

Chemistry Reference Ranges

Test	Sex	Age	Reference Range
Albumin, Plasma or Serum	M/F	0 Days - < 15 Days	3.3 – 4.5 g/dL
		15 Days - < 1 Year	2.8 – 4.7 g/dL
		1 Year - < 8 Years	3.8 – 4.7 g/dL
		8 Years - < 15 Years	4.1 – 4.8 g/dL
		15 Years - < 19 Years	4.0 – 5.1 g/dL
		19 Years - < 60 Years	3.5 – 5.2 g/dL
		60 Years - < 90 Years	3.2 – 4.6 g/dL
		90 Years – 150 Years	2.9 – 4.5 g/dL
Alkaline Phosphatase, Plasma	M/F	0 - < 15 Days	90 – 273 U/L
		15 Days - < 1 Year	134 – 518 U/L
		1 Year - < 10 Years	156 – 369 U/L
		10 Years - < 13 Years	141 – 460 U/L
	M	13 Years - < 15 Years	127 – 517 U/L
	F	13 Years - < 15 Years	62 – 280 U/L
	M	15 Years - < 17 Years	89 – 365 U/L
	F	15 Years - < 17 Years	54 – 128 U/L
	M	17 Years - < 19 Years	54 – 128 U/L
	F	17 Years - > 19 Years	59 – 164 U/L
	M/F	19 Years – 150 Years	40 – 150 U/L
Alanine Aminotransferase (ALT), Plasma	M/F	0 Days - < 1 Year	5 – 51 U/L
		1 Year - < 13 Years	9 – 25 U/L
		13 Years - < 19 Years	8 – 24 U/L
		19 Years – 150 Years	0 – 55 U/L
Ammonia, Plasma	M	0 – 150 Years	16 – 60 µmol/L
	F	0 – 150 Years	11 – 51 µmol/L
Amylase, Plasma	M/F	0 Days - < 15 Days	3 – 10 U/L
		15 Days - < 13 Weeks	2 – 22 U/L
		13 Weeks - < 1 Year	3 – 50 U/L
		1 Year - < 18 Years	25 – 101 U/L
		18 Years - < 70 Years	25 – 125 U/L
		70 Years – 150 Years	20 – 160 U/L

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Aspartate Aminotransferase (AST), Plasma or Serum	M/F	0 Days - < 15 Days	32 – 162 U/L
		15 Days < 1 Year	20 – 67 U/L
		1 Year - < 7 Years	21 – 44 U/L
		7 Years - < 12 Years	18 – 36 U/L
		12 Years - < 19 Years	13 – 35 U/L
		19 Years – 150 Years	5 – 40 U/L
Beta-Hydroxybutyric Acid, Plasma or Serum	M/F	0 – 150 Years	0 – 0.27 mmol/L
Urea Nitrogen, Plasma or Serum	M/F	0 Days - < 15 Days	3 – 22 mg/dL
		15 Days - < 1 Year	4 – 17 mg/dL
		1 Year - < 10 Years	9 – 22 mg/dL
		10 Years - < 19 Years	7 – 20 mg/dL
		19 Years - < 50 Years	7 – 21 mg/dL
		50 Years – 150 Years	8 – 26 mg/dL
Calcium, Plasma	M/F	0 Minutes – 10 Days	7.6 – 10.4 mg/dL
		10 Days – 2 Years	9.0 – 11.0 mg/dL
		2 Years – 12 Years	8.8 – 10.8 mg/dL
		12 Years – 150 Years	8.4 – 10.5 mg/dL
Chloride, Plasma or Serum	M/F	0 Days - < 30 Days	98 – 113 mmol/L
		30 Days – 150 Years	98 – 107 mmol/L
Total Cholesterol, Plasma or Serum	M/F	< 18 Years	< 170 mg/dL
		> 18 Years	< 200 mg/dL
Carbon Dioxide, Plasma or Serum	M/F	0 Minutes – 15 Days	5 – 20 mmol/L
		15 Days – 1 Year	10 – 24 mmol/L
		1 Year - < 5 Years	14 – 24 mmol/L
		5 Years - < 15 Years	17 – 26 mmol/L
		15 Years - < 19 Years	17 – 28 mmol/L
		19 Years - < 60 Years	22 – 29 mmol/L
		60 Years – 150 Years	23 – 31 mmol/L
Creatine Kinase, Plasma or Serum	M	0 – 150 Years	30 – 200 U/L
	F	0 – 150 Years	29 – 168 U/L
Complement Component 3, Serum	M/F	0 Days – 14 Days	50 – 121 mg/dL
		15 Days - < 1Year	50 – 160 mg/dL
		1 Year - < 19 Years	83 – 152 mg/dL
	M	19 Years – 80 Years	82 – 185 mg/dL
	F	19 Years – 80 Years	83 – 193 mg/dL
	M/F	> 80 Years	Not Established

