American Board of Internal Medicine®

ABIM Laboratory Test Reference Ranges – January 2025

Laboratory Tests	Reference Ranges
1,25-Dihydroxyvitamin D (1,25-dihydroxycholecalciferol), serum	*See* Vitamin D metabolites
1,5-Anhydroglucitol, serum or plasma	Female: 6.8–29.3 µg/mL; male: 10.7–32 µg/mL
17-Hydroxycorticosteroids (Porter-Silber), urine	Female: 2–8 mg/24 hr; male: 3–10 mg/24 hr
17-Hydroxyprogesterone, serum	
Female, follicular	<80 ng/dL
Female, luteal	<285 ng/dL
Female, postmenopausal	<51 ng/dL
Male (adult)	<220 ng/dL
25-Hydroxyvitamin D (25-hydroxycholecalciferol), serum	*See* Vitamin D metabolites
5-Hydroxyindoleacetic acid, urine	2–9 mg/24 hr
5'-Nucleotidase, serum	0.3–2.6 (Bodansky) units/dL (0–15 U/L)
6-Thioguanine, whole blood	230–400 pmol/8x10^8 RBCs
Absolute basophil count	0–110/µL
Absolute eosinophil count	0–330/µL
Absolute lymphocyte count	1200–4950/µL
Absolute monocyte count	0–660/µL
Absolute neutrophil count (ANC)	2000–8250/µL
Acid phosphatase, serum	
Total	0.5–2.0 (Bodansky) units/mL
Prostatic fraction	0.1–0.4 unit/mL
ACTH, plasma	10–60 pg/mL
Activated partial thromboplastin time	25–35 seconds
ADAMTS13 activity	>60%
Adrenocorticotropic hormone (ACTH), plasma	10–60 pg/mL
Albumin, serum	3.5–5.5 g/dL
Albumin, urine	<25 mg/24 hr
Albumin-to-creatinine ratio, urine	<30 mg/g
Aldolase, serum	0.8–3.0 IU/mL
Aldosterone, plasma	
Supine or seated	≤10 ng/dL
Standing	<21 ng/dL
Low-sodium diet (supine)	≤30 ng/dL
Aldosterone, urine	5–19 µg/24 hr
Alkaline phosphatase, serum	30–120 U/L
Alpha$_1$-antitrypsin (AAT), serum	150–350 mg/dL
Alpha$_2$-antiplasmin activity, plasma	75%–115%
Alpha-amino nitrogen, urine	100–290 mg/24 hr
Alpha-fetoprotein, serum	<10 ng/mL
Amino acids, urine	200–400 mg/24 hr
Aminotransferase, serum alanine (ALT, SGPT)	10–40 U/L
Aminotransferase, serum aspartate (AST, SGOT)	10–40 U/L
Ammonia, plasma	40–70 µg/dL
Amylase, serum	25–125 U/L (80–180 [Somogyi] units/dL)
Amylase, urine	1–17 U/hr

Androstenedione, serum	Female: 30–200 ng/dL; male: 40–150 ng/dL
Angiotensin-converting enzyme, serum	8–53 U/L
Anion gap, serum	7–13 mEq/L
Antibodies to double-stranded DNA	0–7 IU/mL
Anticardiolipin antibodies IgG IgM	 <20 GPL <20 MPL
Anti-cyclic citrullinated peptide antibodies	<20 units
Antideoxyribonuclease B	<280 units
Anti-F-actin antibodies, serum	≤1:80
Antihistone antibodies	<1:16
Anti-liver-kidney microsomal antibodies (anti-LKM)	<1:20
Antimitochondrial antibodies	≤1:5
Anti–myelin associated glycoprotein antibody	<1:1600
Antimyeloperoxidase antibodies	<1.0 U
Antinuclear antibodies	≤1:40
Anti-phospholipase A2 receptor (PLA2R) antibodies, serum [ELISA]	Negative: <14 RU/mL Borderline: 14 – <20 RU/mL Positive: ≥20 RU/mL
Anti-RNP antibodies [by chemiluminescence method]	<20 CU
Anti-RNP antibodies [by multiplex flow immunoassay]	<1.0 AI
Anti-Scl-70 antibodies (topoisomerase 1 antibodies), IgG, serum	Negative: <1.0 U [Positive: ≥1.0 U]
Anti–smooth muscle antibodies	≤1:80
Anti-SSA/Ro & anti-SSB antibodies [by chemiluminescence method]	<20 CU
Anti-SSA/Ro & anti-SSB antibodies [by multiplex flow immunoassay]	<1.0 AI
Antistreptolysin O titer	<200 Todd units
Antithrombin activity	80%–120%
Antithyroglobulin antibodies	<20 U/mL
Antithyroid peroxidase antibodies	<2.0 U/mL
Anti-tissue transglutaminase antibodies	*See* Tissue transglutaminase antibody
Apolipoprotein A-1, serum	Female: ≥140 mg/dL Male: ≥120 mg/dL
Apolipoprotein B, serum	Desirable: <90 mg/dL Borderline high: 90–119 mg/dL High: 120–139 mg/dL Very High: ≥140 mg/dL
Arterial blood gas studies (patient breathing room air): pH $PaCO_2$ PaO_2 Bicarbonate Oxygen saturation Methemoglobin	 7.38–7.44 3842 mm Hg 75–100 mm Hg 23–26 mEq/L ≥95% 0.5%–3.0%
Ascorbic acid (vitamin C), blood	0.4–1.5 mg/dL
Ascorbic acid, leukocyte	16.5 ± 5.1 mg/dL of leukocytes

