Renal Functions Test or Kidney functions Test

(RFT) or (KFT)

The kidneys

are two bean shaped organs lying retroperitoneally on each side of the vertebral column slightly .

1 – Blood urea:

Urea forms in the liver and, along with CO2, constitutes the final product of protein metabolism. The amount of excreted urea varies directly with dietary protein intake, increased excretion in fever, diabetes, and increased adrenal gland activity.

Clinical implication

- **Increased BUN levels occur in the following conditions:**

a. Impaired renal function

b. Chronic renal disease

c. Urinary tract obstruction

d. Hemorrhage into GI tract

e. Diabetes mellitus with ketoacidosis

f. Excessive protein

g. Anabolic steroid use

- **Decreased BUN levels:**

a. Liver failure

b. Acromegaly

c. Malnutrition, low-protein diets

d. Impaired absorption

e. Nephrotic syndrome

Reference Values

Global	17 – 43 mg/dL
Women < 50 years	40 – 15mg/dL
Women > 50 years	43 – 21mg/dL
Men < 50 years	44 – 19mg/dL
Men > 50 years	18 – 54 mg/dL
Children	
1 –3 years	11 – 36 mg/dL
4 – 13years	15 – 36mg/dL
14 – 19 years	18 – 45 mg/dL

2 - Serum Creatinine

Creatinine is a waste product that comes from the normal wear and tear on muscles of the body. Everyone has creatinine in their bloodstream.

Clinical Implications

- **Increased blood creatinine levels:**

a. Impaired renal function

b. Chronic nephritis

c. Obstruction of urinary tract

d. Muscle disease

e. Congestive heart failure

f. Shock

g. Dehydration

h. Rhabdomyolysis (skeletal muscle tissue breakdown)

i. Hyperthyroidism

- **Decreased creatinine levels:**

a. Small stature

b. Decreased muscle mass

c. Advanced and severe liver disease

d. Inadequate dietary protein

e. Pregnancy

Reference Values

•**Adult men:** 0.9–1.3 mg/dL

•**Adult women:** 0.6–1.1 mg/dL

3 Uric acid

Uric acid is formed from the breakdown of nucleic acids and is an end product of purine (adenosine and guanine) metabolism in the liver.

Clinical applications

Uric acid is measured to:

1. Diagnosis and monitor treatment of gout.
2. Diagnosis of renal calculi
3. Detect kidney function.
4. Assess inherited disorders of purine metabolism
5. Monitor if uric acid levels are too high after chemotherapy or radiation.

Clinical Significance

- **Disease states with increased plasma uric acid (Hyperuricemia)**
  1. Gout
  2. Increased catabolism of nucleic acids
  3. renal disease
  4. Metabolic acidosis, diabetic ketoacidosis
  5. Leukemia, multiple myeloma, lymphoma
- **Decreased levels of uric acid (Hypouricemia) occur in the following conditions:**

1. Fanconi's syndrome (disease of the proximal renal tubules)
2. Wilson's disease (autosomal recessive disorder resulting in the accumulation of copper in tissues)
3. SIADH
4. Some malignancies (e.g., Hodgkin's disease, multiple myeloma)
5. Xanthinuria (deficiency of xanthine oxidase)

Reference Values

Men: 3.4–7.0 mg/dL

Women: 2.4–6.0 mg/dL