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Complement Component 4, Serum	M/F	0 Days - < 1 Year	7 – 30 mg/dL
		1 Year - < 14 Years	13 – 37 mg/dL
	M	14 Years – 80 Years	15 – 53 mg/dL
	F	14 Years – 80 Years	15 – 57 mg/dL
	M/F	> 80 Years	Not Established
C-Reactive Protein (CRP), Plasma	M/F	0 Days - <15 Days	0.3 – 6.1 mg/L
		15 Days - <15 Years	0.1 – 1 mg/L
		15 Years - <19 Years	0.1 – 1.7 mg/L
		≥ 19 Years	0 – 5 mg/L
Creatinine, Plasma or Serum	M/F	0 Days – 15 Days	0.42 – 1.05 mg/dL
		15 Days – 1 Year	0.31 – 0.52 mg/dL
		1 Year – 4 Years	0.39 – 0.55 mg/dL
		4 Years – 7 Years	0.44 – 0.65 mg/dL
		7 Years – 12 Years	0.52 – 0.69 mg/dL
		12 Years – 15 Years	0.57 – 0.80 mg/dL
	M	15 Years – 17 Years	0.65 – 1.04 mg/dL
	F	15 Years – 17 Years	0.59 – 0.86 mg/dL
	M	17 Years – 19 Years	0.69 – 1.1 mg/dL
	F	17 Years – 19 Years	0.60 – 0.88 mg/dL
	M	19 Years – 150 Years	0.72 – 1.25 mg/dL
	F	19 Years – 150 Years	0.57 – 1.11 mg/dL
Cystatin C	M/F	0 Days - < 4 Months	0.5 - 2.0 mg/L
		4 Months - < 1 Year	0.5 – 1.5 mg/L
		1 Year - < 18 Years	0.5 – 1.0 mg/L
		18 Years – 150 Years	0.5 – 1.1 mg/L
Direct Bilirubin	M/F	0 – 15 Days	0.3 – 0.7 mg/dL
		15 Days – 1 Year	0.1 – 0.3 mg/dL
		1 Year – 9 Years	0.1 – 0.2 mg/dL
		9 Years – 13 Years	0.1 – 0.3 mg/dL
		13 Years – 19 Years	0.1 – 0.4 mg/dL
		19 Years – 150 Years	0.0 – 0.5 mg/dL
Ethanol	M/F	0 – 150 Years	None Detected mg/dL
			> 400 mg/dL Toxic mg/dL

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Gamma Glutamyl Transferase, Plasma or Serum	M/F	0 - < 14 Days	23 – 219 U/L
		14 Days - < 1 Year	8 – 127 U/L
		1 Year - < 11 Years	6 – 16 U/L
		11 Years - < 19 Years	7 – 21 U/L
	M	≥ 19 Years	12 – 64 U/L
	F	≥ 19 Years	9 – 36 U/L
Glucose, plasma, serum	M/F	0 Days - < 1 Day	40 – 60 mg/dL
		1 Day - < 30 Days	50 – 80 mg/dL
		30 Days - < 1 Year	60 – 99 mg/dL
		1 Year - < 19 Years	60 – 99 mg/dL
		19 Years – 150 Years	70 – 99 mg/dL
Glucose Tolerance Test (50 G), Plasma	M/F	0-150 years	< 139 mg/dL
Glucose Tolerance Test (100 G), Plasma	M/F	0-150 years	Gestational diabetes diagnosed if at least 2 values exceed the following cut-offs= Baseline= 95 mg/dL 1 hr= 180 mg/dL 2 hrs= 155 mg/dL, 3 hrs= 140 mg/dL
Glucose Tolerance Test (75 G), Plasma	M/F	0-150 years	Fasting Glucose= 95 mg/dL - normal 110-126 mg/dL - impaired Glucose tolerance >126 mg/dL - Diabetes. 2-hour Glucose= <140 mg/dL - normal 140-200 mg/dL - impaired Glucose tolerance >200 mg/dL - Diabetes.
Haptoglobin, Plasma	M/F	0 Days - < 15 Days	0 – 10 mg/dL
		15 Days - < 1 Year	7 – 221 mg/dL
		1 Year - < 12 Years	7 – 163 mg/dL
		12 Years - < 19 Years	7 – 179 mg/dL
		19 Years - < 60 Years	14 – 258 mg/dL
		60 Years – 150 Years	40 – 273 mg/dL
HDL Cholesterol, Plasma or Serum	M	0 – 150 Years	0 – 40 mg/dL
	F	0 – 150 Years	0 – 50 mg/dL
C-Reactive Protein, High Sensitivity (hsCRP), Plasma or Serum	M/F	0 – 150 Years	≤ 3.0 mg/L
Immunoglobulin A, Plasma or Serum	M/F	0 Days - < 3 Months	1 – 34 mg/dL
		3 Months - < 1 Year	8 – 91 mg/dL
		1 Year - < 3 Years	0 – 90 mg/dL
		3 Years - < 6 Years	30 – 150 mg/dL
		6 Years - < 14 Years	50 – 220 mg/dL
	M/F	14 Years - < 19 Years	50 – 290 mg/dL
		M 19 Years - < 60 Years	63 – 484 mg/dL
		F 19 Years - < 60 Years	65 – 421 mg/dL
		M 60 Years – 150 Years	101 – 645 mg/dL
		F 60 Years – 150 Years	69 – 517 mg/dL

