-normal adult height. Many children gain 4 or more inches (about 10 centimeters) during the first year, and 3 or more inches (about 7.6 centimeters) during the next 2 years. The rate of growth then slowly decreases.

Growth hormone therapy does not work for all children.

Left untreated, growth hormone deficiency may lead to short stature and delayed puberty.

Growth hormone deficiency can occur with deficiencies of other hormones such as those that control:

- Production of thyroid hormones
- Water balance in the body
- Production of male and female sex hormones
- The adrenal glands and their production of cortisol, DHEA, and other hormones

## When to Contact a Medical Professional

Call your provider if your child seems abnormally short for their age.

Review your child's growth chart with the pediatrician at each checkup. If there is concern about your child's growth rate, evaluation by a specialist is recommended.

## Alternative Names

Pituitary dwarfism; Acquired growth hormone deficiency; Isolated growth hormone deficiency; Congenital growth hormone deficiency; Panhypopituitarism; Short stature - growth hormone deficiency

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