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A-Z Health Guide from WebMD: Medical Tests

Chemistry Screen

Test Overview

A chemistry screen is a blood test that measures the levels of several substances (such as electrolytes). A chemistry screen provides information about your general state of health and helps your health professional detect certain abnormalities or determine whether treatment for a specific problem is effective.

There are several variations of a chemistry screen test. The most complete form of a chemistry screen (called a chem-20, SMA-20, or SMAC-20) measures 20 substances in the blood. Other types of chemistry screens (such as an SMA-6, SMA-7, or SMA-12) measure fewer substances. The type of chemistry screen you have done depends on which substances your health professional wants to evaluate.

For more information, see the specific medical tests:

- Potassium (K) in Blood
- Sodium (NA) in Blood
- Chloride (CL)
- Calcium (Ca) in Blood
- Phosphate in Blood
- Carbon Dioxide
- Creatinine and Creatinine Clearance
- Blood Glucose
- Blood Urea Nitrogen
- Bilirubin
- Total Serum Protein
- Alkaline Phosphatase
- Alanine Aminotransferase (ALT)
- Aspartate Aminotransferase (AST)
- Lactic Acid
- Cholesterol and Triglycerides Tests
- Uric Acid in Blood

Why It Is Done

A chemistry screen may be done:

- As part of a routine physical examination. A chemistry screen can provide valuable information about the general state of your health. Your health professional can use information obtained from a chemistry screen to recommend dietary or lifestyle changes.
- To detect abnormalities, such as low or high levels of substances, that may be causing specific symptoms.
- To evaluate a specific health condition and monitor the effectiveness of its treatment.
- In preparation for surgery.

How To Prepare

Generally, no special preparation is required before having a chemistry screen.

If a fasting blood sugar test is being done as part of the chemistry screen, do not eat or drink anything other than water for 12 to 14 hours before the blood sample is taken. No special preparation is required before having a random blood sugar test.

Talk to your health professional about any concerns you have regarding the need for the test, its risks, how it will be done, or what the results will indicate. To help you understand the importance of this test, fill out the medical test information form (What is a PDF document?).

How It Is Done

The health professional drawing blood will:

- Wrap an elastic band around your upper arm to stop the flow of blood. This makes the veins below the band larger so it is easier to put a needle into the vein.
- Clean the needle site with alcohol.
- Put the needle into the vein. More than one needle stick may be needed.
- Attach a tube to the needle to fill it with blood.
- Remove the band from your arm when enough blood is collected.
- Apply a gauze pad or cotton ball over the needle site as the needle is removed.
- Apply pressure to the site and then a bandage.

How It Feels

You may feel nothing at all from the needle puncture, or you may feel a brief sting or pinch as the needle goes through the skin. Some people feel a stinging pain while the needle is in the vein. However, many people do not feel any pain (or have only minor discomfort) once the needle is positioned in the vein. The amount of pain you feel depends on the skill of the health professional drawing the blood, the condition of your veins, and your sensitivity to pain.

Risks

Blood test

There is very little risk of complications from having blood drawn from a vein.

- You may develop a small bruise at the puncture site. You can reduce the risk of bruising by keeping pressure on the site for several minutes after the needle is withdrawn.
- Rarely, the vein may become inflamed after the blood sample is taken. This condition is called phlebitis and is usually treated with a warm compress applied several times daily.
- Continued bleeding can be a problem for people with bleeding disorders. Aspirin, warfarin (Coumadin), and other blood-thinning medications can also make bleeding more likely. If you have bleeding or clotting problems, or if you take blood-thinning medication, tell your health professional before your blood is drawn.

Results

A chemistry screen is a blood test that measures the levels of several substances (such as electrolytes). Normal values vary from lab to lab and depend on which tests were included in your chemistry screen. For more information about normal and abnormal values, see the specific medical tests:

- Potassium (K)

- Sodium (NA)
- Chloride (CL)
- Calcium (Ca) in Blood
- Phosphate in Blood
- Carbon Dioxide
- Creatinine and Creatinine Clearance
- Blood Glucose
- Blood Urea Nitrogen
- Bilirubin
- Total Serum Protein
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- Lactic Acid
- Cholesterol and Triglycerides Tests
- Uric Acid in Blood

What Affects the Test

Factors that can interfere with your test and the accuracy of the results include:

- Medications. Some medications affect the normal values of a chemistry screen.
- Diet.
- Recent intravenous (IV) fluids, such as fluids given during surgery.
- Vomiting.
- Diarrhea.
- Dehydration.

What To Think About

There are several variations of a chemistry screen test. For example, an SMA-7 measures 7 substances, including uric acid, potassium, and sodium. By contrast, a complete chemistry screen measures the same substances in an SMA-7 plus 13 others (such as phosphorus, carbon dioxide, and bilirubin). Which chemistry screen is done is based on what medical condition your health professional is evaluating.

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