(1,3)-Beta-D-glucan, serum	<60 pg/mL
Beta-human chorionic gonadotropin (beta-hCG), serum	Female, premenopausal nonpregnant: <1.0 U/L; female, postmenopausal: <7.0 U/L; male: <1.4 U/L
Beta-human chorionic gonadotropin (beta-hCG), urine	<2 mIU/24 hr
$Beta_2$-glycoprotein I antibodies:	
IgG	<21 SGU
IgM	<21 SMU
Beta-hydroxybutyrate, serum	<0.4 mmol/L
$Beta_2$-microglobulin, serum	0.54–2.75 mg/L
Bicarbonate, serum	23–28 mEq/L
Bilirubin, serum	
Total	0.3–1.0 mg/dL
Direct	0.1–0.3 mg/dL
Indirect	0.2–0.7 mg/dL
Bleeding time (template)	<8 minutes
Blood urea nitrogen (BUN), serum or plasma	8–20 mg/dL
Bone-specific alkaline phosphatase, serum	Female, premenopausal: 4.5–16.9 µg/L Female, postmenopausal: 7.0–22.4 µg/L Male, 25 years of age or older: 6.5–20.1 µg/L
B-type natriuretic peptide, plasma	<100 pg/mL
C peptide, serum	0.8–3.1 ng/mL
Calcitonin, serum	Female: ≤5 pg/mL; male: ≤10 pg/mL
Calcium, ionized, serum	1.12–1.23 mmol/L
Calcium, serum	8.6–10.2 mg/dL
Calcium, urine	Female: <250 mg/24 hr; male: <300 mg/24 hr
Carbohydrate antigens, serum	
CA 19-9	0–37 U/mL
CA 27-29	<38.0 U/mL
CA 125	<35 U/mL
Carbon dioxide, serum	23–30 mEq/L
Carboxyhemoglobin, blood	<5%
Carcinoembryonic antigen, plasma	<2.5 ng/mL
Carotene, serum	75–300 µg/dL
Catecholamines, plasma	
Dopamine	<30 pg/mL
Epinephrine	
Supine	<50 pg/mL
Standing	<95 pg/mL
Norepinephrine	
Supine	112–658 pg/mL
Standing	217–1109 pg/mL
Catecholamines, urine	
Dopamine	65–400 µg/24 hr
Epinephrine	2–24 µg/24 hr
Norepinephrine	15–100 µg/24 hr
Total	26–121 µg/24 hr
CD4 T-lymphocyte count	530–1570/µL
Cell count, CSF:	
Leukocytes (WBCs)	0–5 cells/µL
Erythrocytes (RBCs)	0/µL
Ceruloplasmin, serum (plasma)	25–43 mg/dL