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Immunoglobulin G, Plasma or Serum	M/F	0 Days - < 15 Days	320 - 1400 mg/dL
		15 Days - < 1 Year	110 - 700 mg/dL
		1 Year - < 4 Years	320 - 1150 mg/dL
		4 Years - < 10 Years	540 - 1360 mg/dL
		10 Years - < 19 Years	660 - 1530 mg/dL
	M	19 Years - < 80 Years	540 - 1822 mg/dL
	F	19 Years - < 80 Years	552 - 1631 mg/dL
	M/F	80 Years - 150 Years	Not Applicable
Immunoglobulin M, Plasma or Serum	M/F	0 Days - < 15 Days	10 - 40 mg/dL
		15 Days - < 13 Weeks	10 - 70 mg/dL
		13 Weeks - < 1 Year	20 - 90 mg/dL
	M	1 Year - < 19 Years	40 - 150 mg/dL
	F	1 Year - < 19 Years	50 - 190 mg/dL
	M	19 Years - 150 Years	22 - 240 mg/dL
	F	19 Years - 150 Years	33 - 293 mg/dL
Iron, Plasma or Serum	M/F	0 < 14 Years	29 - 137 µg/dL
	M	14 Years - < 18 Years	43 - 176 µg/dL
	F	14 Years - < 18 Years	33 - 170 µg/dL
	M	≥ 18 Years	61 - 157 µg/dL
	F	≥ 18 Years	37 - 145 µg/dL
Lactic Acid, Plasma	M/F	0 - 150 Years	0.5 - 2.2 mmol/L
Lactate Dehydrogenase, Plasma or Serum	M/F	0 Days - < 30 Days	130 - 700 U/L
		1 Month - < 5 Years	130 - 400 U/L
		5 Years - < 12 Years	100 - 300 U/L
		≥ 12 Years	100 - 250 U/L
LDL Cholesterol - Direct, Plasma or Serum	M/F	0 - 150 Years	Optimal: < 100 mg/dL
			Near or Above Optimal: 100 - 129 mg/dL
			Borderline High: 130 - 159 mg/dL
			High: 160 - 189 mg/dL
			Very High: ≥ 190 mg/dL
Lipase, Plasma or Serum	M/F	0 - 150 Years	0 - 60 U/L
Magnesium, Plasma or Serum	M/F	0 Days - < 5 Months	1.5 - 2.2 mg/dL
		5 Months - < 6 Years	1.7 - 2.3 mg/dL
		6 Years - < 20 Years	1.7 - 2.2 mg/dL
		20 Years - 150 Years	1.6 - 2.6 mg/dL

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Test	Sex	Age	Reference Range
Phosphorous, Inorganic, Plasma or Serum	M/F	0 Days - < 15 Days	5.6 – 10.5 mg/dL
		15 Days - < 1 Year	4.8 – 8.4 mg/dL
		1 Year - < 5 Years	4.3 – 6.8 mg/dL
		5 Years - < 13 Years	4.1 – 5.9 mg/dL
		13 Years - < 16 Years	3.2 – 6.2 mg/dL
		16 Years - < 19 Years	2.9 – 5.0 mg/dL
		19 Years – 150 Years	2.3 – 4.7 mg/dL
Potassium, Plasma or Serum	M/F	0 Days - < 30 Days	3.7 – 5.9 mmol/L
		30 Days - < 1 Year	4.1 – 5.3 mmol/L
		1 Year - < 12 Years	3.4 – 4.7 mmol/L
		12 Years – 150 Years	3.3 – 4.8 mmol/L
Sodium, Plasma or Serum	M/F	0 Days - < 30 Days	133 – 146 mmol/L
		30 Days - < 1 Year	139 – 146 mmol/L
		1 Year - < 18 Years	138 – 145 mmol/L
		18 Years – 150 Years	136 – 145 mmol/L
Total Iron Binding Capacity, Plasma	M/F	0 Days - < 2 Months	59 – 175 µg/dL
		2 Months - < 18 Years	250 – 400 µg/dL
		≥ 18 Years	240 – 450 µg/dL
Bilirubin, Total, Plasma	M/F	0 Days - < 1 Day	0.2 – 6.0 mg/dL
		1 Day - < 2 Days	0.2 – 10.0 mg/dL
		2 Days - < 5 Days	0.2 – 12.0 mg/dL
		5 Days - < 15 Days	0.2 – 10.0 mg/dL
		15 Days - < 1 Year	0.1 – 7.0 mg/dL
		1 Year - < 9 Years	0.1 – 0.4 mg/dL
		9 Years - < 12 Years	0.1 – 0.6 mg/dL
		12 Years - < 15 Years	0.1 – 0.7 mg/dL
		15 Years - < 19 Years	0.1 – 0.8 mg/dL
		19 Years – 150 Years	0.2 – 1.2 mg/dL
Total Protein, Plasma or Serum	M/F	0 Days - < 15 Days	5.3 – 8.3 g/dL
		15 Days - < 1 Year	4.4 – 7.1 g/dL
		1 Year - < 6 Years	6.1 – 7.5 g/dL
		6 Years - < 9 Years	6.4 – 7.7 g/dL
		9 Years - < 19 Years	6.5 – 8.1 g/dL
		19 Years – 150 Years	6.0 – 8.3 g/dL

