

Tables of Normal Values (As of January 2013)

Note:

Values and units of measurement listed in these tables are derived from several resources. Substantial variation exists in the ranges quoted as “normal” and may vary depending on the assay used by different laboratories. Therefore, these tables should be considered as directional only. Some values (e.g. hormones) vary by gender, age, time of day and condition (e.g. pregnancy) so a text on endocrinology should be consulted for complete data. Where possible, Canadian sources are used, Globalrph.com was used to provide non SI unit conversions.

CCS = Canadian Cardiovascular Society
 CHEP = Canadian Hypertension Education Program
 MCC = Medical Council of Canada

Table 1: Vital Signs and Body Mass Index

Parameter	Normal Values
Blood Pressure (Systolic / Diastolic)	
CHEP 2012	
At physicians office (average 5 measurements)	< 140 / 90 mmHg
Ambulatory BP monitor	< 135 / 85
With diabetes	< 130 / 80
Heart Rate (HR) or Pulse	
Bradycardia	< 60 beats per minute
Normal	60 – 80
Tachycardia	> 100
Respiration Rate (RR)	
Bradypnea	< 12 breaths per minute
Normal (eupnea)	12 – 18
Tachypnea	> 18
Body Temperature	
Fever	> 37.5 ° C
Normal	36.5 – 37.5 ° C (approximate)
Hypothermia	< 35.0 ° C
Body Mass Index (BMI)	
Underweight	< 18.5 kg/m ²
Normal (Health Canada 2012)	18.5 – 24.9 Caucasian
Overweight	25.0 – 29.9
Obesity class I	30.0 – 34.9
Obesity class II	35.0 – 39.9
Obesity class III (extreme, morbid)	≥ 40.0

Table 2: Common Blood Chemistries

Parameter	SI Units (Canada)	Traditional Units (USA)
Albumin (MCC 2012)	35 – 50 g/L	3.5 – 5.0 g/dL
Alanine Aminotransferase (ALT) (MCC 2012)	3 – 36 U/L	3 – 36 U/L
Alkaline phosphatase (ALP serum) (MCC 2012)	35 – 100 U/L	35 – 100 U/L
Ammonia – NH ₃	12 – 41 µmol/L	20 – 70 µg/dL
Amylase (serum) (MCC 2012)	< 160 U/L	< 160 U/L
Aspartate Aminotransferase (AST) (MCC 2012)	0 – 35 U/L	0 - 35 U/L
Bicarbonate (HCO ₃) (serum) (MCC 2012)	24 – 30 mmol/L	24 – 30 mEq/L
Bilirubin serum (MCC 2012) Total	< 26µmol/L	< 1.5 mg/dL
Bilirubin, conjugated (direct)	< 7 µmol/L	< 0.4 mg/dL
Blood Urea Nitrogen (BUN) (MCC 2012)	2.5 – 8.0 mmol/L	7– 22 mg/dL
Calcium serum (MCC 2012) Total	2.18 – 2.58	8.7 – 10.3 mg/dL
Ionized	1.05 – 1.3 mmol/L	4.2 – 5.2 mg/dL
Carbon dioxide pressure, arterial (PaCO ₂)	35 – 45 mmHg	35 – 45 mmHg
Chloride serum (MCC 2012)	98 – 106 mmol/L	98 – 106 mEq/L
Cholesterol, total		
Desirable	< 5.2 mmol/L	< 200 mg/dL
Borderline high	5.2 – 6.2	201 – 240
High	> 6.2	> 241
Cholesterol, LDL (CCS 2012)		
High risk patients (Framingham risk score)	< 2.0 mmol/L or > 50% reduction	< 77.3 mg/dL or > 50% reduction
Intermediate risk patient if LDL ≥ 3.5	< 2.0 mmol/L or 50% reduction	< 77.3 mg/dL or 50% reduction
Low risk patient if LDL ≥ 5.0	> 50% reduction from baseline	> 50% reduction from baseline
Cholesterol, HDL		
Low	< 1.00 mmol/L	< 40 mg/dL
Creatine Kinase serum (CK also CPK) (MCC 2012)	5 – 130 U/L	5 – 130 U/L