Chloride, CSF	120–130 mEq/L
Chloride, serum	98–106 mEq/L
Chloride, urine	
Random ("spot")	mEq/L; varies
24-hour measurement	mEq/24 hr; varies with intake
Cholesterol, serum	
Total	
Desirable	<200 mg/dL
Borderline-high	200–239 mg/dL
High	>239 mg/dL
High-density lipoprotein	
Low	Female: <50 mg/dL; male: <40 mg/dL
Low-density lipoprotein	
Optimal	<100 mg/dL
Near-optimal	100–129 mg/dL
Borderline-high	130–159 mg/dL
High	160–189 mg/dL
Very high	>189 mg/dL
Cholinesterase, serum (pseudocholinesterase)	≥0.5 pH unit/hr
Packed cells	≥0.7 pH unit/hr
Chorionic gonadotropin, beta-human (beta-hCG), serum	*See* Beta-human chorionic gonadotropin (beta-hCG), serum
Chorionic gonadotropin, beta-human (beta-hCG), urine	*See* Beta-human chorionic gonadotropin (beta-hCG), urine
Chromogranin A, serum	<93 ng/mL
Citrate, urine	250–1000 mg/24 hr
Coagulation factors, plasma	
Factor I (fibrinogen)	200–400 mg/dL
Factor II (prothrombin)	60%–130%
Factor V (accelerator globulin)	60%–130%
Factor VII (proconvertin)	60%–130%
Factor VIII (antihemophilic globulin)	50%–150%
Factor IX (plasma thromboplastin component)	60%–130%
Factor X (Stuart factor)	60%–130%
Factor XI (plasma thromboplastin antecedent)	60%–130%
Factor XII (Hageman factor)	60%–130%
Factor XIII	57%–192%
Cold agglutinin titer	>1:64 positive
Complement components, serum	
C3	100–233 mg/dL
C4	14–48 mg/dL
CH50	110–190 units/mL
Copper, serum	100–200 µg/dL
Copper, urine	0–100 µg/24 hr
Coproporphyrin, urine	50–250 µg/24 hr
Cortisol, free, urine	4–50 µg/24 hr
Cortisol, plasma	
8 AM	5–25 µg/dL
4 PM	<10 µg/dL
1 hour after cosyntropin	≥18 µg/dL
Overnight suppression test (1-mg)	<1.8 µg/dL
Overnight suppression test (8-mg)	>50% reduction in cortisol
Cortisol, saliva, 11 PM – midnight	<0.09 µg/dL

C-reactive protein, serum	≤0.8 mg/dL
C-reactive protein (high sensitivity), serum	Low cardiovascular risk: <1.0 mg/L; Average cardiovascular risk: 1.0–3.0 mg/L; High cardiovascular risk: >3.0 mg/L
Creatine kinase, serum	
Total	Female: 30–135 U/L; male: 55–170 U/L
MB isoenzymes	<5% of total
Creatine, urine	Female: 0–100 mg/24 hr; male: 0–40 mg/24 hr
Creatinine clearance, urine	90–140 mL/min/1.73 m^2
Creatinine, serum	Female: 0.50–1.10 mg/dL; male: 0.70–1.30 mg/dL
Creatinine, urine	
Random ("spot")	mg/dL; varies
24-hour measurement	15–25 mg/kg body weight/24 hr
D-dimer, plasma	<0.5 µg/mL
Dehydroepiandrosterone sulfate (DHEA-S), serum	Female: 44–332 µg/dL; male: 89–457 µg/dL
Delta-aminolevulinic acid, serum	<20 µg/dL
Dihydrotestosterone, serum	Adult male: 25–80 ng/dL
Dopamine, plasma	<30 pg/mL
Dopamine, urine	65–400 µg/24 hr
D-Xylose absorption (after ingestion of 25 g of D-xylose)	
Serum	25–40 mg/dL
Urinary excretion	4.5–7.5 g during a 5-hr period
Electrolytes, serum	
Sodium	136–145 mEq/L
Potassium	3.5–5.0 mEq/L
Chloride	98–106 mEq/L
Bicarbonate	23–28 mEq/L
Epinephrine, plasma	
Supine	<110 pg/mL
Standing	<140 pg/mL
Epinephrine, urine	<20 µg/24 hr
Erythrocyte count	4.2–5.9 million/µL
Erythrocyte sedimentation rate (Westergren)	Female: 0–20 mm/hr; male: 0–15 mm/hr
Erythrocyte survival rate (^{51}Cr)	T½ = 28 days
Erythropoietin, serum	4–26 mU/mL
Estradiol, serum	
Female, follicular	10–180 pg/mL
Mid-cycle peak	100–300 pg/mL
Luteal	40–200 pg/mL
Postmenopausal	<10 pg/mL
Male	20–50 pg/mL
Estriol, urine	>12 mg/24 hr
Estrogen receptor protein	Negative: <10 fmol/mg protein
Estrone, serum	10–60 pg/mL
Ethanol, blood	<0.005% (<5 mg/dL)
Coma level	>0.5% (>500 mg/dL)
Intoxication	≥0.08%–0.1% (≥80–100 mg/dL)
Euglobulin clot lysis time	2–4 hours at 37.0 C
Factor XIII, B subunit, plasma	60–130 U/dL