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Test	Sex	Age	Reference Range
Transferrin, Plasma	M/F	0 Days - < 9 Weeks	104 – 224 mg/dL
		9 Weeks - < 1 Year	107 – 324 mg/dL
		1 Year - < 19 Years	220 – 337 mg/dL
		19 Years - < 60 Years	174 – 382 mg/dL
		60 Years – 150 Years	163 – 360 mg/dL
Triglycerides, Plasma or Serum	M/F	0 – 150 Years	0 – 149 mg/dL
Uric Acid, Plasma or Serum	M/F	0 Days - < 15 Days	2.8 – 12.7 mg/dL
		15 Days - < 1 Year	1.6 – 6.3 mg/dL
		1 Year - < 12 Years	1.8 – 4.9 mg/dL
	M	12 Years – < 19 Years	2.6 – 7.6 mg/dL
	F	12 Years - < 19 Years	2.6 – 5.9 mg/dL
	M	19 Years – 150 Years	3.5 – 7.2 mg/dL
	F	19 Years – 150 Years	2.6 – 6.0 mg/dL

Immunoassay Reference Ranges

Test	Sex	Age	Reference Range
Alpha Fetoprotein, Serum (Tumor Marker)	M/F	0 Days - < 13 Days	5,000 – 105,000 ng/mL
		13 Days - < 30 Days	300 – 60,000 ng/mL
		30 Days - < 2 Months	100 – 10,000 ng/mL
		2 Months - < 3 Months	40 – 1,000 ng/mL
		3 Months - < 4 Months	11 – 300 ng/mL
		4 Months - < 5 Months	5 – 200 ng/mL
		5 Months - < 6 Months	0 – 90 ng/mL
		6 Months - < 1 Year	0 – 97 ng/mL
		1 Year - < 2 Years	0 – 41 ng/mL
		2 Years - < 3 Years	0 – 12 ng/mL
		3 Years – 150 Years	0 – 9.9 ng/mL
Beta hCG, Plasma or Serum (Pregnancy)	Male	0 – 70 Years	0 – 4 mIU/mL
	Female (Non-Pregnant)	0 – 55 Years	0 – 5 mIU/mL
B-Type Natriuretic Peptide, Plasma	M/F	0 – 150 Years	10 – 100 pg/mL
C-Peptide, Serum	M/F	0 – 150 Years	0.7 – 5.2 ng/mL
Cancer Antigen 125 (CA125), Serum	M	0 – 150 Years	Not Established
	F	0 – 150 Years	0 – 35 U/mL
CEA	M/F	0 – 150 Years	0 – 3 ng/mL
Cortisol	M/F	0-150 Years	Before 10AM= 3.7-19.4 µg/dL After 5PM= 2.9 - 17.3 µg/dL Stimulation Test= >20 µg/dL one hour after 0.25 mg Cortosyn (ACTH). Supression Test= Note= The Endocrine Society suggests a cut-off of <1.8 µg/dL 8 hours after 1 mg overnight Dexamethasone supression test, or 2 hours after the last dose in the longer low-dose dexamethasone suppression test

Immunoassay Reference Ranges

Test	Sex	Age	Reference Range
Dehydroepiandrosterone Sulfate (DHEA-S), Plasma	M/F	0 Days - < 7 Days	108 – 607 mcg/dL
		7 Days - < 30 Days	32 – 431 mcg/dL
		30 Days - < 6 Months	3 – 124 mcg/dL
		6 Months - < 3 Years	0 – 33 mcg/dL
		3 Years - < 7 Years	0 – 47 mcg/dL
		7 Years - < 10 Years	5 – 115 mcg/dL
		M	10 Years - < 15 Years
	F	10 Years - < 15 Years	22 – 255 mcg/dL
	M	15 Years - < 20 Years	88 – 483 mcg/dL
	M	20 Years - < 30 Years	280 – 640 mcg/dL
	F	15 Years - < 30 Years	63 – 380 mcg/dL
	M	30 Years - < 50 Years	95 – 530 mcg/dL
	F	30 Years - < 50 Years	32 – 270 mcg/dL
	M	50 Years - < 60 Years	70 – 310 mcg/dL
	F	50 Years - < 60 Years	26 – 200 mcg/dL
M	60 Years – 150 Years	28 – 290 mcg/dL	
F	60 Years – 150 Years	10 – 130 mcg/dL	
Estradiol, Serum (Adult Premenopausal Females or Individuals on Estrogen Hormone Therapy)	M/F	0 Days - < 15 days	Not Applicable
		15 Days - < 1 Year	0 – 24 pg/mL
	M	1 Year - < 11 Years	0 – 13 pg/mL
	F	1 Year - < 9 Years	0 – 10 pg/mL
	M	11 Years - < 15 Years	0 – 28 pg/mL
	F	9 Years - < 12 Years	0 – 94 pg/mL
	M	15 Years - < 19 Years	0 – 38 pg/mL
	F	12 Years - < 14 Years	11 – 172 pg/mL
	M	19 Years – 150 Years	11 – 44 pg/mL
	F	14 Years – 150 Years	Not Applicable
Ferritin, Plasma or Serum	M	0 – 150 Years	24 – 336 ng/mL
	F	0 – 150 Years	15 – 204 ng/mL
Folate, Serum	M/F	0 – 150 Years	5.9 – 24.8 ng/mL

