

# Growth Hormone Deficiency



**Knowledge**  
to grow by

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What does it mean if the doctor says that your child has short **stature**? It means that your child is much shorter than average for his or her age group. There are many reasons for a child to be shorter than average.

In some cases, a child may be short simply because being short runs in the family. In other cases, a child is short because of a medical issue that affects growth.

If your child is shorter than average, he or she may be sent to an **endocrinologist**. This doctor is a specialist who is trained to diagnose and treat children with growth disorders. The endocrinologist will evaluate your child to find the cause of your child's slow or poor growth.

## Growth hormone deficiency

What does it mean if the doctor says that your child has **growth hormone deficiency**, or GHD? It means that your child's body does not make enough **growth hormone**. Growth hormone is needed for growth during childhood. Not enough growth hormone can cause poor growth in children.

Most children with GHD appear otherwise healthy. Often, short stature is the only feature present. If GHD is the cause of your child's slow growth, there are medicines that may help.

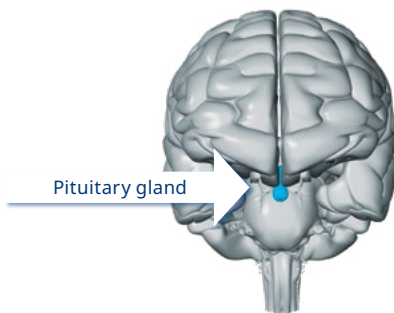
### About growth hormone

Hormones are key factors in the body. Hormones are chemical messengers. They are made in glands and sent through the blood to other parts of the body. They deliver messages that tell the body to perform certain tasks.



One hormone that is important for a child's growth is growth hormone. It is made by the **pituitary gland**. The pituitary gland is a small organ in the body. It is the size of a pea and sits in the middle of the head at the bottom of the brain, just behind the nose.

The pituitary gland sends growth hormone into the body, where it causes bone growth. Growth hormone helps the cells in a child's bones to grow and divide. Growth in the bones, especially the spine and the leg bones, makes a child taller.



## What causes GHD?

There are many possible causes of GHD. In some cases, GHD results from a birth defect and may appear in infancy. In other cases, GHD happens after birth and may appear in later childhood. Sometimes GHD appears alone. Other times GHD happens along with other pituitary hormone deficiencies.

## Diagnosing GHD

Before diagnosing your child with GHD, the doctor will check for other causes of poor growth. Your child will be given a physical exam. The doctor will review your child's medical and family history. The doctor will also look at your child's pattern of growth and may run standard blood tests.

If your child shows no signs of other conditions, the doctor may test for GHD.

## The signs of GHD

In children, some signs of GHD are:

- Much shorter height than expected, based on biological parents' heights
- Growth of less than 2 inches per year between the ages of 2 and 11 years in girls or the ages of 2 and 13 years in boys
- Leveling off and slowing of growth rate
- Growth that is below the 3rd percentile on standardized growth charts

## GHD and growth charts

Doctors and nurses use growth charts to track a child's height and weight over time. They also use these charts to compare a child's height and weight with the statistical norm. This is the average height and weight of other children who are the same sex and age. Separate growth charts are used for girls and boys.

In general, most children grow at least 2 to 2 1/2 inches every year between the age of 3 years and **puberty**. Puberty usually starts between the ages of 8 and 13 years in girls and between the ages of 9 and 14 years in boys. There is a special set of growth charts for children younger than 2 years of age (from birth to 24 months). A child with GHD tends to grow less than 2 inches per year.

Each growth chart has lines called **percentile** curves, or percentiles. These lines represent the percentage of children at the same height or weight for that age group.

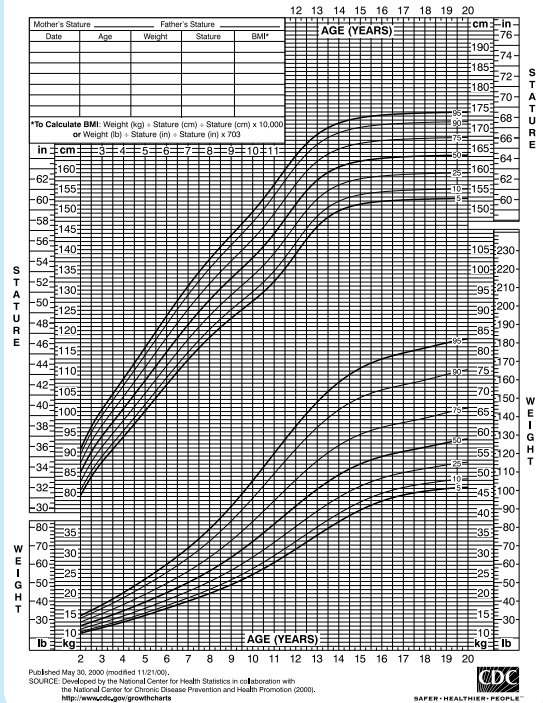
A percentile is a way to show ranking. For example, if a 10-year-old girl is in the 50th percentile for height, that means 50% of 10-year-old girls are taller and 50% are shorter than she is.

On the other hand, if a 2-year-old boy is in the 5th percentile for height, that means 95% of 2-year-old boys are taller and 5% are shorter than he is.