Fecal fat	<7 g/24 hr
Fecal pH	7.0–7.5
Fecal weight	<250 g/24 hr
Ferritin, serum	Female: 24–307 ng/mL; male: 24–336 ng/mL
Fibrin(ogen) degradation products	<10 µg/mL
Fibrinogen, plasma	200–400 mg/dL
Fibroblast growth factor-23, serum	30–80 RU/mL
Folate, red cell	150–450 ng/mL of packed cells
Folate, serum	1.8–9.0 ng/mL
Follicle-stimulating hormone, serum	
Female, follicular/luteal	2–9 mIU/mL (2–9 U/L)
Female, mid-cycle peak	4–22 mIU/mL (4–22 U/L)
Female, postmenopausal	>30 mIU/mL (>30 U/L)
Male (adult)	1–7 mIU/mL (1–7 U/L)
Children, Tanner stages 1, 2	0.5–8.0 mIU/mL (0.5–8.0 U/L)
Children, Tanner stages 3, 4, 5	1–12 mIU/mL (1–12 U/L)
Free kappa light chain, serum	3.3–19.4 mg/L
Free kappa-to-free lambda light chain ratio, serum	0.26–1.65
Free lambda light chain, serum	5.7–26.3 mg/L
Gamma globulin, CSF	6.1–8.3 mg/dL
Gamma-glutamyltransferase	
(gamma-glutamyl transpeptidase), serum	Female: 8–40 U/L; male: 9–50 U/L
Gastrin, serum	<100 pg/mL
Glucose, CSF	50–75 mg/dL
Glucose, plasma (fasting)	70–99 mg/dL
Glucose-6-phosphate dehydrogenase, blood	5–15 units/g of hemoglobin
Glycoprotein α-subunit, serum	<1 ng/mL
Growth hormone, serum	
At rest	<5 ng/mL
Response to provocative stimuli	>7 ng/mL
Haptoglobin, serum	83–267 mg/dL
Hematocrit, blood	Female: 37%–47%; male: 42%–50%
Hemoglobin A_{1C}	4.0%–5.6%
Hemoglobin, blood	Female: 12–16 g/dL; male: 14–18 g/dL
Hemoglobin fractionation	
Hb A	96%–98%
Hb A_2	1.5%–3.5%
Hb F	<1%
Hemoglobin, plasma	<5.0 mg/dL
Heparin–anti-factor Xa assay, plasma	0.3–0.7 IU/mL [therapeutic range for standard (unfractionated) heparin therapy]
Heparin–platelet factor 4 antibody, serum	Positive: >0.4 optical density unit
Hepatic copper	25–40 µg/g dry weight
Hepatic iron index	<1.0
Histamine excretion, urine	20–50 µg/24 hr
Homocysteine, plasma	5–15 µmol/L
β-Human chorionic gonadotropin (β-hCG), serum	Female, premenopausal nonpregnant: <1.0 U/L; female, postmenopausal: <7.0 U/L; male: <1.4 U/L
β-Human chorionic gonadotropin (β-hCG), urine	<2 mIU/24 hr
Hydroxyproline, urine	10–30 mg/sq meter of body surface/24 hr

