

Core Laboratory for Clinical Studies  
Reference Ranges  
Effective 04/10/2017  
(314) 362-3522

**Chemistry/Endocrinology**

Analyte	Units	Reference Range		
		Age Specific	Males	Females
Albumin	g/dL	0-17 yrs ≥ 18 yrs	2.5 - 5.0 3.5 - 5.2	
Alkaline Phosphatase	IU/L	0-17 yrs ≥ 18 yrs	70 - 550 35 - 129	
ALT (SGPT)	IU/L		6 - 53	
AST (SGOT)	IU/L	0-12 yrs 13-17 yrs ≥ 18 yrs	10 - 60 10 - 50 11 - 47	
Bilirubin, Direct	mg/dL		0.00 – 0.30	
Bilirubin, Total	mg/dL	0-17 yrs ≥ 18 yrs	0.3 - 1.1 0.2 - 1.4	
C-peptide	ng/mL		1.10 – 4.40  Reference range is for fasting subjects. Non-fasting values may be higher.	
Calcium	mg/dL	0-17 yrs ≥ 18 yrs	8.6 - 11.0 8.6 - 10.3	
Chloride	mmol/L		95 - 107	
CK (CPK), Total	IU/L		26 - 308	
Carbon Dioxide (CO2)	mmol/L	0-17 yrs ≥ 18 yrs	17 - 32 21 - 29	
Cortisol	µg/dL		3.3 – 24.8	
Creatinine	mg/dL	0-18 yrs ≥ 19 yrs	0.4 - 1.0 0.7 - 1.3	0.2 - 0.8 0.6 - 1.1
Ferritin	ng/mL		22.0–322.0	10.0 – 291.0
Free T3	pg/mL		2.3 – 4.4	
Free T4	ng/dL		0.93 - 1.70	
Gamma-GT	IU/L	1 – 12 yrs ≥ 13 yrs	7 – 32 8 – 61	7 - 32 5 - 36

Core Laboratory for Clinical Studies  
Reference Ranges  
Effective 04/10/2017  
(314) 362-3522

Analyte	Units	Reference Range		
		Age Specific	Males	Females
Glucose, Fasting	mg/dL	Normal: Impaired Fasting Glucose: Provisional Diagnosis of Diabetes:  Nonfasting Range:	64 - 99  100 - 125  ≥ 126	
HbA1c	%	Normal: Prediabetes: Provisional Diagnosis of Diabetes:	5.1 - 5.6 5.7 - 6.4 ≥ 6.5	
hs C-Reactive Protein (hsCRP)	mg/L	Cardiovascular Risk Assessment: Low Risk: Average Risk: High Risk:	< 1.0 1.0 – 3.0 > 3.0	
Insulin	μIU/mL		2.6 – 24.9 Reference range is for fasting subjects. Non- fasting levels may vary from 0 to greater than 100 in normal subjects.	
Iron, Total	μg/dL	1 month – 11 years ≥12 years	50 - 120 45 - 160	50 – 120 30 - 160
Iron Binding Capacity, Total	μg/dL		220 - 420	
Iron Saturation	%		15.0 – 60.0	11.0 – 52.0
LDH (LD), Total	IU/L		100 - 250	
Magnesium	mg/dL		1.6 – 2.6	
Phosphorus	mg/dL		2.3 - 4.5	
Potassium	mmol/L		3.3 - 5.1	
PTH (Parathyroid Hormone)	pg/mL		15 - 65	
Sodium	mmol/L		135 - 145	
Total Protein	g/dL		6.1 - 8.4	

Core Laboratory for Clinical Studies  
Reference Ranges  
Effective 04/10/2017  
(314) 362-3522

Analyte	Units	Reference Range		
		Age Specific	Males	Females
TSH	μIU/mL		0.50 - 5.00	
Urea Nitrogen (BUN)	mg/dL	0-17yrs ≥ 18 yrs	9 - 18 7 - 23	
Uric Acid	mg/dL	0-12 yrs ≥ 12 yrs	3.4 - 6.4 4.1 - 8.5	3.4 - 5.9 3.1 - 7.7
Urine Albumin/Creatinine Ratio	mg/g		0.0 - 29.9	
Vitamin B12	pg/mL		211 - 946	
Vitamin D, 25-Hydroxy	ng/mL		30 – 100 <20 = Vitamin D Deficiency <30 = Vitamin D Insufficiency <50 = Unsupplemented Normal Subjects	

Core Laboratory for Clinical Studies  
Reference Ranges  
Effective 04/10/2017  
(314) 362-3522