2 to 20 years: Girls  
Stature-for-age and Weight-for-age percentiles

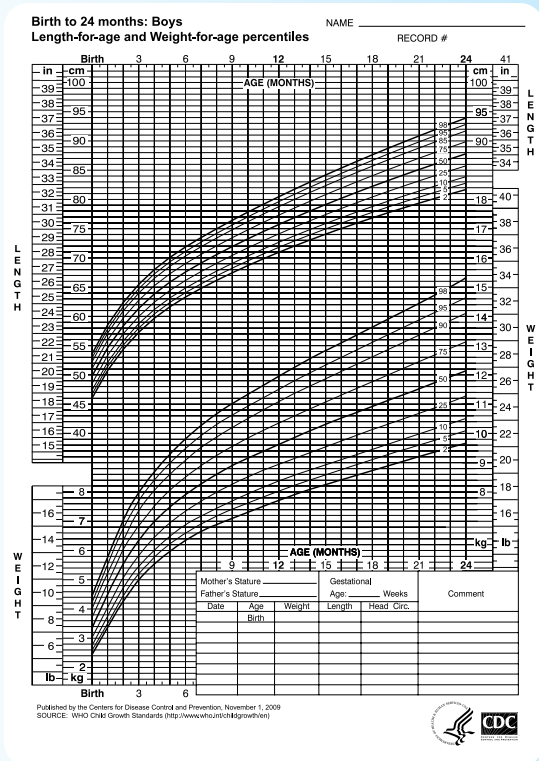
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Growth chart for girls aged 2 to 20 years

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Growth chart for boys from birth to 24 months

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To record your child’s growth, the doctor may draw a line connecting height measurements for your child at several points. This is called a growth curve. The growth curve for most children usually falls along one of the percentiles on the growth chart. The doctor may also draw similar lines for weight.

Children with GHD are shorter than other children who are the same age. Children with GHD may have a growth curve that is often below the 5th percentile or are showing abnormally slow growth for a long period of time.

Stimulation testing

Some doctors use a stimulation test, or stim test, to check for GHD. A stimulation test is a procedure used to measure the blood level of growth hormone produced by the pituitary gland in response to stimulation. The pituitary gland makes growth hormone. This test is performed to measure the body’s ability to release the appropriate amount of growth hormone under controlled circumstances.

During the stim test, your child will receive medicine to artificially **stimulate** the pituitary gland to produce human growth hormone. This test is typically used to help identify GHD as a cause of poor growth.



## Treatment

Certain types of therapy may help children with GHD reach an adult height within their genetic potential. Several treatment options have been approved by the US Food and Drug Administration (FDA). Treatment typically lasts for a specific period of time while the potential for growth exists. Duration of treatment also depends on how well the child responds to therapy.

To learn more about treatment options for your child, speak with your pediatrician or pediatric endocrinologist.

## Follow-up visits

After diagnosing your child with GHD, the doctor will likely ask for regular follow-up visits. The doctor will monitor your child's growth to make sure that treatment is working well.

## Support your child

The self-esteem of children with short stature has much to do with how they see their bodies. Children who feel good about themselves and who feel loved by their families may feel fine about their short stature.

Remind your child that a person's worth has nothing to do with height. But it has everything to do with who that person is.



## Insurance

### Questions about coverage

If your child is prescribed treatment, you may have questions about insurance coverage. There are programs that may help you get the assistance you need. In many cases, assistance is just a phone call away. The manufacturer of your child's treatment may be able to answer your questions about insurance coverage and reimbursement, and may be able to help you find additional coverage to ensure that your child's treatment continues as prescribed.

### Getting help

With your permission, your doctor may contact the pharmaceutical manufacturer so that you can get help with completing insurance paperwork. The doctor may submit a Statement of Medical Necessity, a recent growth chart (if applicable), and any available insurance information.

### Manufacturers' assistance programs

If your doctor has prescribed a treatment option for your child but you are unable to resolve insurance reimbursement issues, the pharmaceutical manufacturer may be able to provide treatment free of charge on a short-term basis. There may also be assistance available from other patient and not-for-profit support organizations.

## ADDITIONAL RESOURCES

**You can also find information and support from these organizations:**

### Hormone Health Network

The public education affiliate of The Endocrine Society  
8401 Connecticut Avenue, Suite 900  
Chevy Chase, MD 20815-5817  
Tel: 1-800-HORMONE (467-6663)

[hormone.org](http://hormone.org)

### Human Growth Foundation

997 Glen Cove Avenue, Suite 5  
Glen Head, NY 11545  
Tel: 1-800-451-6434

[hgfound.org](http://hgfound.org) | [hgf1@hgfound.org](mailto:hgf1@hgfound.org)

### The MAGIC Foundation®

6645 W. North Avenue  
Oak Park, IL 60302  
Tel: 1-800-3MAGIC3 (362-4423)

[magicfoundation.org](http://magicfoundation.org)

### Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)

National Institutes of Health, DHHS

31 Center Drive, Bldg. 31  
Rm. 2A32  
Bethesda, MD 20892-2425  
Tel: 1-800-370-2943

[nichd.nih.gov](http://nichd.nih.gov)

### Pituitary Network Association

P.O. Box 1958  
Thousand Oaks, CA 91358  
Tel: 805-499-9973

[pituitary.org](http://pituitary.org)

Regional Support Groups at:

[pituitary.org/support-groups](http://pituitary.org/support-groups)

## GLOSSARY

**Here are definitions for some words in this brochure that may be new to you. If there are other words that you need to understand better, your child's doctor or nurse can help you.**

### **Endocrinologist**

A specially trained doctor who diagnoses and treats diseases of the glands and hormone imbalances.

### **Growth hormone**

A hormone produced by the pituitary gland that promotes growth in children and adolescents.

### **Growth hormone deficiency**

A disorder in which the body does not make enough growth hormone.

### **Percentile**

A measurement that tells how much of a group is equal to or below it. For example, a percentile score of 95 is a score equal to or greater than 95% of other scores.

### **Pituitary gland**

A pea-sized gland located at the base of the brain. The pituitary gland produces and sends growth hormone via the bloodstream to the bones and other parts of the body.

### **Puberty**

The growth period during sexual maturity.

### **Stature**

The standing height of a person.

### **Stimulate**

To temporarily increase activity.



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