

Know who is at risk, and test for CGD

Chronic granulomatous disease (CGD) can cause serious, life-threatening infections. That's why understanding who's at risk and getting tested for CGD is so important. If the test shows that you or your child has CGD, your doctor can prescribe medications to help reduce the risk of serious, and potentially life-threatening, infections.

Read below to understand how X-linked CGD is passed down.



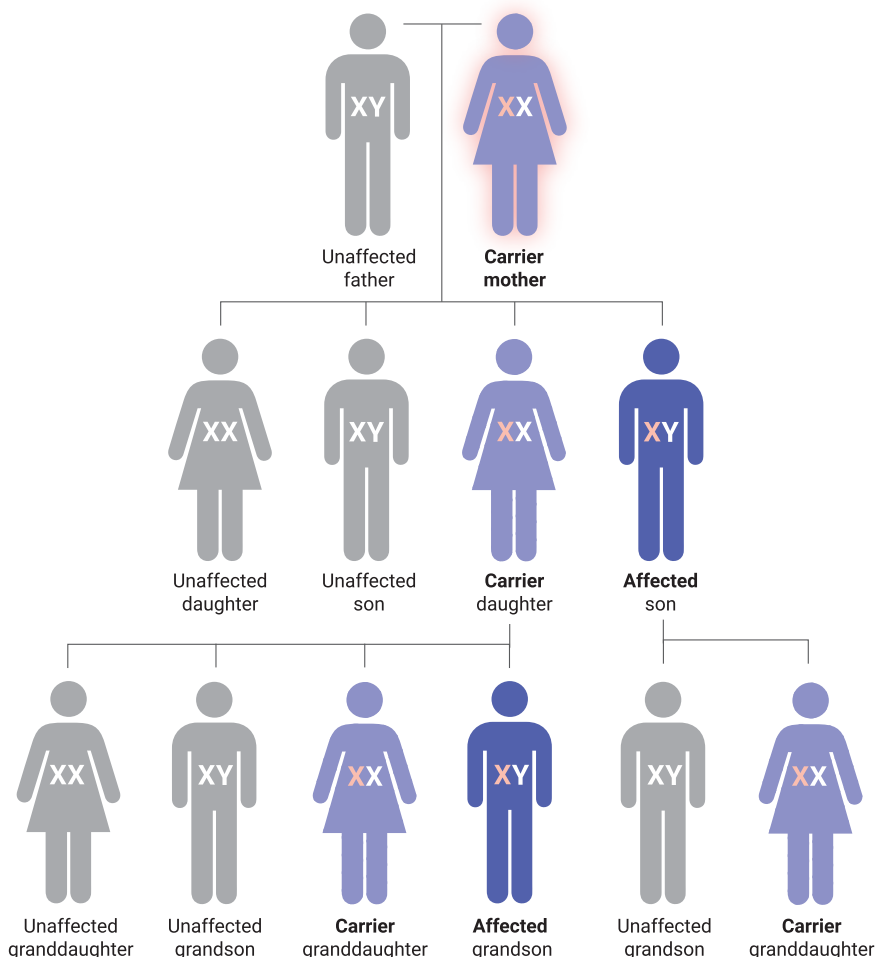
How CGD may impact your immediate family

X-linked CGD is a genetic condition, which means you're born with it. It's passed down to a child from their mother who is a "carrier."

A female carrier doesn't have the disease but may experience some symptoms of CGD, like skin sensitivity, sores inside the mouth, or lupus-like symptoms. Lupus-like symptoms may include photosensitivity (sensitivity to the sun), skin rashes, mouth ulcers (sores in the mouth), and unexplained joint pain. A female carrier's children can inherit CGD and pass it on.

A father who has CGD can also pass on the condition to his daughters, who will then be carriers.

X = X chromosome with mutation
X = normal X chromosome
Y = normal Y chromosome



What about your grandchildren?

IF YOUR DAUGHTER IS A CARRIER:

Her sons will have a:

- 50% chance of having CGD
- 50% chance of not having CGD

Her daughters will have a:

- 50% chance of being a CGD carrier
- 50% chance of not having CGD

IF YOUR SON HAS CGD:

- All of his sons will be **unaffected**
- All of his daughters will be **carriers**

What is ACTIMMUNE® (Interferon gamma-1b) used for?

ACTIMMUNE® is part of a drug regimen used to treat Chronic Granulomatous Disease, or CGD. CGD is a genetic disorder, usually diagnosed in childhood, that affects some cells of the immune system and the body's ability to fight infections effectively. CGD is often treated (though not cured) with antibiotics, antifungals, and ACTIMMUNE.

How X-linked CGD may impact your extended family

If you inherited the CGD gene from one of your parents, other family members may be affected.

