



Blood Urea Nitrogen

Topic Contents

Test Overview

A blood urea nitrogen (BUN) test measures the amount of nitrogen in your blood that comes from the waste product [urea](#). Urea is made when protein is broken down in your body. Urea is made in the [liver](#) and passed out of your body in the urine.

A BUN test is done to see how well your [kidneys](#) are working. If your kidneys are not able to remove urea from the blood normally, your BUN level rises. [Heart failure](#), [dehydration](#), or a diet high in protein can also make your BUN level higher. Liver disease or damage can lower your BUN level. A low BUN level can occur normally in the second or third [trimester](#) of pregnancy.

Blood urea nitrogen to creatinine ratio (BUN:creatinine)

A BUN test may be done with a blood [creatinine](#) test. The level of creatinine in your blood also tells how well your kidneys are working; a high creatinine level may mean your kidneys are not working properly. Blood urea nitrogen (BUN) and creatinine tests can be used together to find the BUN-to-creatinine ratio (BUN:creatinine). A BUN-to-creatinine ratio can help your doctor check for problems, such as dehydration, that may cause abnormal BUN and creatinine levels.

Why It Is Done

A [blood urea nitrogen \(BUN\)](#) test is done to:

- See if your kidneys are working normally.
- See if your kidney disease is getting worse.
- See if treatment of your kidney disease is working.
- See if severe dehydration is present. Dehydration generally causes BUN levels to rise more than creatinine levels. This causes a high BUN-to-creatinine ratio. Kidney disease or blockage of the flow of urine from your kidney causes both BUN and creatinine levels to go up.

How To Prepare

Do not eat meat or other protein before having a blood urea nitrogen (BUN) test.

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.

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- Attach a tube to the needle to fill it with blood.
- Remove the band from your arm when enough blood is collected.
- Put a gauze pad or cotton ball over the needle site as the needle is removed.
- Put pressure to the site and then a bandage.

How It Feels

The blood sample is taken from a vein in your arm. An elastic band is wrapped around your upper arm. It may feel tight. You may feel nothing at all from the needle, or you may feel a quick sting or pinch.

Risks

There is very little chance of a problem from having blood sample taken from a vein.

- You may get a small bruise at the site. You can lower the chance of bruising by keeping pressure on the site for several minutes.
- In rare cases, the vein may become swollen after the blood sample is taken. This problem is called phlebitis. A warm compress can be used several times a day to treat this.
- Ongoing bleeding can be a problem for people with bleeding disorders. Aspirin, warfarin (Coumadin), and other blood-thinning medicines can make bleeding more likely. If you have bleeding or clotting problems, or if you take blood-thinning medicine, tell your doctor before your blood sample is taken.

Results

A blood urea nitrogen (BUN) test measures the amount of nitrogen in your blood that comes from the waste product [urea](#).

Normal

Normal values may vary from lab to lab.

Blood urea nitrogen (BUN)

Normal:	10–20 milligrams per deciliter (mg/dL) or 3.6–7.1 millimoles per liter (mmol/L)
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BUN-to-creatinine ratio

Over 12 months of age:	10:1–20:1
Babies less than 12 months of age:	Up to 30:1

High values

- A high BUN value can mean kidney injury or disease is present. Kidney damage can be caused by [diabetes](#) or [high blood pressure](#) that directly affect the kidneys. High BUN levels can also be caused by blockage of the urinary tract (by a [kidney stone](#) or tumor) or low blood flow to the kidneys caused by [dehydration](#) or [heart failure](#).
- Many medicines may cause a high BUN. Be sure to tell your doctor about all the nonprescription and prescription medicines you take.
- A high BUN value may be caused by a high-protein diet,

[Addison's disease](#), tissue damage (such as from severe burns), or from bleeding in the gastrointestinal tract.

- High BUN-to-creatinine ratios occur with sudden (acute) kidney failure, which may be caused by [shock](#) or severe dehydration. A blockage in the urinary tract (such as a kidney stone) can cause a high BUN-to-creatinine ratio. A very high BUN-to-creatinine ratio may be caused by bleeding in the [digestive tract](#) or [respiratory tract](#).

Low values

- A low BUN value may be caused by a diet very low in protein, malnutrition, or severe liver damage.
- Drinking excessive amounts of liquid may cause overhydration and cause a low BUN value.
- Women and children may have lower BUN levels than men because of how their bodies break down protein.
- A low BUN-to-creatinine ratio may be caused by a diet low in protein, a severe muscle injury called [rhabdomyolysis](#), pregnancy, [cirrhosis](#), or syndrome of inappropriate antidiuretic hormone secretion (SIADH). SIADH sometimes occurs with lung disease, cancer, diseases of the central nervous system, and the use of certain medicines.

What Affects the Test

Reasons you may not be able to have the test or why the results may not be helpful include:

- Taking medicines, such as amphotericin B (such as Fungizone), nafcillin, aminoglycosides (such as Garamycin), kanamycin (Kantrex), and tobramycin (Nebcin), [corticosteroids](#), tetracycline antibiotics, and rarely, the antibiotic chloramphenicol (Chloromycetin).
- Taking [diuretics](#), which can cause dehydration.
- Your age. BUN levels rise as you get older.
- Your sex. Women and children have lower BUN levels than men.

What To Think About

- A BUN test may be done with a blood [creatinine](#) test. Blood urea nitrogen (BUN) and creatinine tests can be used together to find the BUN-to-creatinine ratio (BUN:creatinine). For more information, see the medical test [Creatinine and Creatinine Clearance](#).
- BUN levels may be measured regularly in people who have [kidney dialysis](#). BUN levels are used to see how well dialysis is working.
- A [glomerular filtration rate](#) may be done for people with chronic kidney disease to regularly check how well the kidneys are working.
- Diabetes experts recommend that blood creatinine levels be done every year for people with diabetes. The creatinine level is used to find the glomerular filtration rate, which shows how well the kidneys are working.

References

Other Works Consulted

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