

Deployment Health and Family Readiness Library



G6PD Deficiency

For Service members

Important Facts

- Glucose-6-Phosphate Dehydrogenase (G6PD) is an important protein (enzyme) found in our blood. It helps the blood cells process sugars to produce energy.
- G6PD deficiency is a condition that is inherited causing low levels of G6PD in a person's blood. There are about 400 million people worldwide (about 1 in 16) who have this deficiency. G6PD deficiency primarily affects males and is most common in people of African, Asian, or Mediterranean descent. Up to 14% of black males are affected by this condition.
- Individuals with G6PD deficiency can experience harmful health effects if exposed to certain foods, chemicals, or drugs.
- The U.S. Military Services test their members for G6PD deficiency to protect them from the potentially harmful health effects of certain medications, including some prescribed during deployments. Certain drugs, such as some of those to prevent or treat malaria (primaquine) and other infections (sulfa) can cause illness in people with this deficiency.

What is Glucose-6-phosphate dehydrogenase (G6PD)?

Glucose-6-phosphate dehydrogenase (G6PD) is an important protein (enzyme) that helps blood cells use sugars to produce energy. Normal amounts of G6PD protect red blood cells from certain drugs or chemicals.

What is G6PD Deficiency?

G6PD deficiency is an abnormally low level of the G6PD protein in the blood cells. Some people refer to this condition as "favism," because eating fava beans can trigger symptoms in a person with G6PD deficiency. In people with this deficiency, exposure to certain drugs, foods, and chemicals can result in damage or destruction of red blood cells. Destruction of red blood cells can cause serious illness. This condition is usually inherited, primarily affects males, and is more common in people of African, Asian, or Mediterranean descent.

Are all military personnel tested for G6PD?

Yes. The U.S. Navy, Marines, and Air Force screens and documents results for all active duty and Reserve Component members for G6PD deficiency when they join the Service.

The U.S. Army screens service members and documents results before they deploy to areas of the world where malaria is present. All deploying Army personnel with G6PD deficiency are issued alert tags stating, "G6PD deficient: no primaquine," that need to be carried at all times.

What are the symptoms of G6PD deficiency?

Most forms of G6PD deficiency are mild and do not cause symptoms. Symptoms may occur in a G6PD deficient person who has been ill, inhaled mothball vapors, eaten fava beans, or taken certain medications such as sulfa antibiotics or drugs used to treat malaria. Persons with a more severe type of G6PD deficiency, which is common in persons of Mediterranean descent, may develop symptoms without exposure.

Symptoms result from anemia caused by the destruction of red blood cells as a result of exposure. An affected person may feel very tired, short of breath, or suffer a number of other symptoms such as a yellowing of the skin called jaundice. If you have G6PD deficiency and experience these symptoms, consult a health care provider as soon as possible.

Health Effects that May Occur with G6PD Deficiency and Exposure to Certain Drugs
<ul style="list-style-type: none">• Extreme fatigue or tiredness• Shortness of breath or rapid breathing• Rapid heartbeat• Dizziness• Headache• Back or stomach pain• Yellowing of skin and eyes• Very dark colored urine• Enlarged spleen



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A collaborative effort between the Air Force Institute for Operational Health, the Deployment Health Clinical Center, Force Health Protection and Readiness, the Navy Environmental Health Center, the U.S. Army Center for Health Promotion and Preventive Medicine, and the OUSD(P&R)/Military Family and Community Policy

How long do symptoms last?

Symptoms caused by exposure to medication, food, drugs, or chemicals can last until exposure is stopped. People with very low levels of G6PD may experience a more serious reaction. Illnesses or pre-existing medical conditions, such as diabetes, can contribute to more severe symptoms that can be life threatening.

How do I know if I have G6PD deficiency?

A blood test can easily identify if you have G6PD deficiency. If you have close relatives who are G6PD deficient, you should discuss testing with your health care provider if you haven't been tested.

What must I do if I have G6PD Deficiency?

If you are found to have G6PD deficiency, avoid exposure to those substances that trigger reactions. The drugs or chemicals that most often trigger reactions include sulfa drugs, including the antibiotics *Bactrim* and *Septra*, certain diuretics ("water pills"), and drugs for the prevention or treatment of malaria, especially primaquine. If you are deficient, it is important that you talk with your health care provider BEFORE taking any medications, including those not requiring prescriptions. Some drugs used to prevent or treat malaria can be dangerous if given to a person with G6PD deficiency, although some of these may be safe when used in the right doses.

What should I do if I have a reaction?

If you have G6PD deficiency and experience a reaction, you should seek medical attention. Prompt treatment will help control symptoms and reduce serious outcomes, including the possibility of death.

If I have G6PD deficiency, can I pass it to my children?

Yes, you may have the potential to pass the condition on to your children. However, this potential depends upon whether you are male or female. In some cases, your children may inherit the

deficiency and in other cases they will not inherit it. For a more complete answer to your questions, you should ask your doctor.

Examples of Drugs that Should be Avoided by Those with G6PD Deficiency

- Some drugs used to treat malaria such as *Primaquine*
- Sulfa drugs including *Bactrim* and *Septra*
- *Thiazide diuretics* ("water pills")
- Aspirin (acetylsalicylic acid)

Ways to Prevent Drug Reactions If you have G6PD Deficiency

- Discuss prescription and non-prescription medication with your health care provider before taking it
- Know the results of your screening test
- Advise your health care providers of your condition
- Avoid medicines, food, and chemicals that trigger red blood cell destruction

Where Do I Get More Information?

DoD Deployment Health Clinical Center (DHCC)

Phone: (866) 559-1627

<http://www.pdhealth.mil/>

U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM)

Phone: (800) 222-9698

<http://chppm-www.apgea.army.mil>

Air Force Institute for Operational Health (AFIOH)

Phone: (888) 232-3764

<http://www.brooks.af.mil/afioh/>

DoD Force Health Protection & Readiness (FHP & R)

Phone: (800) 497-6261

<http://fhp.osd.mil>

Navy Environmental Health Center (NEHC)

Phone: (757) 953-0700

<http://www-nehc.med.navy.mil>

U.S. National Library of Medicine – Guide for Understanding Genetic Conditions

<http://ghr.nlm.nih.gov/condition=glucose6phosphatedehydrogenasedeficiency>



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