Total Carbon Dioxide (Blood)

Does this test have other names?

Carbon dioxide content, CO2 content, carbon dioxide blood test, bicarbonate blood test, bicarbonate test

What is this test?

This test measures how much carbon dioxide is in the blood in your veins.

When you burn food for energy, your body makes carbon dioxide as a waste product in the form of a gas. Your blood carries this gas to your lungs. You exhale carbon dioxide and breathe in oxygen thousands of times a day. Carbon dioxide in your blood usually causes no problems. But if you have too much or too little of it, you may have a disease or a health emergency.

Most of the carbon dioxide in your body is in the form of bicarbonate. Bicarbonate is used to keep the pH of your blood (acids and bases) in balance.

The test measures all types of carbon dioxide in your blood: bicarbonate, carbonic acid, and dissolved CO2. Because of this, it gives only an estimate of the amount of bicarbonate.

Why do I need this test?

You may need this test if you are having trouble breathing, especially if you feel confused and disoriented.

You may also need this test if your healthcare provider thinks you have a lung, liver, or digestive disease. This is because your body uses carbon dioxide to keep a healthy balance of acid-base (pH) and electrolytes. These diseases are linked to changes in levels of bicarbonate in the blood.

You may also have this test if your provider wants to check the progress of a disease linked to blood bicarbonate levels. This may be Cushing disease or kidney disease. You may also have this test to look at any side effects of medicines like metformin that may cause acidosis.

What other tests might I have along with this test?

Your healthcare provider may also order an electrolyte panel. This measures your sodium, potassium, and chloride levels.

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.

Results are given in milliequivalents per liter (mEq/L). Normal values in adults are 23 to 30 mEq/L.

Higher levels of carbon dioxide may mean you have:

- Metabolic alkalosis, or too much bicarbonate in your blood
- Cushing disease
- Hyperaldosteronism, an adrenal gland problem
- Kidney failure

Lower levels of carbon dioxide may mean you have:

- Metabolic acidosis, or your blood is too acidic
- Addison disease, an adrenal gland problem
- Ketoacidosis (this is a complication of type 1 and type 2 diabetes)
- Lactic acidosis

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.

There is another completely different test in which carbon dioxide is measured in blood from an artery. This test is called an arterial blood gas (ABG).

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?

Certain medicines can affect your results.

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.