**Lipids**

Analyte	Units	Reference Range	
		Male	Female
Apolipoprotein A1	mg/dL	116 - 185	116 - 210
Apolipoprotein B	mg/dL	47 – 123	
HDL Cholesterol *	mg/dL	Adults: Optimal	≥60
		Near optimal	40-59
		High Risk	<40
LDL Cholesterol *	mg/dL	Adults: Optimal	<100
		Near Optimal	100-129
		Borderline High	130-159
		High	160-189
		Very High	≥190
		Pediatric: Acceptable	<100
		Borderline High	110-129
		High	≥130
Net Triglyceride *	mg/dL	Adults: Normal	<150
		Borderline High	150-199
		High	200-499
		Very High	≥500
Total Cholesterol*	mg/dL	Adults: Desirable	<200
		Borderline High	200- 239
		High	≥240
		Pediatric: Acceptable	<170
		Borderline High	170-199
		High	≥200

\*Adult Treatment Panel III guidelines. (Reference: Journal of American Medical Association, 2001; 285:2486-2497)

Core Laboratory for Clinical Studies  
Reference Ranges  
Effective 04/10/2017  
(314) 362-3522

**Hematology – Adult Reference range (≥ 13 years old)**

Analyte	Units	Reference Range	
		Males	Females
RBC	M/ $\mu$ L	4.06 - 5.63	3.63 – 4.92
Hemoglobin	g/dL	13.0 - 17.5	11.9 - 15.5
Hematocrit	%	40.7 - 50.3	36.1 - 44.3
MCV	fL	80.0 - 97.6	
MCH	pg	26.7 - 33.7	
MCHC	g/dL	32.7 - 35.5	
RDW	%	12.3 – 17.0	
Platelets	K/ $\mu$ L	140 - 440	
MPV	fL	6.8 - 10.4	
WBC	K/ $\mu$ L	3.6 – 11.2	
Neutrophil	% K/ $\mu$ L	38.7 - 74.5 1.8 - 6.6	
Lymphocyte	% K/ $\mu$ L	20.0 - 54.3 0.8 - 3.3	
Monocyte	% K/ $\mu$ L	4.3 - 13.5 0.2 - 1.2	
Eosinophil	% K/ $\mu$ L	0.0 - 6.0 0.0 - 0.5	
Basophil	% K/ $\mu$ L	0.0 - 3.0 0.0 - 0.2	

Core Laboratory for Clinical Studies  
Reference Ranges  
Effective 04/10/2017  
(314) 362-3522

**Hematology – Pediatric Reference range (6-12 years old)**

Analyte	Units	Reference Range
RBC	M/ $\mu$ L	4.00 - 5.20
Hemoglobin	g/dL	11.5 - 15.5
Hematocrit	%	35.0 - 45.0
MCV	fL	77.0 - 95.0
MCH	pg	26.7 - 33.7
MCHC	g/dL	32.7 - 35.5
RDW	%	11.8 - 14.6
Platelets	K/ $\mu$ L	140 - 440
MPV	fL	6.8 - 10.4
WBC	K/ $\mu$ L	4.5 - 13.5
Neutrophil	% K/ $\mu$ L	38.7 - 74.5 1.8-6.6
Lymphocyte	% K/ $\mu$ L	20.0-54.3 1.2 - 3.3
Monocyte	% K/ $\mu$ L	4.3 - 13.5 0.2 - 1.2
Eosinophil	% K/ $\mu$ L	0.0 - 6.0 0.0 - 0.5
Basophil	% K/ $\mu$ L	0.0 - 3.0 0.0 - 0.2

Core Laboratory for Clinical Studies  
Reference Ranges  
Effective 04/10/2017  
(314) 362-3522

**Hematology – Pediatric Reference range (2-5 years old)**

Analyte	Units	Reference Range
RBC	M/ $\mu$ L	3.9 – 5.3
Hemoglobin	g/dL	11.5 - 13.5
Hematocrit	%	34.0 - 40.0
MCV	fL	75.0 - 87.0
MCH	pg	26.7 - 33.7
MCHC	g/dL	32.7 - 35.5
RDW	%	11.8 - 14.6
Platelets	K/ $\mu$ L	140 - 440
MPV	FL	6.8 - 10.4
WBC	K/ $\mu$ L	5.0 - 15.5
Neutrophil	% K/ $\mu$ L	38.7 - 74.5 1.8-6.6
Lymphocyte	% K/ $\mu$ L	20.0-54.3 1.2 - 3.3
Monocyte	% K/ $\mu$ L	4.3 - 13.5 0.2 - 1.2
Eosinophil	% K/ $\mu$ L	0.0 - 6.0 0.0 - 0.5
Basophil	% K/ $\mu$ L	0.0 - 3.0 0.0 - 0.2