Immunoassay Reference Ranges

Test	Sex	Age	Reference Range
Follicle Stimulating Hormone, Serum	M/F	0 Days - < 1 Month	Not Applicable
	M	1 Month - < 1 Year	0.1 - 2.4 mIU/mL
	F	1 Month - < 1 Year	0.5 - 11 mIU/mL
	M	1 Year - < 10 Years	0 - 1.6 mIU/mL
	F	1 Year - < 10 Years	0.4 - 5.5 mIU/mL
	M	10 Years - < 18 Years	0.4 - 5.1 mIU/mL
	F	10 Years - < 15 Years	0.3 - 7.8 mIU/mL
	M	18 Years - 150 Years	1 - 12 mIU/mL
	F	15 Years - 150 Years	11 - 172 mIU/mL
Free Thyroxine (Free T4), Serum	M/F	0 Days - < 5 Days	N/A
		5 Days - < 15 Days	1.05 - 3.21 ng/dL
		15 Days - < 1 Month	0.68 - 2.53 ng/dL
		1 Month - < 1 Year	0.89 - 1.70 ng/dL
		1 Year - < 18 Years	0.80 - 1.37 ng/dL
		18 Years - 150 Years	0.70 - 1.37 ng/dL
Homocysteine, Plasma	M/F	0 - 150 Years	5 - 15 µmol/L
Insulin, Serum	M/F	0 - 150 Years	0 - 16 µU/mL
Luteinizing Hormone, Serum	M/F	0 Days - < 3 Months	Not Applicable
		3 Months - < 1 Year	0 - 2.9 mIU/mL
		1 Year - < 10 Years	0 - 0.5 mIU/mL
	M	10 Years - < 13 Years	0 - 4.3 mIU/mL
		13 Years - < 15 Years	0 - 6.4 mIU/mL
		15 Years - 150 Years	0.6 - 12 mIU/mL
		F	15 Years - 150 Years
Progesterone, Serum	M/F	0 Days - < 1 Month	Not Applicable
		1 Month - < 1 Year	0 - 0.7 ng/mL
		1 Year - < 10 Years	0 - 0.3 ng/mL
	M	10 Years - < 15 Years	0.1 - 0.8 ng/mL
	F	10 Years - < 14 Years	0.1 - 0.8 ng/mL
	M	15 Years - < 18 Years	0.1 - 0.6 ng/mL
	M	18 Years - 150 Years	0 - 0.2 ng/mL
	F	14 Years - 150 Years	Not Applicable

