

Osmolality (Blood)



Does this test have other names?

Serum osmolality, osmolality serum, plasma osmolality

What is this test?

This test measures the concentration of dissolved particles (osmolality) in your blood.

This test can help diagnose a fluid or electrolyte imbalance, including dehydration. Electrolytes are mineral salts that help move nutrients into your cells and waste products out of your cells.

Electrolytes also control your acidity and pH levels. The more diluted your blood and urine are, the lower the concentration of particles. When there is less water in your blood, the concentration of particles is greater. Osmolality increases when you are dehydrated and decreases when you have too much fluid in your blood.

Your body has a unique way to control osmolality. When osmolality increases, it triggers your body to make antidiuretic hormone (ADH). It's also called arginine vasopressin (AVP). This hormone tells your kidneys to keep more water inside your blood vessels and your urine becomes more concentrated. When osmolality decreases, your body doesn't make as much ADH. Your blood and urine become more diluted.

Why do I need this test?

You may need this test if you have seizures or problems with ADH. You may also have this test if you are dehydrated or if your healthcare provider thinks you might have diabetes insipidus (DI). Diabetes insipidus happens when your body makes less ADH. DI can also happen if your kidneys are not responding to ADH, even though you are making enough of it. Symptoms of DI include:

- Frequent need to urinate day and night
- Very diluted urine
- Dizziness when standing
- Extreme thirst
- Low blood pressure, which can lead to shock and organ failure

You might also have this test if you have symptoms of hyponatremia. This is a condition in which your body retains fluid because it doesn't have enough sodium, an electrolyte. Symptoms of hyponatremia include:

- Nausea and vomiting
- Headache
- Mental confusion
- Fatigue
- Restlessness
- Irritability
- Muscle weakness
- Spasms or cramps

- Seizures or passing out

You may also have this test if you are in a coma. When osmolality increases, it can cause fatal grand mal seizures.

What other tests might I have along with this test?

You may also need a urine osmolality test. The results of both urine osmolality and blood osmolality tests help your healthcare provider figure out the cause of osmolality problems.

You may also need these tests:

- **Antidiuretic hormone test.** This measures the amount of ADH in your blood.
- **Antidiuretic hormone suppression test.** This looks for problems with ADH.

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 milliosmoles per kilogram (mOsm/kg). Normal results are:

- 275 to 295 mOsm/kg for adults and older adults

If your levels are higher than normal, it may mean you have 1 of these conditions:

- Dehydration
- Hypernatremia
- Hyperglycemia
- Diabetes insipidus
- Kidney problems

A level that's beyond normal range may also be caused by blood loss. This may be due to injury or prolonged vomiting or diarrhea.

If your levels are lower than normal, it may mean that you have 1 of these conditions:

- Overhydration
- Too much antidiuretic hormone
- Hyponatremia
- Underactive thyroid gland
- Too much water or fluid intake

How is this test done?

The test is done with a blood sample, which is drawn through a needle from a vein in your arm.

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 a poor diet or drinking too much water can affect your results. Intense exercise and being under stress can also affect your results. Certain medicines and the illegal drug MDMA can also affect your results.

How do I get ready for this test?

Talk with your healthcare provider about any directions you need to follow before the 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. Also tell your provider if you have been drinking a lot of water.

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