Immature platelet fraction	1%–5% of platelet count
Immune complexes, serum	0–50 µg/dL
Immunoglobulins, serum	
IgA	90–325 mg/dL
IgE	<380 IU/mL
IgG	800–1500 mg/dL
IgM	45–150 mg/dL
Immunoglobulin free light chains, serum	
Kappa	3.3–19.4 mg/L
Lambda	5.7–26.3 mg/L
Kappa-to-lambda ratio	0.26–1.65
Insulin, serum (fasting)	<20 µU/mL
Insulin-like growth factor 1 (IGF-1) (somatomedin-C), serum	
Ages 16–24	182–780 ng/mL
Ages 25–39	114–492 ng/mL
Ages 40–54	90–360 ng/mL
Ages 55 and older	71–290 ng/mL
Iodine, urine	
Random ("spot")	µg/L; varies
Iron, serum	50–150 µg/dL
Iron-binding capacity, serum (total)	250–310 µg/dL
Lactate dehydrogenase, serum	80–225 U/L
Lactate, arterial blood	<1.3 mmol/L (<1.3 mEq/L)
Lactate, serum or plasma	0.7–2.1 mmol/L
Lactate, venous blood	0.7–1.8 mEq/L; 6–16 mg/dL
Lactic acid, serum	6–19 mg/dL (0.7–2.1 mmol/L)
Lactose tolerance test, GI	Increase in plasma glucose: >15 mg/dL
Lead, blood	<5.0 µg/dL
Leukocyte count	4000–11,000/µL
Segmented neutrophils	50%–70%
Band forms	0%–5%
Lymphocytes	30%–45%
Monocytes	0%–6%
Basophils	0%–1%
Eosinophils	0%–3%
Lipase, serum	10–140 U/L
Lipoprotein(a), serum	Desirable: <30 mg/dL
Luteinizing hormone (LH), serum	
Female, follicular/luteal	1–12 mIU/mL (1–12 U/L)
Female, mid-cycle peak	9–80 mIU/mL (9–80 U/L)
Female, postmenopausal	>30 mIU/mL (>30 U/L)
Male (adult)	2–9 mIU/mL (2–9 U/L)
Children, Tanner stages 1, 2, 3	<9.0 mIU/mL (<9.0 U/L)
Children, Tanner stages 4, 5	1–15 mIU/mL (1–15 U/L)

Lymphocyte subsets	
CD3	900–3245/µL
CD4	530–1570/µL
CD8	430–1060/µL
CD19	208–590/µL
CD56	40–500/µL
Magnesium, serum	1.6–2.6 mg/dL
Magnesium, urine	14–290 mg/24 hr
Mean corpuscular hemoglobin	28–32 pg
Mean corpuscular hemoglobin concentration	33–36 g/dL
Mean corpuscular volume	80–98 fL
Mean platelet volume	7–9 fL
Metanephrines, fractionated, plasma	
Metanephrine	<0.5 nmol/L
Normetanephrine	<0.9 nmol/L
Metanephrines, fractionated, 24-hour urine	
Metanephrine	<400 µg/24 hr
Normetanephrine	<900 µg/24 hr
Methylmalonic acid, serum	0.00–0.40 µmol/L
Myoglobin, serum	<100 µg/L
Norepinephrine, plasma	
Supine	70–750 pg/mL
Standing	200–1700 pg/mL
Norepinephrine, urine	0–100 µg/24 hr
Normetanephrine, fractionated, plasma	<0.9 nmol/L
Normetanephrine, fractionated, 24-hour urine	<900 µg/24 hr
N-telopeptide, urine	Female: 11–48 nmol BCE/mmol creatinine; male: 7–68 nmol BCE/mmol creatinine
N-terminal-pro-B-type natriuretic peptide (NT-pro-BNP), serum or plasma	If eGFR >60 mL/min/1.73 m^2 *18 –49 years of age* Heart failure unlikely: ≤300 pg/mL High probability of heart failure: ≥450 pg/mL *50–75 years of age* Heart failure unlikely: ≤300 pg/mL High probability of heart failure: ≥900 pg/mL *Older than 75 years of age* Heart failure unlikely: ≤300 pg/mL High probability of heart failure: ≥1800 pg/mL If eGFR <60 mL/min/1.73 m^2 *18 years of age or older* High probability of heart failure: ≥1200 pg/mL
Osmolality, serum	275–295 mOsm/kg H_2O
Osmolality, urine	38–1400 mOsm/kg H_2O
Osmotic fragility of erythrocytes	Increased if hemolysis occurs in over 0.5% NaCl; decreased if hemolysis is incomplete in 0.3% NaCl
Osteocalcin, serum	Female: 7.2–27.9 ng/mL; male: 11.3–35.4 ng/mL
Oxalate, urine	<40 mg/24 hr
Oxygen consumption	225–275 mL/min
Oxygen saturation, arterial blood	≥95%
Parathyroid hormone, serum	
C-terminal	150–350 pg/mL
Intact	10–65 pg/mL
Intact (dialysis patients only)	Target: 130–585 pg/mL

