

# Comprehensive Metabolic Panel



## Does this test have other names?

Metabolic panel, CMP, chem 14, chemistry panel, chemistry screen, (formerly SMAC, sequential multiple analyzer chemistry)

## What is this test?

This test is a screening panel of 14 tests that look at your metabolism.

Your body gets energy from food through a process called metabolism. The tests in this panel help see how well your liver and kidneys are working. These are 2 major organs involved in metabolism.

These tests also measure your electrolyte and acid-base balance, your blood sugar, and your blood proteins. Electrolytes are mineral salts that are involved in many cellular processes, including maintaining your body's fluid and acidity (pH) levels.

Most labs do the same 14 tests. But these may be changed depending on what your healthcare provider is looking for. They may also vary slightly between labs. The 14 tests that are included in most CMPs are:

- Albumin, a liver protein
- Alkaline phosphatase
- Alanine aminotransferase
- Aspartate aminotransferase
- Blood urea nitrogen
- Calcium
- Carbon dioxide, an electrolyte
- Chloride, an electrolyte
- Creatinine
- Glucose
- Potassium, an electrolyte
- Sodium, an electrolyte
- Total bilirubin
- Total protein

## Why do I need this test?

You may need this test as part of a routine physical. You may also have this test done to check for kidney and liver diseases. It can also check on many other problems, including diabetes.

If you take medicines for high blood pressure, you may have this test to see how your kidneys and liver are working. You may also have this test if you take other medicines that can affect your kidneys or liver.

## What other tests might I have along with this test?

Your healthcare provider may also order other tests to look at how well your liver and kidneys are working. These tests may include:

- Prealbumin
- Gamma-glutamyl transpeptidase
- Urine tests

Your healthcare provider may also order other blood tests to check for iron deficiency, anemia, and other disorders:

- Complete blood count
- Serum iron level
- Ferritin
- Transferrin
- Hemoglobin

## 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 findings may be different depending on the laboratory used. Commonly used ranges for the 14 tests are:

- Albumin: 3.5 to 5.5 grams per deciliter (g/dL)
- ALP: 30 to 120 international units/liter (IU/L)
- ALT: 10 to 40 IU/L
- AST: 10 to 40 IU/L
- BUN: 8 to 20 milligrams/per deciliter (mg/dL)
- Calcium: 8.6 to 10.2 mg/dL
- Carbon dioxide: 23 to 30 millimoles per liter (mmol/L)
- Chloride: 98 to 106 mmol/L
- Creatinine: 0.5 to 1.1 mg/dL (females), 0.7 to 1.3 mg/dL (males)
- Glucose test: 70 to 99 mg/dL
- Potassium test: 3.5 to 5.0 milliequivalents per liter (mEq/L)
- Sodium: 136 to 145 mEq/L
- Total bilirubin: 0.3 to 1.0 mg/dL
- Total protein: 5.5 to 9.0 g/dL

If your results are abnormal or you have a combination of abnormal levels, it may mean you have a health problem, such as diabetes, liver disease, or kidney disease. You may need more tests to confirm or rule out specific conditions.

## **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?**

Eating or exercising before the test can affect your results. Taking certain medicines can also affect your results. These include diuretics, steroids, insulin, and hormones.

If you are pregnant or dehydrated, your results may be affected.

## **How do I get ready for this test?**

You may need to not eat or drink (fast) for a certain time before the test. Don't exercise before the test. Tell your healthcare provider 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.

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