



Growth Hormone Deficiency in Children

WHAT IS GROWTH HORMONE DEFICIENCY?

Growth hormone deficiency (GHD) is a rare condition in which the body does not make enough growth hormone (GH). GH is made by the pituitary gland, a small organ at the base of the brain.

In children, GH is essential for normal growth, muscle and bone strength, and distribution of body fat. It also helps control glucose (sugar) and lipid (fat) levels in the body. Without enough GH, a child is likely to grow slowly and be much shorter than other children of the same age and gender.

It's important for parents to know that there are many reasons for slow growth and below-average height in children. At times, slow growth is normal and temporary, such as right before puberty starts. A pediatric endocrinologist (children's hormone specialist) or primary care doctor can help find out why a child is growing slowly.

DID YOU KNOW?

Most children with growth hormone deficiency grow less than two inches (5 centimeters) each year.

WHAT CAUSES GHD?

Some children are born with GHD. Others develop it after birth due to a brain injury, a tumor, or radiation treatment to the head. For some children, doctors can find no cause.

HOW IS GHD DIAGNOSED?

Your doctor will review your child's medical history and growth charts, and look for signs of GHD and other conditions that affect growth. Your doctor may do tests to help find the cause of slow growth. These include

- An X-ray of the hand to check bone growth (bone age) and assess growth potential
- Blood tests and other laboratory tests to rule out other conditions that affect growth

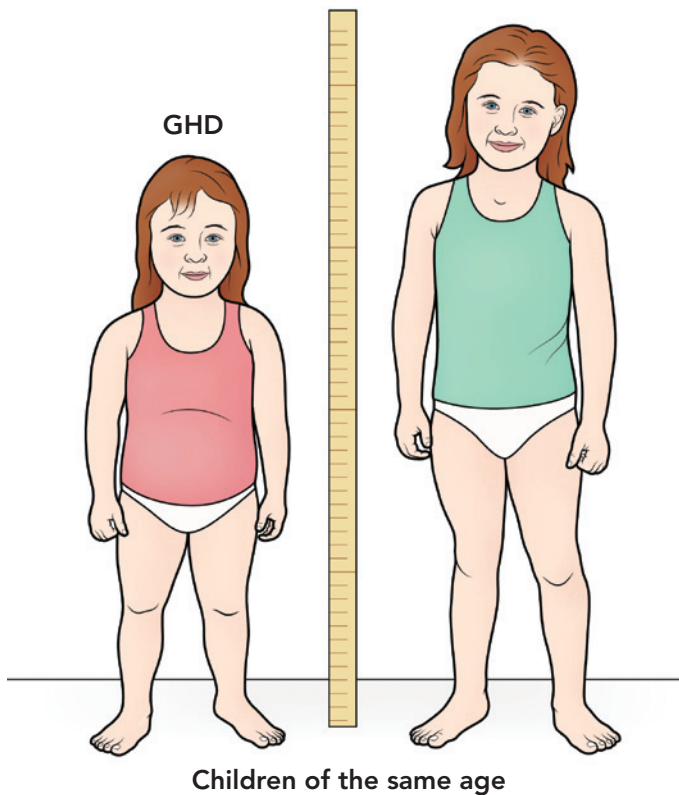
Specific tests for GHD include

- **Insulin-like growth factor (IGF-1).** A blood test checks levels of IGF-1, a hormone that reflects GH levels.
- **GH stimulation test.** The child is given medicines that stimulate the pituitary to release GH. Then, if GH levels in the blood don't rise to a certain level, it can mean the pituitary is not making enough GH.
- **Magnetic resonance image (MRI).** An MRI (imaging test) of the head will look for a problem with the pituitary or the brain, and can rule out a brain tumor.

HOW IS A CHILD WITH GHD TREATED?

Children with GHD receive treatment with daily injections of synthetic (manufactured) human GH, a prescription medicine. The GH, given at home, is injected under the skin. Growth is usually monitored every 3 to 6 months by a pediatric endocrinologist, who will adjust the dose as needed.

The best results occur when GHD is diagnosed and treated early. In some children, GH can lead to four inches (10 centimeters) of growth during the first year of treatment. Others grow less, but usually faster than without treatment. Some children need treatment until adolescence; others need it into adulthood.



Children of the same age

SIGNS OF GHD

- Slowed growth in height in infants, children, or adolescents (teenagers)
- A young-looking face compared with other children of the same age
- A chubby body, small hands and feet, and poorly developed muscles
- Low blood glucose levels (in infants and toddlers with severe GHD)
- A very small penis (in male newborns with severe GHD)
- Delayed puberty

WHAT ARE THE SIDE EFFECTS OF GROWTH HORMONE THERAPY?

Mild to moderate side effects are uncommon. They include

- Headaches
- Muscle or joint pain
- Mildly underactive thyroid gland
- Swelling of hands and feet
- Curvature of the spine (scoliosis)
- Development of breast tissue in boys

EDITORS

Luiz Claudio Castro, MD
 Alan D. Rogol, MD, PhD
 Dorothy I. Shulman, MD

The Hormone Health Network offers free, online resources based on the most advanced clinical and scientific knowledge from The Endocrine Society (www.endo-society.org). The Network's goal is to move patients from educated to engaged, from informed to active partners in their health care. This fact sheet is also available in Spanish at www.hormone.org/Spanish. The development of this fact sheet was supported by educational grants from Genentech, Inc.; Lilly USA, LLC; and Pfizer, Inc.

Growth Hormone Deficiency in Children Fact Sheet

Rare but serious side effects include

- Severe headache with vision problems
- A hip problem, when the top of the thigh bone slips out of place
- Inflamed pancreas (pancreatitis)

For most children, the benefits of taking GH outweigh the risks.

WHAT CAN YOU DO TO HELP YOUR CHILD WITH GHD?

You can help your child get the best care for GHD by taking these steps:

- Call the doctor if you have questions about treatment.
- Follow directions carefully when giving GH and other prescription medicines to your child.
- Tell all of your child's doctors that your child takes GH.
- Be sure your child gets frequent checkups.
- Get counseling for your child if you see signs of poor self-esteem or sadness that could be related to being smaller than peers.

Questions to ask your doctor

- What should my child's height be at this age?
- Why is my child growing slowly?
- Does my child need treatment for GHD?
- If so, how and when do I give my child the shots?
- Should we see a pediatric endocrinologist?

RESOURCES

- Find-an-Endocrinologist: www.hormone.org or call 1-800-HORMONE (1-800-467-6663)
- Hormone Health Network information about growth disorders: www.hormone.org/Growth/index.cfm
- The Human Growth Foundation: www.hgfound.org/pub_growth.html
- The Nemours Foundation (KidsHealth) information for kids: "Feeling Too Tall or Too Short:" <http://kidshealth.org/Features.jsp?lic=1&feature=300#>
- The Magic Foundation information about GHD: www.magicfoundation.org/www/docs/108/growth_hormone_deficiency_in_children



**Hormone Health
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