Immunoassay Reference Ranges

Test	Sex	Age	Reference Range
Prolactin, Serum	M/F	0 Days - < 1 Month	Not Applicable
		1 Month - < 1 Year	6 - 114 ng/mL
		1 Year - < 18 Years	4 - 23 ng/mL
	M	18 Years - 150 Years	3 - 20 ng/mL
	F	18 Years - 150 Years	3 - 27 ng/mL
PSA	See Reference Notes	<p>While there is no universally accepted normal range for PSA when used as an initial screening test, a PSA higher than 3 ng/mL is typically considered elevated, based on clinical studies and national guidelines (J Urol. 2023;210(1):45-53; J Natl Compr Canc Netw. Early Detection of Prostate Cancer Version 2.2023. https://www.nccn.org/professionals/physician_gls/pdf/prostate_detection.pdf).</p> <p>However, the PSA value should be interpreted in light of factors such as age, race, family history of prostate cancer, digital rectal examination result, prostate volume and result of prior prostate biopsy. Nomograms, such as the PBCG calculator, may be helpful in calculating the risk of clinically significant prostate cancer based on these factors (https://riskcalc.org/ExtendedPBCG/) (BMC Med Res Methodol 2022;22(1):200).</p>	
Parathyroid Hormone, Intact, Serum	M/F	0 Days - < 6 Days	Not Applicable
		6 Days - < 1 Year	6 - 89 pg/mL
		1 Year - < 9 Years	16 - 63 pg/mL
		9 Years - < 17 Years	22 - 88 pg/mL
		17 Years - < 19 Years	16 - 60 pg/mL
		19 Years - 150 Years	16 - 77 pg/mL
Testosterone Total Adult Male, serum	M/F	0 Days - < 4 Days	Not Applicable
	M	4 Days - < 6 Months	8.7 - 298.9 ng/dL
	M	6 Months - < 9 Years	0 - 35.7 ng/dL
	M	9 Years - < 11 Years	0 - 23.3 ng/dL
	M	11 Years - < 14 Years	0 - 444.4 ng/dL
	M	14 Years - < 16 Years	36 - 632.3 ng/dL
	M	16 Years - < 19 Years	147.8 - 794 ng/dL
	M	19 Years - < 50 Years	187.2 - 950.3 ng/dL
	M	50 Years - 150 Years	178.4 - 986.7 ng/dL
	F	4 Days - < 9 Years	1.2 - 62 ng/dL
	F	9 Years - < 13 Years	0 - 28.2 ng/dL
	F	13 Years - < 15 Years	10.4 - 44.4 ng/dL
	F	15 Years - < 19 Years	14.1 - 49 ng/dL
	F	19 Years - < 50 Years	12.3 - 58.5 ng/dL
F	50 Years - 150 Years	9.7 - 36.8 ng/dL	
Triiodothyronine, Total (Total T3), Plasma	M/F	0 Days - < 11 Years	113 - 189 ng/dL
		11 Years - < 14 Years	98 - 176 ng/dL
		14 Years - < 16 Years	92 - 156 ng/dL
		16 Years - < 18 Years	104 - 135 ng/dL
		18 Years - 150 Years	58 - 160 ng/dL

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Thyroxine, Total T4, Plasma or Serum	M/F	0 - < 9 Years	6.2 – 10.3 µg/dL
		9 Years - < 12 Years	5.5 – 9.3 µg/dL
		12 Years - < 17 Years	4.7 – 8.6 µg/dL
		≥ 17 Years	4.0 – 11.0 µg/dL
Vitamin D Total, Serum (25-Hydroxyvitamin D)	M/F	0 – 150 Years	25 – 80 ng/mL
Troponin-I, Plasma	M/F	0 – 17 Years	Reference intervals have not been established.
Thyroid Stimulating Hormone (TSH), Serum	M/F	4 Days - < 6 Months	0.73 – 4.77 µU/mL
		6 Months - < 13 Years	0.56 – 4.0 µU/mL
		13 Years - < 18 Years	0.47 – 3.41 µU/mL
		≥ 18 Years	0.35 – 3.6 µU/mL
Vitamin B12, Serum	M/F	0 – 150 Years	213 – 816 pg/mL

Therapeutic Drug Reference Ranges

Test	Sex	Age	Reference Range
Amikacin, Trough, Plasma or Serum	M/F	0 – 150 Years	< 10 µg/mL
Amikacin, Peak, Plasma or Serum	M/F	0 – 150 Years	20 – 30 µg/mL
Amikacin, Random	M/F	0 – 150 Years	Not Applicable µg/mL
Acetaminophen, Plasma	M/F	0 – 150 Years	10 – 30 µg/mL
Carbamazepine, Plasma	M/F	0 – 150 Years	4 – 12 µg/mL
Digoxin, Plasma or Serum	M/F	0 – 150 Years	0.8 – 2.0 ng/mL
Gentamicin, Trough, Plasma or Serum	M/F	0 - <18 Years	< 1.9 µg/mL
	M/F	> 18 Years	< 0.4 µg/mL
Gentamicin, Peak	M/F	0 – 150 Years	5 – 10 µg/mL
Gentamicin, Random, Plasma or Serum	M/F	0 – 150 Years	Not Applicable
Lithium, Plasma or Serum	M/F	0 – 150 Years	0.6 – 1.2 mEq/L
Methotrexate, Plasma or Serum	M/F	0 -150 Years	24 hours post infusion: < 5.0 µmol/L
	M/F	0 -150 Years	48 hours post infusion: < 0.5 µmol/L
	M/F	0 -150 Years	72 hours post infusion: < 0.10 µmol/L
NAPA, Plasma	M/F	0 – 150 Years	NAPA: 5 - 30 µg/mL
Phenobarbital, Plasma or Serum	M/F	0 -150 Years	10 – 40 µg/mL
Phenytoin, Plasma or Serum	M/F	0 – 150 Years	10 – 20 µg/mL
Procainamide, Serum	M/F	0 – 150 Years	4 – 10 µg/mL
Salicylate, Plasma	M/F	0 – 150 Years	15 – 30 mg/dL
Theophylline, Plasma or Serum	M/F	0 - < 1 Month	5 – 10 µg/mL
	M/F	> 1 Month	10 – 20 µg/mL
Tobramycin Trough, Plasma or Serum	M/F	0 - < 18 Years	< 1.9 µg/mL
	M/F	> 18 Years	< 0.4 µg/mL
Tobramycin Peak, Plasma or Serum	M/F	0 – 150 Years	5 – 10 µg/mL
Tobramycin Random, Plasma or Serum	M/F	0 – 150 Years	Not Applicable
Valproic Acid, Plasma or Serum	M/F	0 – 150 Years	50 – 100 µg/mL
Vancomycin Trough, Plasma or Serum	M/F	0 – < 18 Years	5 – 20 µg/mL
	M/F	> 18 Years	10 – 20 µg/mL
Vancomycin Peak, Plasma or Serum	M/F	0 – < 18 Years	25 – 50 µg/mL
	M/F	> 18 Years	20 – 40 µg/mL
Vancomycin Random, Plasma or Serum	M/F	0 – 150 Years	Not Applicable

