

Creatine Kinase with Isoenzymes (Blood)



Does this test have other names?

Creatine kinase, creatine phosphokinase with isoenzymes, CK, CPK, CK-MM, CK-MB, CK-BB

What is this test?

This test is used to find damage to muscles in your body, including your heart muscle.

Creatine kinase (CK) is an enzyme found in your muscles. Enzymes are proteins that help your body's cells do their jobs. The level of the CK enzymes rises when you have damage to muscle cells in your body.

The 3 types of CK are called isoenzymes. They are:

- CK-MM, found in your skeletal muscle and heart
- CK-MB, found in the heart and rises when heart muscle is damaged
- CK-BB, found mostly in your brain. It's also found in smooth muscles such as the intestine or uterus.

A general CK test can tell whether there is damage to your body's muscles. Going a step further, the CK with isoenzymes test may help pinpoint where the damage has taken place.

Why do I need this test?

You may need this test if you have:

- Symptoms of a heart attack, such as chest tightness or pain
- Muscle weakness, pain, or inflammation

Your healthcare provider may also order this test if you have been diagnosed with a muscular disorder and they want to see how your body responds to treatment.

What other tests might I have along with this test?

If your healthcare provider suspects a heart attack, you may also have:

- Troponin blood test. It's like a CK-MB test but more sensitive and specific.
- Electrocardiogram (ECG), to measure the electrical activity of your heart

Several other muscle enzymes may be tested along with CK. Comparing CK test results with the results of these other muscle enzyme tests can help your healthcare provider better diagnose and treat you. The other muscle enzymes that may be tested are:

- Aldolase, found mostly in skeletal muscle, liver, and brain
- Lactate dehydrogenase, found throughout the body
- Aminotransferases, found throughout the body but often used to detect liver disorders

What do my test results mean?

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

The results for this test include both a general CK measurement and a percentage for each of the 3 isoenzymes. A high CK level could be a sign of muscle damage in your heart or elsewhere. Normal CK levels vary by age and gender. Race can also affect results.

Higher levels of the three isoenzymes mean different things:

- CK-MM generally rises if you have muscle damage in your heart, brain, or skeleton after a crush injury, seizures, muscular dystrophy, muscle inflammation, or another skeletal muscle disorder.
- CK-MB generally rises after a heart attack, inflammation of the heart muscle, heart injury, heart surgery, muscular dystrophy, and other problems related to the heart.
- CK-BB tends to rise if you have a brain injury, meningitis, abnormal cell growth, severe shock, stroke, hypothermia, or restricted blood flow to the bowel.

The normal levels for the 3 isoenzymes of creatine kinase are:

- CK-MM: 100%
- CK-MB: 0%
- CK-BB: 0%

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 or a dizzy feeling. When the needle pricks your arm or hand, you may feel a slight stinging or pain. Afterward, the site may be slightly sore.

What might affect my test results?

Intense physical exercise, such as running a marathon, within a day or two of the test can lead to higher CK-MB levels.

Skeletal muscle damage, especially blunt trauma to the muscles, and cocaine abuse can also increase your levels of CK-MB. CK-MB is found mostly in the heart.

Drinking too much alcohol can also raise your CK levels. In some cases, people with low thyroid hormone levels, kidney failure, or alcohol abuse may also have higher CK-MB levels.

Certain medicines and supplements can also increase levels.

How do I get ready for this test?

You don't need to prepare for this 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 illegal drugs you may use.

© 2000-2027 The StayWell Company, LLC. All rights reserved. This information is not intended as a substitute for professional medical care. Always follow your healthcare professional's instructions.
This information is not intended as a substitute for professional medical care. Always follow your Healthcare professional's instructions. Copyright Krames LLC.