Parathyroid hormone-related protein, serum	<1.5 pmol/L
Partial thromboplastin time (activated)	25–35 seconds
pH, urine	4.5–8.0
Phenolsulfonphthalein, urine	At least 25% excreted by 15 minutes; 40% by 30 minutes; 60% by 120 minutes
Phosphatase (acid), serum	
Total	0.5–2.0 (Bodansky) units/mL
Prostatic fraction	0.1–0.4 unit/mL
Phosphatase (alkaline), serum	30–120 U/L
Phospholipids, serum (total)	200–300 mg/dL
Phosphorus, serum	3.0–4.5 mg/dL
Phosphorus, urine	500–1200 mg/24 hr
Platelet count	150,000–450,000/µL
Platelet function analysis (PFA-100):	
Collagen–epinephrine closure time	60–143 seconds
Collagen–ADP closure time	58–123 seconds
Platelet survival rate (^{51}Cr)	10 days
Potassium, serum	3.5–5.0 mEq/L
Potassium, urine	
Random ("spot")	mEq/L; varies
24-hour measurement	mEq/24 hr; varies with intake
Prealbumin, serum	16–30 mg/dL
Pregnanetriol, urine	0.2–3.5 mg/24 hr
Pressure (opening) [initial], CSF	70–180 mm CSF (70–180 mm H_2O); 7–18 cm H_2O
Procalcitonin, serum	≤0.10 ng/mL
Progesterone, serum	
Female, follicular	0.02–0.9 ng/mL
Female, luteal	2–30 ng/mL
Male (adult)	0.12–0.3 ng/mL
Proinsulin, serum	3–20 pmol/L
Prolactin, serum	<20 ng/mL
Prostate-specific antigen, serum	ng/mL; no specific normal or abnormal level
Protein C activity, plasma	65%–150%
Protein C antigen, plasma	70%–140%
Protein catabolic rate, urine	goal: 1.0–1.2 g/kg/24 hr
Protein S activity, plasma	57%–131%
Protein S antigen, plasma	
Total	60%–140%
Free	60%–130%
Protein, urine	
Random ("spot")	mg/dL; varies
24-hour measurement	<100 mg/24 hr
Proteins, CSF total	15–45 mg/dL
Proteins, serum	
Total	5.5–9.0 g/dL
Albumin	3.5–5.5 g/dL

Proteins, serum (continued)	
Globulin	2.0–3.5 g/dL
Alpha1	0.2–0.4 g/dL
Alpha2	0.5–0.9 g/dL
Beta	0.6–1.1 g/dL
Gamma	0.7–1.7 g/dL
Protein-to-creatinine ratio, urine	<0.2 mg/mg
Prothrombin time, plasma	11–13 seconds
Pyruvic acid, blood	0.08–0.16 mmol/L
Red cell distribution width (RDW)	9.0%–14.5%
Red cell mass	Female: 22.7–27.9 mL/kg; male: 24.9–32.5 mL/kg
Renin activity (angiotensin-I radioimmunoassay)	
Peripheral plasma	
Normal diet	
Supine	0.3–2.5 ng/mL/hr
Upright	0.2–3.6 ng/mL/hr
Low sodium diet	
Supine	0.9–4.5 ng/mL/hr
Upright	4.1–9.1 ng/mL/hr
Diuretics + low sodium diet	6.3–13.7 ng/mL/hr
Renal vein concentration	Normal ratio (high:low): <1.5
Reptilase time	10–12 seconds
Reticulocyte count	0.5%–1.5% of red cells
Reticulocyte count, absolute	25,000–100,000/µL
Rheumatoid factor (nephelometry)	<24 IU/mL
Rheumatoid factor, latex test for	≤1:80
Ristocetin cofactor activity of plasma	*See* von Willebrand factor activity (ristocetin cofactor activity), plasma
Russell viper venom time, dilute	33–44 seconds
Sex hormone-binding globulin	Female, nonpregnant: 18–144 nmol/L; male: 10–57 nmol/L
Sodium, serum	136–145 mEq/L
Sodium, urine	
Random ("spot")	mEq/L; varies
24-hour measurement	mEq/24 hr; varies with intake
Specific gravity, urine	1.002–1.030
Sperm density	10–150 million/mL
Sweat test for sodium and chloride	<60 mEq/L
T3 resin uptake	25%–35%
T-lymphocyte count, CD4	530–1570/µL
Testosterone, serum	Female: 18–54 ng/dL; male: 291–1100 ng/dL
Testosterone, bioavailable, serum	Female, age 18–69 yrs: 0.5–8.5 ng/dL
Testosterone, free, serum	Male: 70–300 pg/mL
Thrombin time	17–23 seconds