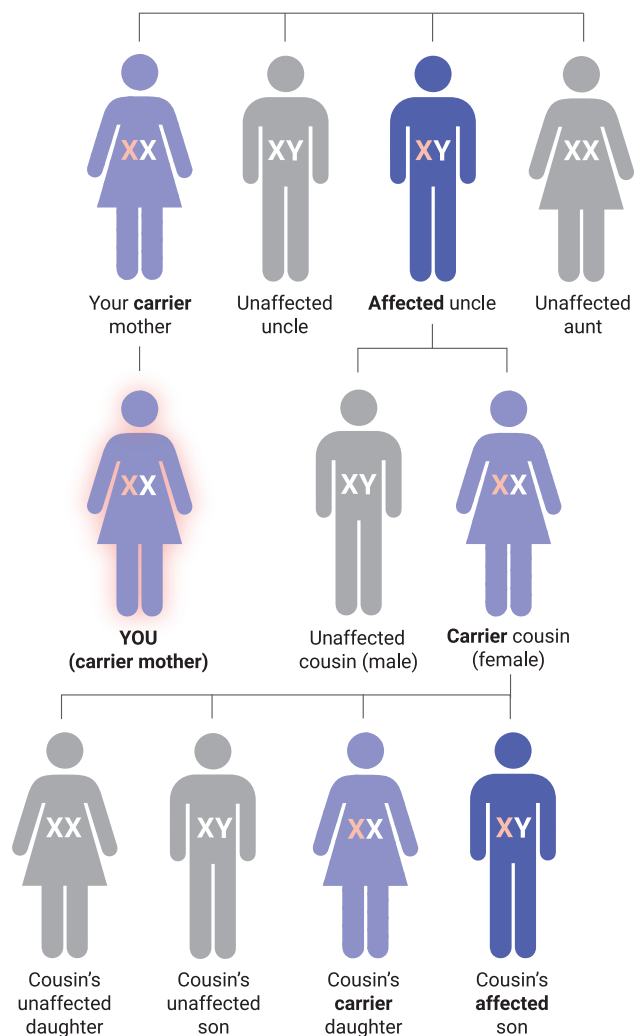


What about your relatives on your mother's side of the family?

If you are a carrier of CGD, it means you likely received the carrier gene from your mother.

Here's who may need to be tested in your extended family if you are a carrier:

- Your mother
- Your mother's brothers and sisters (your maternal aunts and uncles)
- Your cousins on your mother's side of the family
- Your cousins' children on your mother's side of the family

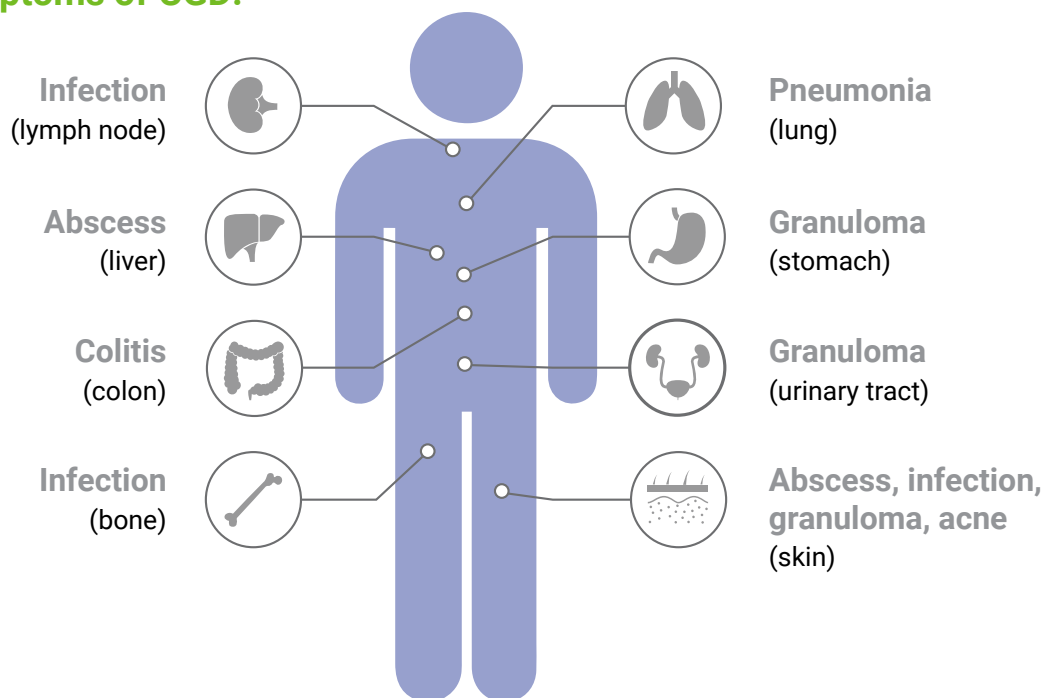


If you think that you or someone in your family may need to be tested for CGD, **Speak with your doctor** about taking the dihydrorhodamine (DHR) test for CGD.