Urine Chemistry Reference Ranges

Test	Sex	Age	Reference Range
Urine BUN	M/F	0 - 150 Years	300 – 1800 mg/dL
Urine Calcium	M/F	0 - 150 Years	2.5 – 25 mg/dL
Urine Chloride	M/F	0 - 150 Years	Reference intervals not established
Urine Creatinine	M/F	0 - 150 Years	40 – 200 mg/dL
Urine Glucose	M/F	0 - 150 Years	1 – 15 mg/dL
Urine Microalbumin	M/F	0 - 150 Years	0 – 14.9 µg/mL
Urine Phosphorus	M/F	0 - 150 Years	20 – 150 mg/dL
Urine Potassium	M/F	0 - 150 Years	Reference intervals not established
Urine Protein	M/F	0 - 150 Years	0 – 15 mg/dL
Urine Sodium	M/F	0 - 150 Years	Reference intervals not established
Urine Uric Acid	M/F	0 - 150 Years	20 – 100 mg/dL

Coagulation Reference Ranges

Test	Sex	Age	Reference Range
Antithrombin Activity	M/F	0 - 150 Years	75 – 140% of Normal
D-Dimer	M/F	0 - 150 Years	0.27 – 0.49 µg/mL FEU
Fibrinogen	M/F	0 - 150 Years	220 – 415 mg/dL
Low Molecular Weight Heparin	M/F	0 - 150 Years	< 0.0 IU/mL Therapeutic Range: 0.60 – 1.20 IU/mL
PT	M/F	0 - 150 Years	11.9 – 14.5 seconds
PTT	M/F	0 - 150 Years	23.5 – 33.5 seconds
Thrombin Time	M/F	0 - 150 Years	15.0 – 25.0 seconds
Unfractionated Heparin	M/F	0 - 150 Years	< 0.0 IU/mL Therapeutic Range: 0.30 – 0.70 IU/mL

Hematology Reference Ranges

Test	Sex	Age	Reference Range
WBC	M/F	0-1 week	9.4-31.1 10 ³ /uL
		8-30 days	4.3-18.3 10 ³ /uL
		1 mo-6 yrs	4.0-14.6 10 ³ /uL
		7-11 yrs	4.0-13.2 10 ³ /uL
		12-17 yrs	3.4-10.2 10 ³ /uL
		18+ yrs	3.9-10.7 10 ³ /uL
RBC	M/F	0-1 week	4.4-5.8 106/uL
		8-30 days	3.8-5.5 106/uL
		1 mo-6 yrs	3.8-5.5 106/uL
		7-11 yrs	3.8-5.5 106/uL
		12-17 yrs	3.8-5.5 106/uL
	F	18+ yrs	4.0-5.5 106/uL
M	18+ yrs	4.5-6.0 106/uL	
HGB	M/F	0-7 days	13.5-22.6 g/dl
		8-30 days	12.5-20.6 g/dl
		1-2 mo	10.0-18.1 g/dl
		3-6 mo	9.0-14.0 g/dl
		7 mo-6 yrs	10.5-13.5 g/dl
		7-11 yrs	11.4-15.5 g/dl
	12-17 yrs	12.0-16.0 g/dl	
	F	18+ yrs	11.8-16.0 g/dl
M	18+ yrs	14.0-18.1 g/dl	
HCT	M/F	0-7 days	41-65 %
		8-30 days	38-61 %
		1-2 mo	31-54 %
		3-6 mo	28-40 %
		7 mo-6 yrs	32-39 %
		7-11 yrs	34-44 %
	12-17 yrs	35-49 %	
	F	18+ yrs	36-43 %
M	18+ yrs	41-49 %	
MCV	M/F	0-7 days	93-118 fl
		8-30 days	84-118 fl
		1-2 mo	75-112 fl
		3-6 mo	72-106 fl
		7 mo-6 yrs	69-85 fl
		7-11 yrs	75-93 fl
		12-17 yrs	76-96 fl
		18+ yrs	81-98 fl
MCH	M/F	0-7 days	28.0-40.0 pg
		8-30 days	28.0-40.0 pg
		1-2 mo	26.0-38.0 pg
		3-6 mo	25.0-35.0 pg
		7 mo-6 yrs	23.0-31.0 pg
		7-11 yrs	25.0-33.0 pg
		12-17 yrs	25.0-35.0 pg
		18+ yrs	27.0-32.0 pg

