

Growth Hormone with Stimulation (Blood)



Does this test have other names?

GH, GHD, arginine, insulin tolerance test or insulin-induced hypoglycemia, clonidine, L-dopa, glucagon, growth-hormone-releasing hormone, GHRH

What is this test?

This test measures the level of growth hormone (GH) in your blood.

GH is made in your pituitary gland. It affects height, bone, and muscle growth in children. It affects how adults look and feel, as well as their bone and muscle health.

GH is made in a pulse-like manner. Most GH is made while you sleep. When you're awake, little or possibly no GH is found in your blood. That makes it hard to test your GH level. Specialists have developed methods to figure out if you make too little GH by testing your blood over time after stimulating GH production. If your GH level does not rise to a certain range, you may have growth hormone deficiency.

These are different kinds of stimulation that may be used in this test:

- **Insulin** is the best way to stimulate GH. It's the most powerful GH stimulant and the most specific, but it isn't safe to use with everyone. Sometimes this test is called insulin-induced hypoglycemia. If your healthcare provider decides an insulin tolerance test is right for you or your child, blood samples are taken 30, 60, and 120 minutes after the insulin is given.
- **Glucagon** is a good choice for infants and young children because it's given right under the skin. Blood is taken about every 30 minutes between 1 and 3 hours, with a peak in GH expected between 2 and 3 hours.
- **Clonidine** is the quickest test. Peak GH secretion happens about an hour after it's given.
- **Macimorelin** is a solution that is used in adults to stimulate GH. Blood samples are checked at 30, 45, 60, and 90 minutes after drinking the solution.

Why do I need this test?

You may need this test if your healthcare provider suspects that you have a growth hormone deficiency. Symptoms include:

- Decreased bone density
- Reduced muscle strength
- Increased lipids, or fats in your blood
- Increased fat in certain parts of your body
- Cardiovascular disease
- Depression

Your child might need this test if they have these symptoms:

- Slow growth, or growth in the lower third percentile for height
- Short stature for their age, or less than 0.5 percentile for age height

- Delayed puberty

What other tests might I have along with this test?

Your healthcare provider may also order a blood test for insulin-like growth factor-1 (IGF-1). GH tells your liver to make IGF-1, so usually GH and IGF-1 are connected. GH is secreted in pulses while you sleep, but IGF is always found in your blood. That makes it much easier to find IGF-1 in your blood than GH.

Your child's healthcare provider may also order a test for insulin-like growth factor binding protein-3, IGFBP-3. This protein is made by the liver and works with IGF-1.

Your healthcare provider may also order an MRI to check for a pituitary gland tumor. Children may also have a bone age test.

What do my test results mean?

Test results may vary depending on your age, gender, health history, and other things. Your test results may be different depending on the lab used. They may not mean you have a problem. Ask your healthcare provider what your test results mean for you.

Normal results differ by age. All growth hormone deficiency tests take age into account.

If your levels of GH are lower, it may mean that you have a pituitary tumor. It may also mean you have hypopituitarism, a condition in which the pituitary gland makes low amounts of many kinds of hormones, including GH.

Lower levels in children may be present from birth or they may be caused by head trauma, a tumor, or radiation therapy. If a low GH level is not caused by a damaged pituitary gland, sometimes the child outgrows it by adolescence or young adulthood. Your healthcare provider may want to retest at different stages of your child's development.

How is this test done?

The test is done with a blood sample. A needle is used to draw blood from a vein in your arm or hand.

Does this test pose any risks?

Having a blood test with a needle carries some risks. These include bleeding, infection, bruising, and feeling lightheaded. When the needle pricks your arm or hand, you may feel a slight sting or pain. Afterward, the site may be sore.

What might affect my test results?

Sleeping, certain foods and beverages, exercising can all affect your results.

How do I get ready for this test?

You will need to avoid eating or drinking anything but water the night before and the morning of the test. Be sure your healthcare provider knows about all medicines, herbs, vitamins, and supplements you are taking. This includes medicines that don't need a prescription and any illicit drugs you may use.

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