Someone in my family has been diagnosed with chronic granulomatous disease (CGD)

CGD is a rare genetic disorder that affects the immune system and can cause serious, life-threatening infections. About 20 children in the United States are born with CGD every year, and 85% of them are boys. Because people with CGD have trouble fighting off infections from certain bacteria and fungi, they are at a higher risk for getting serious, unusual, and repeat infections.

I or someone in my family has experienced several of the following common signs and symptoms of CGD:



For information about testing for CGD using the dihydrorhodamine (DHR) test and treatment options, doctors can visit ACTIMMUNEhcp.com.

SELECT IMPORTANT SAFETY INFORMATION

What warnings should I know about ACTIMMUNE?

At high doses, ACTIMMUNE can cause (flu-like) symptoms, which may worsen some pre-existing heart conditions. ACTIMMUNE may cause decreased mental status, walking disturbances, and dizziness, particularly at very high doses. These symptoms are usually reversible within a few days upon dose reduction or discontinuation of therapy.

IMPORTANT SAFETY INFORMATION

What is ACTIMMUNE® (Interferon gamma-1b) used for?

ACTIMMUNE® is part of a drug regimen used to treat Chronic Granulomatous Disease, or CGD. CGD is a genetic disorder, usually diagnosed in childhood, that affects some cells of the immune system and the body's ability to fight infections effectively. CGD is often treated (though not cured) with antibiotics, antifungals, and ACTIMMUNE.

ACTIMMUNE is also used to slow the worsening of severe, malignant osteopetrosis (SMO). SMO is a genetic disorder that affects normal bone formation and is usually diagnosed in the first few months after birth.

When should I not take ACTIMMUNE?

Don't use ACTIMMUNE if you are allergic to interferon-gamma, *E coli*-derived products, or any ingredients contained in the product.

What warnings should I know about ACTIMMUNE?

At high doses, ACTIMMUNE can cause (flu-like) symptoms, which may worsen some pre-existing heart conditions.

ACTIMMUNE may cause decreased mental status, walking disturbances, and dizziness, particularly at very high doses. These symptoms are usually reversible within a few days upon dose reduction or discontinuation of therapy.

Bone marrow function may be suppressed with ACTIMMUNE, and decreased production of cells important to the body may occur. This effect, which can be severe, is usually reversible when the drug is discontinued or the dose is reduced.

Taking ACTIMMUNE may cause reversible changes to your liver function, particularly in patients less than 1 year old. Your doctor should monitor your liver function every 3 months, and monthly in children under 1 year.

In rare cases, ACTIMMUNE can cause severe allergic reactions and/or rash. If you experience a serious reaction to ACTIMMUNE, discontinue it immediately and contact your doctor or seek medical help.

What should I tell my healthcare provider?

Be sure to tell your doctor about all the medications you are taking.

Tell your doctor if you:

- are pregnant or plan to become pregnant or plan to nurse
- have a cardiac condition such as irregular heartbeat, heart failure, or decreased blood flow to your heart
- have a history of seizures or other neurologic disorders
- have, or have had, reduced bone marrow function. Your doctor will monitor these cells with blood tests at the beginning of therapy and at 3-month intervals on ACTIMMUNE therapy

What are the side effects of ACTIMMUNE?

The most common side effects with ACTIMMUNE are "flu-like" symptoms such as fever, headache, chills, muscle pain, or fatigue, which may decrease in severity as treatment continues. Bedtime administration of ACTIMMUNE may help reduce some of these symptoms. Acetaminophen may be helpful in preventing fever and headache.

What other medications might interact with ACTIMMUNE?

Some drugs may interact with ACTIMMUNE to potentially increase the risk of damage to your heart or nervous system, such as certain chemotherapy drugs. Tell your doctor about all other medications you are taking.

Avoid taking ACTIMMUNE at the same time as a vaccination.

You are encouraged to report negative side effects of prescription drugs to the FDA. Visit www.fda.gov/medwatch, or call 1-800-FDA-1088.

The risk information provided here is not comprehensive. To learn more, talk about ACTIMMUNE with your healthcare provider or pharmacist. The FDA-approved product labeling can be found at <http://www.ACTIMMUNE.com> or 1-866-479-6742.

Please see the ACTIMMUNE® Full Prescribing Information and Information for the Patient/Caregiver at [ACTIMMUNE.com](http://www.ACTIMMUNE.com).

ACTIMMUNE®
(Interferon gamma-1b)



ACTIMMUNE and the HORIZON logo are trademarks owned by or licensed to Horizon.
© 2019 Horizon Therapeutics plc P-ACT-00751 09/19