

## Dialysis Lab Tests At a Glance

Blood Test	Normal Values	Typical Values for ESRD	Signs/Symptoms
Albumin	3.5-5 gm/dl	≥4.0 BCG (preferred); Lab normal BCP	Low: Malnutrition, weight loss, poor appetite, liver disease, medication side effects
Aspartate aminotransferase [AST] (formerly SGOT)	8-20 U/L	Same	High: Jaundice, nausea/vomiting, abdominal pain
Alanine aminotransferase [ALT] (formerly SGPT)	7-56 U/L	Same	High: Abdominal pain, nausea/vomiting, other medication side effects e.g. muscle cramps
Bicarbonate [CO <sub>2</sub> ]	21-30 mEq/L	>22 mEq/L	High: Rapid breathing, shortness of breath
Bilirubin - Direct - Total	<0.3 mg/dL 0.2-1.3 mg/dL	Same	High: Jaundice, abdominal pain, fatigue, appetite changes
Blood Cultures	Negative or no growth	Same	Depends on source: fever, malaise, rigors, hypotension, nausea, abdominal discomfort, cough, etc.
Blood Urea Nitrogen [BUN]	7-21 ml/dL Expect ratio of BUN:Creatinine ~ 10:1	<90; depends on protein intake	High: Fatigue, nausea, insomnia, dry or itching skin, urine-like body odor and breath
Calcium corrected for BCG albumin	8.5-10.5 mg/dl	Normal for lab; preferred upper level is <10	Low: Muscle twitching/cramping, seizures, depression, hair loss, cataracts High: Muscle weakness, fatigue, symptoms same as sodium, mental changes ranging from mild confusion to psychosis
Chloride [Cl]	95-108 mEq/L	Same	Low: Hyperexcitable nervous system, low blood pressure, shallow breathing, tetany High: Muscle weakness, fatigue, deep breathing
Creatinine	0.5-1.4 mg/dL	12-20 mg/dL: varies with muscle mass	
Ferritin	12-300 ng/mL male 10-150 ng/mL female	100-500 ng/mL CKD 1-4 and PD; <500 ng/mL HD or evaluate	If anemic: Pallor, fatigue, tachycardia, cold intolerance Maybe high due to infection or inflammation: abscess/wounds, fever
Glucose	Fasting: <126 mg/dL	Same	High: Excessive thirst Low: Hunger, fatigue, vertigo, mood changes, sweating, anxiety, poor memory
Hemoglobin	13.2-16.2 gm/dL male 12-15.2 gm/dL female	Minimize signs & symptoms, transfusions, & ESA risks	Low: Fatigue, shortness of breath, chest pain, cold intolerance, weakness
Hemoglobin A1c	<7%	Same	May be inaccurate in ESRD due to the decreased RBC lifespan
Hepatitis Antibody [Anti HBs]	Immune = ≥10mIU/mL Susceptible = <10mIU/mL	Same	Patients are susceptible to infection by the hepatitis B virus
Hepatitis B surface antigen [HBsAg] (formerly Australian Antigen)	Negative	Same	Positive: Abdominal pain, anorexia, nausea/vomiting, jaundice, fatigue, or asymptomatic
Hepatitis C Antibody [anti-HCV]	Negative	Same	Positive: 80% of persons have no signs or symptoms; symptoms may include: jaundice, fatigue, dark urine; abdominal pain, loss of appetite, nausea
Magnesium [Mg]	1.6-2.4 mEq/L	Same	High or Low: Muscle weakness, twitching, cramping, confusion
Mean corpuscular volume [MCV]	82-102 male 78-101 female	Same	
Parathyroid Hormone Level [PTH] Intact PTH	10-65 pg/ml	Adult: 150-300 pg/mL (under review) Pediatric: 200-300 pg/mL	High: Initially, asymptomatic; later, itching, bony changes on X-ray, fractures
Phosphorus [PO <sub>4</sub> ]	3.0-5.0 mg/dL	Goal: 3.5 – 5.5 mg/dL	High: Causes elevated PTH by lowering Ca; abnormal: bone fractures
Platelet count	140-450 x 10 <sup>3</sup> /μL	Same	Low: Increased risk of bleeding

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Potassium [K]	3.6-5 mEq/L	Same, with some patients tolerating values up to 6.0 without problem	High: With ESRD, few symptoms below 7.0. Extreme weakness preceding cardiac arrest
Reticulocyte count	0.5-1.5%	Same but will be higher in states of increased RBC production	
Sodium [Na]	133-145 mEq/L	Same	High: Thirst and drinking more, fluid gain, elevated BP and shortness of breath Low: Confusion, hallucination, coma, muscle spasms, muscle cramps, weakness, fatigue, loss of appetite, nausea, vomiting
Total Protein	6-8 gm/dL	Same	High: Chronic inflammation/infection, bone marrow disorders Low: Liver disease, malnutrition or malabsorption disorders
Transferrin saturation [TSAT]	15-50%	>20%	Low: Anemia symptoms: fatigue, shortness of breath, cold intolerance
White Blood Count [WBC]	4.8-10.8 x 10 <sup>3</sup> /μL	Same	High: Signs of infection, fever

### NKF-KDOQI Stages of Chronic Kidney Disease

Stage	Description	GFR (ml/min/1.73 m <sup>2</sup> )	Action
1	Kidney damage with normal or ↑ GFR	≥90	Diagnosis & treatment, treatment of comorbid conditions, slowing progression, cardiovascular disease risk reduction
2	Kidney damage with mild ↓ GFR	60-90	Estimating progression
3	Moderate ↓ GFR	30-59	Evaluating & treating complications
4	Severe ↓ GFR	15-29	Preparation for kidney replacement therapy
5	Kidney failure	<15	Replacement (if uremia present)

The National Kidney Foundation defines chronic kidney disease as either kidney damage or GFR ≤60 for ≥3 months. Kidney damage is defined as pathological abnormalities or markers of damage, including abnormalities in blood or urine tests or imaging studies.

### References:

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