

BUN and Creatinine Levels

- Taken together, the blood urea nitrogen (BUN) and creatinine levels can provide useful information about kidney function.
- The BUN and creatinine levels can be affected by many things, including certain medications and various illnesses.
- If your pet's BUN or creatinine level is abnormal, additional tests may be recommended to determine the cause.

What Are BUN and Creatinine?

BUN stands for *blood urea nitrogen*. The BUN is a measurement that represents the level of urea in the blood. Urea is considered one of the body's waste products. It is produced when the liver participates in protein metabolism, and it is usually eliminated from the body by the kidneys. Therefore, both the liver and kidneys must be functioning properly for the body to maintain a normal level of urea in the blood.

Creatinine is a substance that the body produces during normal metabolism. The body eliminates creatinine almost exclusively through the kidneys' filtration process, so measurement of creatinine is an accurate estimation of how well the kidney filtration processes are working. Anything that alters the ability of the kidneys to filter efficiently (such as dehydration) can cause changes in the level of creatinine in the blood.

Taken together, and usually combined with results of a *urinalysis* (a screening test to evaluate components in the urine), the BUN and creatinine levels provide a very accurate estimation of how well the kidneys are working. The BUN and creatinine levels are frequently part of a blood test known as a *chemistry panel*, so they are often evaluated during routine wellness checkups or pre-surgery screening in healthy pets.

Often, the BUN and creatinine levels are evaluated along with other blood tests that screen for abnormalities involving the kidneys. Because various illnesses can affect the BUN and creatinine levels, your veterinarian

may recommend testing your pet's blood if your pet has any of the following signs of illness:

- Vomiting
- Appetite loss
- Lethargy (tiredness)
- Anemia
- Increased drinking and/or urination
- Weight loss
- Dehydration

How Are the BUN and Creatinine Levels Measured?

To measure your pet's BUN and creatinine levels, your veterinary team must obtain a small blood sample. This procedure is usually very quick; it may take only a few seconds if the patient is well behaved. For patients that are very frightened or not well behaved, your veterinary team may want to use a muzzle, towel, or other gentle restraint device. In some cases, such as in patients with very thick fur, it may be necessary to shave the hair from the area where blood will be drawn. The hair will grow back, and this is often a good way to find the vein quickly.

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Some veterinary offices have in-house blood analysis equipment, so they can perform the tests for BUN and creatinine in the office and have results the same day. Other offices send blood samples to an outside laboratory for the tests to be performed. If an outside laboratory is used, results are generally available within 1 to 2 days.

Be sure to tell your veterinarian about any medications or supplements your pet may be receiving,

Tests and Procedures

as some products can alter the BUN and creatinine levels in the blood.

What Do the BUN and Creatinine Levels Tell Your Veterinarian?

Although changes in the BUN and creatinine levels are commonly associated with kidney disease, many factors can affect these levels. Some antibiotics, for example, can cause these levels to increase.

The following are a few conditions that can cause abnormal BUN and creatinine levels:

- Dehydration
- Kidney infection
- Kidney failure
- Toxic injury to the kidneys
- Urinary blockage
- Shock
- Severe heart disease
- Muscle wasting or severe weight loss

Sometimes, the BUN and creatinine levels are both abnormal, but many times, one level is normal and the other is not. If your pet has abnormal test results, your veterinarian will combine that information with other vital information about your pet to decide if further diagnostic testing is recommended to investigate the abnormal result. Additional tests may include a urinalysis, radiographs (“x-rays”), or additional blood testing. Depending on your pet’s overall condition, your veterinarian may recommend medications or other management.

Are There Risks Associated With Measuring the BUN and Creatinine Levels?

Very few risks are associated with measuring the BUN and creatinine levels. Drawing blood takes only a few seconds, and your veterinary team will take precautions to ensure that your pet is not injured during this procedure. Once blood is obtained, all further processing is performed at the veterinarian’s office or at a diagnostic laboratory, so there is no risk of harm to your pet.