Table 2: Common Blood Chemistries cont'd

Parameter	SI Units (Canada)	Traditional Units (USA)
Copper	11.0 – 25.0 µmol/L	70 – 155 µg/dL
Creatinine, serum		
Male	70 – 120 µmol/L	0.8 – 1.4 mg/dL
Female	50 – 90	0.56 – 1.0
Creatinine Clearance (adult)	75 – 125 mL/min	75 – 125 mL/min
Ferritin	22 – 561 pmol/L	10 – 250 ng/mL
Folic Acid (Folate) (MCC 2012)	7 – 36 nmol/L	3 – 16 ng/mL
Gamma Glutamyl Transferase (GGT)		
Female	5 – 36 U/L	5 – 36 U/L
Male	8 – 61 U/L	8 – 61 U/L
Glucose, fasting		
Normal	3.3 – 5.8 mmol/L	59 – 105 mg/dL
Glucose, postprandial		
Normal	< 6.5 mmol/L	< 120 mg/dL
Glycosylated Hemoglobin – HbA1C		
Normal (MCC 2012)	4 - 6%	4 – 6%
β-Hydroxybutyrate	< 270 µmol/L	< 2.8 mg/dL
Iron (MCC 2012)	11 – 32 µmol/L	60 – 178 µg/dL
Iron-Binding Capacity, total – TIBC	45 – 82 µmol/L	251– 460 µg/dL
Lactic Acid (Lactate plasma venous)	0.9 – 1.8 mmol/L	9 – 16 mg/dL
Lactate Dehydrogenase serum (LDH) (MCC 2012)	95 – 195 U/L	95 – 195 IU/L
Magnesium serum	0.75 – 0.95 mmol/L	1.82 – 2.31 mg/dL
Osmolality Serum (MCC 2012)	280 – 300 mmol/kg	280 – 300 mOsm/kg
Oxygen partial pressure, arterial – PaO ₂ (MCC 2012)	85 – 105 mm Hg	85 – 105 mm Hg
pH – arterial	7.35 – 7.45 pH	7.35 – 7.45 pH
Phosphorus, inorganic (MCC 2012)	0.80 – 1.50 mmol/L	2.5 – 4.5 mg/dL

Table 2: Common Blood Chemistries cont'd

Parameter	SI Units (Canada)	Traditional Units (USA)
Potassium	3.5 – 5.0 mmol/L	3.5 – 5.0 mEq/L
Protein, total		
Plasma	60 – 80 g/L	6.0 – 8.0 g/dL
Urine	< 0.15 g/day	< 150 mg/24 hr
PSA – Prostate Specific Antigen serum (MCC 2012)		
40 years or older	0 – 4 µg/L	0 – 4 µg/L
Pyruvate (Pyruvic Acid)	31 – 102 µmol/L	0.30 – 0.90 mg/dL
Sodium serum	135 – 145 mmol/L	135 – 145 mEq/L
Transferrin serum	1.88 – 3.41 g/L	188 – 341 mg/dL
Transferrin saturation	0.2 – 0.5	20 – 50%
Triglyceride (MCC 2012)	< 2.20 mmol/L	< 195 mg/dL
Troponin T	< 0.01 µg/L	< 0.01 µg/L
Uric Acid (MCC 2012)	180 – 420 µmol/L	3.0 – 7.0 mg/dL
Blood Urea Nitrogen (BUN)	2.5 – 8.0 mmol/L	7 – 22.4 mg/dL
Vitamin B ₁₂ (Cyanocobalamin)	74-516 pmol/L	100-700 pg/mL
Zinc	9.2 – 19.9 µmol/L	60 – 130 µg/dL

