



NORMAL LABORATORY VALUES

IMPORTANT NOTES:

"Normal" values can vary depending on a variety of factors, including the laboratory running the test, and the equipment or method used; patient age or gender; time of day when the sample was taken. Your test results can be thrown off by several factors, including active infections, stage of HIV disease, and food (some test samples need to be taken after you have fasted - not eaten anything - for several hours). Because of these factors, an abnormal lab result may not be a cause for concern. Discuss abnormal results with your health care provider.

The table below compares the units used in the United States with the "Système International d'Unités (SI units), a metric system used in many parts of the world. The last column, "To Convert US to SI Units," is the factor to multiply US lab values to convert them to SI units. To convert SI units to US units, divide the SI value by the conversion factor.

Where normal values for men and women are different, they are indicated as women: ♀ and men: ♂

Laboratory Test	Normal Range in US Units	Normal Range in SI Units	To Convert US to SI Units	
ALT (Alanine aminotransferase)	♀ 7-30 units/liter ♂ 10-55 units/liter	♀ 0.12-0.50 µkat/liter ♂ 0.17-0.92 µkat/liter	x 0.01667	
Albumin	3.1 - 4.3 g/dl	31 - 43 g/liter	x 10	
Alkaline Phosphatase	♀ 30-100 units/liter ♂ 45-115 units/liter	♀ 0.5-1.67 µkat/liter ♂ 0.75-1.92 µkat/liter	x 0.01667	
Amylase (Serum)	53-123 units/liter	0.88-2.05 nkat/liter	x 0.01667	
Aspartate aminotransferase	♀ 9-25 units/liter ♂ 10-40 units/liter	♀ 0.15-0.42 µkat/liter ♂ 0.17-0.67 µkat/liter	x 0.01667	
Basophils	0-3% of lymphocytes	0.0-0.03 fraction of white blood cells	x 0.01	
Bilirubin - Direct	0.0-0.4 mg/dl	0-7 µmol/liter	x 17.1	
Bilirubin - Total	0.0-1.0 mg/dl	0-17 µmol/liter	x 17.1	
C peptide	0.5-2.0 ng/ml	0.17-0.66 nmol/liter	x 0.33	
Calcium, serum	8.5-10.5 mg/dl	2.1-2.6 mmol/liter	x 0.25	
Calcium, urine	0-300 mg/24hr	0.0-7.5 mmol/24hr	x 0.025	
Cholesterol, Total & LDL	Total <200 mg/dL Desirable <100 mg/dL Marginal 200-239 mg/dL High >239 mg/dl Very High -- HDL: Low (heart risk) <40 mg/dL Moderate 40 - 60 mg/dL Good (protective) >60 mg/dL	LDL (Bad cholesterol) <100 mg/dL 100 - 159 mg/dL 160 - 189 mg/dL >190 mg/dL	Total <5.17 mmol/liter LDL (Bad cholesterol) <2.59 mmol/liter 5.17-6.18 mmol/liter 2.59 - 4.14 >6.18 mmol/liter 4.14 - 4.89 -- >4.91 mmol/liter	x0.02586
Cortisol: serum	0-25 µg/dl (depends on time of day)	0-690 nmol/liter	x 27.59	
free (urine)	20-70 µg/dl	55-193 nmol/24hr	x 2.759	
Creatine kinase	♂ 60-400 units/liter ♀ 40-150 units/liter	♂ 1.00-6.67 µkat/liter ♀ 0.67-2.50 µkat/liter	x 0.01667	
DHEA	♂ 180-1250 ng/dl ♀ 130-980 ng/dl	♂ 6.24-43.3 nmol/liter ♀ 4.5-34.0 nmol/liter	x 0.03467	
DHEA Sulfate	♂ 10-619 µg/dl ♀ Pre-menopause: 12-535 µg/dl ♀ Post-menopause: 30-260 µg/dl	♂ 100-6190 µg/liter ♀ Pre-menopause: 120-5350 µg/liter ♀ Post-menopause: 300-2600 µg/liter	x 10	
Eosinophils	0-8% of white blood cells	0.0-0.8 fraction of white blood cells	x 0.01	
Folate	3.1-17.5 ng/ml	7.0-39.7 nmol/liter	x 2.266	
Glucose, urine	<0.05 g/dl	<0.003 mmol/liter	x 0.05551	
Glucose, plasma	70-110 mg/dl (fasting <110)	3.9-6.1 mmol/liter	x 0.05551	
Hematocrit	♂ 37.0% - 49.0% of red blood cells ♀ 36.0% - 46.0% of red blood cells	♂ 0.37-0.49 fraction of red blood cells ♀ 0.36-0.46 fraction of red blood cells	x 0.01	

