**BUN / Urea**

Urea consists of nitrogen, carbon, hydrogen and oxygen.

It is the waste product of protein catabolism and is eliminated from the blood through the kidneys. Nitrogen is removed in the form of ammonia, in aquatic creatures and in the form of urea and uric acid in land animals. Liver malfunction results in decreased blood urea.

It is a waste product that is reabsorbed by the medulla of the kidney. It is mixed in the blood and eliminated in the urine. Minute quantities are also are excreted through sweat.

The quantity of nitrogen in the urea is estimated by BUN.

Urea is formed when protein is broken down in the body and is produced in the liver. BUN measures the amount of nitrogen present in the blood that comes from the waste product Urea.

BUN also estimates the kidney function. BUN increases when the kidney is unable to remove the urea from the blood.

Other factors are dehydration, high protein diets, congestive heart failure or acute myocardial infarction.

Increase in BUN is called azotemia.

Liver diseases lower BUN. Pregnancy (2\textsuperscript{nd} / 3\textsuperscript{rd} trimester) also lowers BUN. Reduction in BUN level occurs in the case of malnourishment, consumption of anabolic steroids and over hydration or if the flow of urine is drastically reduced leaving more water in the blood.

Urea in the nitrogen in the blood is an indicator of kidney function, though changes in BUN are seen in hepatic failure and catabolism of protein.
BUN/Creatinine ratio points the way to the health of the kidney. Both are elevated in the event of kidney malfunction or blockage to the flow of urine.

**Creatinine**

Creatinine is a chemical waste molecule that is synthesized from muscle metabolism. The kidney filters it out of the blood and excretes it out through the urine. Almost 2% of the body’s creatine is transformed into creatinine everyday.

The creatinine blood test measures the amount of creatinine that is present in the blood.

The production of creatine and creatinine depends on the muscle mass, which fluctuates as creatinine is a nonprotein end product of creatinine phosphate, which is used in skeletal muscle contraction. Men have higher values than women, which may fall by as much as 25% during pregnancy.

Creatinine Clearance is the elimination or clearance from the body. CCr is the volume of blood plasma that is cleared of creatinine per unit of time. The calculation is a useful indicator in estimating the glomerular filtration rate (GFR) of the kidneys. This is done by checking the urine concentration (UCr), urine flow (Vol), and the plasma concentration (PCr). (CClr = UCr X Vol divided by PCr).

Since creatinine is entirely eliminated by the kidney, it is a direct indicator of the renal function status. Normally the serum creatinine levels will remain constantly within range. Serious kidney disorders are indicated when the levels are abnormal.

Eating NV prior to the test will affect the readings.