Hematology Reference Ranges

Test	Sex	Age	Reference Range
MCHC	M/F	0-7 days	29.0-38.0 gm/dL
		8-30 days	30.0-37.0 gm/dL
		1-2 mo	30.0-37.0 gm/dL
		3-6 mo	31.0-36.0 gm/dL
		7 mo-6 yrs	31.0-37.0 gm/dL
		7-17 yrs	32.0-37.0 gm/dL
		18+ yrs	31.0-35.0 gm/dL
PLT	M/F	0-7 days	140-300 10 ⁹ /uL
		8-30 days	200-470 10 ⁹ /uL
		1 mo-6 yrs	150-400 10 ⁹ /uL
		7-11 yrs	150-400 10 ⁹ /uL
		12-17 yrs	150-400 10 ⁹ /uL
		18+ yrs	135-371 10 ⁹ /uL
RDW SD	M/F	0-150 years	37.4-52.4 fl
RDW CV	M/F	0-150 years	11.1-14.3 %
MPV	M/F	0-7 days	10.2-12.0 fl
		8-30days	10.0-12.2 fl
		1mo-1yr	8.7-11.0 fl
		2-7yrs	9.2-11.4 fl
		8-12yrs	9.6-11.8 fl
		13-18yrs	9.3-12.8 fl
		18+yrs	9.3-12.8 fl
RET%	M/F	0-150 years	0.5 - 1.8 %
RET#	M/F	0-30 days	0.063-0.271 10 ⁶ /uL
		1 mo-2 yrs	0.018-0.108 10 ⁶ /uL
		3-17 yrs	0.018-0.072 10 ⁶ /uL
		18+ yrs	0.02-0.100 10 ⁶ /uL
RETHE	M	0-150 years	29.8-40.4 pg
	F	0-150 years	30.1-39.8 pg
IRF	M	0-150 years	2.6-20.4 %
	F	0-150 years	2.1-25.5 %
IPF	M/F	0-150 years	1.6 - 8.1 %

Hematology Reference Ranges

Test	Sex	Age	Reference Range
Neutrophils	M/F	0-1 days	50.0-79.0 %
		2-31 days	25.0-67.0 %
		1-6 mo	20.0-40.0 %
		7 mo-2 yrs	22.0-45.0 %
		3-5 yrs	32.0-54.0 %
		6-10 yrs	39.0-67.0 %
		11-17 yrs	45.0-67.0 %
		18+ yrs	35.0-75.0 %
	M/F	0-30 days	5.9-19.9 10 ³ /uL
		1-11 mo	1.5-7.7 10 ³ /uL
		1-6 yrs	1.7-7.7 10 ³ /uL
		7-11 yrs	1.7-7.7 10 ³ /uL
		12-17 yrs	1.8-7.7 10 ³ /uL
		18+ yrs	1.6-8.1 10 ³ /uL
Lymphs	M/F	0-1 days	15.0-38.0 %
		2-31 days	28.0-62.0 %
		1 mo-2 yrs	47.0-67.0 %
		3-5 yrs	37.0-59.0 %
		6-10 yrs	26.0-48.0 %
		11-17 yrs	24.0-44.0 %
		18+ yrs	15.0-49.0 %
		M/F	0-30 days
	1-11 mo		2.5-9.8 10 ³ /uL
	1-6 yrs		2.0-6.2 10 ³ /uL
	7-11 yrs		1.8-4.9 10 ³ /uL
	12-17 yrs		1.7-4.5 10 ³ /uL
	18+ yrs		1.1-3.5 10 ³ /uL
	Monos	M/F	0-1 days
2-31 days			2.0-19.0 %
1 mo-17 yrs			1.0-13.0 %
18+ yrs			3.5-12.0 %
M/F		0-30 days	0.2-1.0 10 ³ /uL
		1-11 mo	0.2-1.0 10 ³ /uL
		1-6 yrs	0.2-0.9 10 ³ /uL
		7-11 yrs	0.2-0.9 10 ³ /uL
		12-17 yrs	0.2-1.0 10 ³ /uL
		18+ yrs	0.3-1.1 10 ³ /uL

Hematology Reference Ranges

Test	Sex	Age	Reference Range
Eos	M/F	0-1 days	0.0-6.0 %
		2-31 days	0.0-10.0 %
		1 mo-17 yrs	0.0-9.0 %
		18+ yrs	0.4-7.5 %
	M/F	0-150 years	0.03-0.51 10 ³ /uL
Basos	M/F	0-17 Years	0.0-2.0 %
		18+ yrs	0.1-1.5 %
	M/F	0-150 years	0.01-0.08 10 ³ /uL
Imm Gran	M/F	0-150 years	0.0-0.6 %
	M/F	0-150 years	0.0-0.03 10 ³ /uL