

Blood Urea

A blood urea nitrogen (BUN) test measures the amount of urea nitrogen in your blood. Levels of urea nitrogen is one marker on how well your kidneys are working. This is a simple test done by drawing blood out of your body through a vein in your arm.

Urea is a waste product formed in the liver that travels through your blood to the kidneys, which then filters it out of the blood. It is then carried out of your body through urine. A small amount of urea in your blood is normal because this process is ongoing. Too much urea shows that it is not being filtered out properly and may indicate a possible problem with the kidneys.

Normally blood contain 15-40 mg/dl. In adult over 60 years of age it rises up to 50 mg/dl and is considered normal. During pregnancy blood urea is commonly between 15-20mg/dl.

normal BUN levels vary, but high levels in your blood sample usually mean your kidneys aren't working normally. They can be a sign of kidney disease or failure. Higher than normal BUN levels may also indicate dehydration, a high-protein diet, medications, burns, or other conditions. Your doctor tells you what your results mean.

Decrease in blood urea is rare, this has been reported in some cases of sever liver disease.

Reference values:

Newborns (>10 days): 6.4 – 53.5 mg/dl.

Adult (12-60): 15 – 50 mg/dl.

Physiological

Increase: The blood urea rises in normal people on increasing the protein content of the diet.

Decrease:

- 1-The blood urea concentration is lower in the growing infant than in the adult.
- 2- During normal pregnancy
- 3- Normal person on low protein, high carbohydrate diet. This the basis of conservative treatment of anuria.

Pathological

Increase:

- 1- Excessive formation: excessive body protein catabolism
- 2- renal disease
- 3- Gastrointestinal hemorrhage

Decrease:

Very low urea levels may be found following transfusion of glucose solution. The effects are mixture of simple dilution of body fluids, protein catabolism reduction.

Some medicine can cause blood urea to be higher than normal .

Procedure :

Addition Sequence	Blank (ml)	Standard (ml)	Test (ml)
Buffer Reagent	1.0	1.0	1.0
Enzyme Reagent	0.1	0.1	0.1
Distilled water	0.01	-	-
Urea Standard	-	0.01	-
Test	-	-	0.01
Mix well and incubate for 5 mint .at 37°C or 10 mint at 25°C.			
Chromogen Reagent	0.2	0.2	0.2

Mix well and incubate for 5 mint .at 37°C or 10 mint at 25°C. Measure the absorbance of the Standard (Abs.S) and Test Sample (Abs.T) against the Blank within 60 mint on wavelength 570 nm .

Calculation

$$\text{Blood Urea mg/dl} = \frac{\text{Abs. T}}{\text{Abs. S}} \times \text{Standard concentration}$$

Standard concentration = 40

Blood Urea Nitrogen = Blood Urea × 0.467

Urine diluted: multiply the result by dilution factor In serum and plasma

<1 year	7 – 9 mg/dl	1.4 – 6.8 mmol/L
Children	11 – 39 mg/dl	1,8 – 6.4 mmol/L
18-60 years	13 – 40 mg/dl	2.1 – 7.1 mmol/L
In urine	26 – 43 g/24h	0.43 – 0.71 mol/24h