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Folate	3.1-17.5 ng/ml	7.0-39.7 nmol/liter	x 2.266
Glucose, urine	<0.05 g/dl	<0.003 mmol/liter	x 0.05551
Glucose, plasma	70-110 mg/dl	3.9-6.1 mmol/liter	
Hematocrit	♂ 37.0% - 49.0% of red blood cells ♀ 36.0% - 46.0% of red blood cells	♂ 0.37-0.49 fraction of red blood cells ♀ 0.36-0.46 fraction of red blood cells	x 0.01
Hemoglobin	♂ 13.0-18.0 g/dl ♀ 12.0-16.0 g/dl	♂ 8.1-11.2 mmol/liter ♀ 7.4-9.9 mmol/liter	x 0.6206
Lactic acid	0.5-2.2 mmol/liter	0.5-2.2 mmol/liter	No conversion
Leukocytes (WBC)	4.5-11.0x10 ³ /mm ³	4.5-11.0x10 ⁹ /liter	x 10 ⁶
Lymphocytes	16-46% of white blood cells	0.16-0.46 fraction of white blood cells	x 0.01
Mean corpuscular hemoglobin (MCH)	25.0-35.0 pg/cell	25.0-35.0 pg/cell	No conversion
Mean corpuscular hemoglobin concentration (MCHC)	31.0-37.0 g/dl	310-370 g/liter	x 10
Mean corpuscular volume (MCV)	♂ 78-100 µm ³ ♀ 78-102 µm ³	♂ 78-100 fl ♀ 78-102 fl	No conversion
Monocytes	4-11% of white blood cells	0.04-0.11 fraction of white blood cells	x 0.01
Neutrophils	45-75% of white blood cells	0.45-0.75 fraction of white blood cells	x 0.01
Potassium	3.4-5.0 mmol/liter	3.4-5.0 mmol/liter	No conversion
Sodium	135-145 mmol/liter	135-145 mmol/liter	No conversion
Testosterone, total (morning sample)	♂ 270-1070 ng/dl ♀ 6-86 ng/dl	♂ 9.36-37.10 nmol/liter ♀ 0.21-2.98 nmol/liter	x 0.03467
Testosterone, Unbound	Age 20-40: ♂ 15.0-40.0, ♀ 0.6-3.1 pg/ml Age 41-60: ♂ 13.0-35.0, ♀ 0.4-2.5 pg/ml Age 61-80: ♂ 12.0-28.0, ♀ 0.2-2.0 pg/ml	♂ 520-1387, ♀ 20.8-107.5 pmol/liter ♂ 451-1213, ♀ 13.9-86.7 pmol/liter ♂ 416-971, ♀ 6.9-69.3 pmol/liter	x 34.67
Triglycerides (fasting)	Normal: 40-150 mg/dl Borderline: 150-200 mg/dl High: 200-500 mg/dl Very High: >500 mg/dl	0.45-1.69 mmol/liter 1.69 - 2.26 mmol/liter 2.26 - 5.65 mmol/liter >5.65 mmol/liter	x 0.01129
Urea, plasma (BUN)	8-25 mg/dl	2.9-8.9 mmol/liter	x 0.357
Urinalysis: pH	5.0-9.0	5.0-9.0	No conversion
Specific gravity	1.001-1.035	1.001-1.035	
WBC (White blood cells, Leukocytes)	4.5-11.0x10 ³ /mm ³	4.5-11.0x10 ⁹ /liter	x 10 ⁶

TERMINOLOGY: Some units of measurement include the following fractions and multipliers:

mega (M): 10⁹ or x1,000,000

milli (m): 10⁻³ or ÷1,000

kilo (k): 10³ or x1,000

micro (µ): 10⁻⁶ or ÷1,000,000

deca or deka: 10¹ or x10

nano (n): 10⁻⁹ or ÷1,000,000,000

deci (d): 10⁻¹ or ÷10

pico (p): 10⁻¹² or ÷1,000,000,000,000

gram: common measurement of weight. Used in this table: pg (picograms), g (grams), mg (milligrams), etc. per liter

katal (kat): a unit of catalytic activity, used especially in the chemistry of enzymes. Used in this table: µkat (microkatal), nkat (nanokatal) per liter

micrometer (µm): a unit of length. Mean Corpuscular Volume is expressed in cubic micrometers

mole: also "gram molecular weight," a quantity based on the atomic weight of the substance. Many test results in the Système Internationale are expressed as the number of moles per liter. In US units, these measurements are usually in grams per liter. Used in this table: mmol (millimoles), µmol, (micromoles), nmol (nanomoles), pmol (picomoles) per liter

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