

Dialysis Lab Tests At a Glance

Blood Test	Normal Values	Expected Values for CKD	Signs/Symptoms
Albumin	3.5-5 gm/dl	Goal: ≥ 4.0 BCG (preferred); Lab normal BCP	Low: Malnutrition, weight loss, poor appetite, liver disease, medication side effects
Aspartate aminotranferase [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 ₂]	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	<100 ; depends on protein intake	High: Fatigue, nausea, insomnia, dry or itching skin, urine-like body odor and breath
Ca X PO ₄ Product	NA	<55	High: calcification of blood vessels and soft tissues and bone demineralization
Calcium corrected for BCG albumin	8.5-10.5 mg/dl	Same although 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
Hematocrit [Hct]	45-52% male 37-46% female	30-36% if on erythropoiesis stimulating agent (ESA)	Low: Fatigue, shortness of breath, chest pain, cold intolerance, weakness
Hemoglobin	13.2-16.2 gm/dL male 12-15.2 gm/dL female	10-12 gm/dL if on erythropoiesis stimulating agent (ESA)	See hematocrit
Hemoglobin A1c	$<7\%$	Same	May be inaccurate in ESRD due to the decreased RBC lifespan
Hepatitis Antibody [Anti HBs]	Negative (Positive if recovered or vaccinated)	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
Homocysteine	5-15		
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	

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Parathyroid Hormone Level [PTH] Intact PTH	10-65 pg/ml	Stage 3: 35-70 pg/ml Stage 4: 70-110 pg/ml Stage 5: 150-300 pg/ml	High: Initially, asymptomatic; later, itching, bony changes on X-ray, fractures
Phosphorus [PO ₄]	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 ³ /μL	Same	Low: Increased risk of bleeding
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
Red Blood Cells [RBC]	4.3-6.2 x 10 ⁶ /μL male 3.8-5.5 x 10 ⁶ /μL female	Same	
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, leading to drinking more, fluid gain, elevated BP and shortness of breath
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%	Goal : >20%	Low: Anemia symptoms: fatigue, shortness of breath, cold intolerance
White Blood Count [WBC]	4.8-10.8 x 10 ³ /μL	Same	High: Signs of infection, fever

Table revised September 2009 with the assistance of Matthew Arduino, MS, DrPH, Donna Bednarski, MSN, RN, CS, CNP, CNN; Deborah Brooks, MSN, RN, ANP, CNN, CNN-NP; Lesley Dinwiddie, MSN, RN, FNP, CNN; and Glenda Payne, RN, MS, CNN

References:

- Clinical Practice Recommendations (2008). American Diabetes Association. http://care.diabetesjournals.org/cgi/reprint/31/Supplement_1/S12 Accessed 2/21/08.
- NKF-KDOQI Clinic Practice Guidelines and Clinical Practice Recommendations for Anemia in Chronic Kidney Disease. (May, 2006). *American Journal of Kidney Diseases*, 47(5) suppl 3.
- NKF-KDOQI Clinical Practice Guidelines for Bone Metabolism and Disease in Chronic Kidney Disease (October 2004). *American Journal of Kidney Diseases*.
- NKF-KDOQI Clinical Practice Guidelines and Clinical Practice Recommendations for Diabetes for Chronic Kidney Disease (February 2007 Supplement). *American Journal of Kidney Diseases*.
- Pagana, K.D. & Pagana, T.J. (1999). Mosby's Diagnostic and Laboratory Test Reference, 4th ed. Mosby, St. Louis: MO.
- Recommendations for Preventing Transmission of Infections Among Chronic Hemodialysis Patients (April 27, 2001). MMWR. <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5005a1.htm> Accessed 2/18/08.
- Recommendations for Prevention and Control of Hepatitis C Virus (HCV) Infection and HCV-Related Chronic Disease (October 16, 1998). MMWR. <http://www.cdc.gov/mmwr/preview/mmwrhtml/00055154.htm>
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