Table 3: Hematological Parameters

Parameter	SI Units (Canada)	Traditional Units (USA)
Red Blood Cells		
Erythrocytes (RBC) (MCC 2012)		
Female	4.0 – 5.2 X 10 ¹² /L	4.0 – 5.2 X 10 ⁶ /mm ³
Male	4.4 – 5.7 X 10 ¹² /L	4.4 – 5.7 X 10 ⁶ /mm ³
Reticulocyte Count (MCC 2012)	20-84 X 10 ⁹ / L	0.5 – 2.5%
Hematocrit (MCC 2012)		
Female	0.370 – 0.460	37– 46%
Male	0.420 – 0.520	42 –52%
Hemoglobin		
Female	123 – 157 g/L	12.3 – 15.7 g/dL
Male	140 – 174 g/L	14.0 – 17.4 g/dL
Erythrocyte Sedimentation Rate (ESR Westergren) (MCC 2012)		
Female	< 10 mm/h	< 10 mm/h
Male	< 6 mm/h	< 6 mm/h
White Blood Cells (WBC)		
White Blood Cell Count	4.0 – 10.0 X 10 ⁹ /L	4.0 – 10.0 X 10 ³ /mm ³
WBC Differential (MCC 2012)		
Segmented Neutrophils	2 – 7 X 10 ⁹ /L	45 – 75%
Lymphocytes	1.5 – 3.4 X 10 ⁹ /L	16 – 46%
Monocytes	0.14 – 0.86 X 10 ⁹ /L	4 – 11%
Band neutrophils	< 0.7 X 10 ⁹ /L	0 – 5%
Eosinophils	< 0.45 X 10 ⁹ /L	0 – 8%
Basophils	< 0.10 X 10 ⁹ /L	0 – 3%
Coagulation		
Bleeding Time (Ivy) (MCC 2012)	< 9 min	< 9 min
Clotting Time	5 – 15 min	5 – 15 min
Fibrinogen	5.1 – 11.8 µmol/L	175 – 400 mg/dL
International Normalized Ratio (INR) (MCC 2012)		
	0.9 – 1.2	0.9 – 1.2
Plasminogen	75 – 140 %	75 – 140 %
Platelet Count (Thrombocytes) (MCC 2012)	130 – 400 X 10 ⁹ /L	130 – 400 X 10 ³ /mm ³
Prothrombin Time (PT) (MCC 2012)	10 – 13 sec	10 – 13 sec
Partial Thromboplastin Time (PTT) (MCC 2012)	28 – 38 sec	28 – 38 sec
Thrombin Time	14 – 16 sec	14 – 16 sec

Table 4: Hormones

Parameter	SI Units (Canada)	Traditional Units (USA)
Adrenocorticotropin (ACTH)	1,3 – 16,7 pmol/L	6,0 – 76,0 pg/mL
Aldosterone (Normal Sodium Diet Adult)	0.52 – 0.94 nmol/L	19 – 34 ng/dL
Calcitonin		
Female	< 6.4 ng/L	< 6.4 pg/mL
Male	< 13.8	< 13.8
Cortisol serum		
Time : am	110 – 607 nmol/L	5 – 25 µg/dL
Time : pm	83- 469 nmol/L	3.1 – 16.7 µg/dL
Estrogens (as Estradiol)		
Female (premenopausal)	185 – 1625 pmol/L	50 – 450 pg/mL
Male	< 200	< 55
Follicle-Stimulating Hormone (FSH)		
Female (premenopausal)	2 – 12 IU/L	2 – 12 IU/L
Male	1 – 12	1 – 12
Glucagon	50 – 200 ng/L	50 – 200 pg/mL
Growth Hormone	< 8 µg/L	< 8 ng/mL
Insulin	36 – 179 pmol/L	5 – 25 µU/L
Luteinizing Hormone (LH)		
Female (premenopausal)	0.0 – 76 IU/L	0.0 – 76 IU/L
Male	1.5 – 9.3	1.5 – 9.3
Parathyroid Hormone (PTH)	1.2 – 5.8 pmol/L	11 – 54 pg/mL
Progesterone		
Female (mid-luteal phase)	14.3 – 64 nmol/L	4.5 – 25.2 ng/mL
Male	0.95 – 3.18 nmol/L	0.3 – 1.0 ng/mL
Prolactin	< 1.29 nmol/L	< 30 ng/mL
Renin Activity		
Normal Sodium Diet	0.5 – 4.0 ng/mL/hr	0.5 – 4.0 ng/mL/hr
Thyroxine (T4 free serum)	8.5 – 15.2 pmol/L	0.66 – 1.18 ng/dL
Triiodothyronine (T3 free serum) (MCC 2012 for SI units)	3.5 – 6.5 pmol/L	227 – 422 ng/dL
Testosterone		
Female	< 2.1 nmol/L	< 62 ng/dL
Male	6.7 – 28.9	300 – 1000
Thyroid-Stimulating Hormone (TSH) (MCC 2012)	0.4 – 5.0 µU/mL	0.4 – 5.0 µU/mL
Vitamin D3 - Cholecalciferol	60 – 105 nmol/L	24 – 40 ng/mL
25-Hydroxy-Cholecalciferol	25 – 137 nmol/L	10 – 55 ng/mL
1,25-Dihydroxy-Cholecalciferol	58 – 156 pmol/L	24 – 65 pg/mL