Thyroid function studies	
T3 resin uptake	25%–35%
Thyroglobulin, serum	<20 ng/mL
Thyroidal iodine (^{123}I) uptake	5%–30% of administered dose at 24 hours
Thyroid-stimulating hormone (TSH), serum	0.5–4.0 µU/mL (0.5–4.0 mU/L)
Thyroid-stimulating immunoglobulin (TSI)	<130%
Thyroxine-binding globulin, serum	12–27 µg/mL
Thyroxine index, free (estimate)	5–12
Thyroxine (T_4), serum	
Total	5–12 µg/dL
Free	0.8–1.8 ng/dL
Triiodothyronine (T_3), serum	
Total	80–180 ng/dL
Reverse	20–40 ng/dL
Free	2.3–4.2 pg/mL
Tissue transglutaminase antibody, IgA [by chemiluminescence method]	<20 AU
Tissue transglutaminase antibody, IgG [by chemiluminescence method]	<20 AU
Tissue transglutaminase antibody, IgA [by ELISA]	<4.0 U/mL
Tissue transglutaminase antibody, IgG [by ELISA]	<6.0 U/mL
Total proteins, CSF	15–45 mg/dL
Transaminase, serum glutamic oxaloacetic (SGOT)	*See* Aminotransferase, serum aspartate (AST)
Transaminase, serum glutamic pyruvic (SGPT)	*See* Aminotransferase, serum alanine (ALT)
Transferrin saturation	20%–50%
Transferrin, serum	200–400 mg/dL
Triglycerides, serum (fasting)	
Optimal	<100 mg/dL
Normal	<150 mg/dL
Borderline-high	150–199 mg/dL
High	200–499 mg/dL
Very high	>499 mg/dL
Troponin I, cardiac, serum	≤0.04 ng/mL
Troponin T, cardiac, serum	≤0.01 ng/mL
Troponin I, cardiac, high-sensitivity, plasma	Female: ≤15 ng/L; male: ≤20 ng/L
Troponin T, cardiac, high-sensitivity, plasma	Female: ≤10 ng/L; male: ≤15 ng/L
Tryptase, serum	<11.5 ng/mL
Urea clearance, urine	
Standard	40–60 mL/min
Maximal	60–100 mL/min
Urea nitrogen, blood	8–20 mg/dL
Urea nitrogen, urine	12–20 g/24 hr
Uric acid, serum	3.0–7.0 mg/dL
Uric acid, urine	250–750 mg/24 hr
Uroporphyrin, urine	10–30 µg/24 hr
Vanillylmandelic acid, urine	<9 mg/24 hr
Venous oxygen content, mixed	14–16 mL/dL

Venous studies, mixed, blood	
pH	7.32–7.41
PCO_2	42–53 mm Hg
PO_2	35–42 mm Hg
Bicarbonate	24–28 mEq/L
Oxygen saturation (SvO2)	65%–75%
Viscosity, serum	1.4–1.8 cp
Vitamin A, serum:	
Adult	32.5–78.0 µg/dL
Pediatric, age 1–2 yr (retinol)	20–43 µg/dL
Vitamin B_{12}, serum	200–800 pg/mL
Vitamin D metabolites, serum	
1,25-Dihydroxyvitamin D (1,25-dihydroxycholecalciferol)	15–60 pg/mL
25-Hydroxyvitamin D (25-hydroxycholecalciferol)	30–60 ng/mL
Vitamin E, serum:	
Adult	5.5–17.0 mg/L
Pediatric, age 1–2 yr (alpha-tocopherol)	2.9–16.6 mg/L
Volume, blood	
Plasma	Female: 43 mL/kg body weight; male: 44 mL/kg body weight
Red cell	Female: 20–30 mL/kg body weight; male: 25–35 mL/kg body weight
von Willebrand factor activity (ristocetin cofactor activity), plasma	50%–150%
von Willebrand factor antigen, plasma	50%–150%
Zinc, serum	75–140 µg/dL

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