TITLE: Laboratory Test Reference Ranges	**Doc #:** 40243
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Always refer to the laboratory report for appropriate reference ranges at the time of analysis.

This document lists the test reference ranges that were established for the analysis methodologies used only by Nova Scotia Health Central Zone (CZ) Department of Pathology and Laboratory Medicine facilities.

Anatomical Pathology Blood Tests

Name of Test	Specimen	Units	Low	High	Critical
Anti-Cardiac Muscle Antibody	Serum (SST)	Qualitative	N/A	N/A	N/A
Anti-Skeletal Muscle Antibody	Serum (SST)	Qualitative	N/A	N/A	N/A
Anti-Pemphigoid Antibody	Serum (SST)	Qualitative	N/A	N/A	N/A
Anti-Pancreatic Islet Cell Antibody	Serum (SST)	Qualitative	N/A	N/A	N/A
Anti-Smooth Muscle Antibody	Serum (SST)	Qualitative	N/A	N/A	N/A
Anti-Liver Kidney Microsomal Antibody	Serum (SST)	Qualitative	N/A	N/A	N/A

Clinical Chemistry Blood Tests

Name of Test	Gender	Age	Units	Low	High	Critical
Acetaminophen	M/F	>0min	µmol/L			>350
	Interpretive Data: Therapeutic range: 66-199 umol/L Toxic level: Refer to Rumack Matthew nomogram. Acetaminophen results can be falsely low for patients undergoing treatment of N-acetylcysteine (NAC).					
Adrenocorticotropic hormone (ACTH)	M/F	>0min	pmol/L	2.3	10.1	
	Interpretive Data: Adrenocorticotropic Hormone (ACTH) reference ranges are based on samples collected prior to 10 AM.					
Albumin	M/F	0-1yr	g/L	25	46	
		>1yr		35	50	
Alcohol	M/F	>0min	mmol/L	None Detected		>54
	Interpretive Data: The method is intended for clinical purposes only. Medical-legal specimens should be analyzed by gas chromatographic method for confirmation of results.					
Alkaline Phosphatase (ALP)	M/F	0-15d	U/L	90	273	
	M/F	15d-1yr		134	518	
	M/F	1-10yr		156	369	
	M/F	10-13yr		141	460	
	M	13-15yr		127	517	
	F	13-15yr		62	280	
	M	15-17yr		89	365	
	F	15-17yr		54	128	
	M	17-19yr		59	164	
	F	17-19yr		48	95	
	M/F	>19yr		38	150	
Alanine Aminotransferase (ALT)	M/F	0-1yr	U/L	0	32	
	M/F	1-19yr		0	24	
	M	>19yr		0	54	

Clinical Chemistry Blood Tests

Name of Test	Gender	Age	Units	Low	High	Critical
	F	>19yr		0	44	
Alpha-1-Antitrypsin	M/F	>0 min	g/L	1.00	1.90	
Alpha Fetoprotein (AFP)	M/F	0min - 3mth	µg/L	Not established		
		3mth - 6mth		4	275	
		6mth - 1yr		3	148	
		1-3yr		3	21	
		>3yr		1	8	
Ammonia	M/F	>0min	µmol/L	18	72	
Amylase	M/F	0-15d	U/L	3	10	
		15d-3mth		2	22	
		3mth-1yr		3	50	
		1-19yr		20	101	
		>19yr		20	125	
	Interpretive Data: Amylase is less sensitive and specific in acute pancreatitis than lipase. Amylase results may be elevated in patients with macroamylase. The most common macroamylase is amylase complexed with an immunoglobulin. This elevated amylase is not diagnostic for pancreatitis. By utilizing plasma lipase, macroamylase may be determined.					
Androstenedione	M	>0min	nmol/L	1.4	10.8	
	F			1.4	14.3	
	Interpretive Data: Note: Stated reference range is for adults.					
Angiotensin Converting Enzyme (ACE)	M/F	>0min	U/L	8	52	
	Interpretive Data: Reference values are for adults. The reference intervals for pediatric patients may be up to 50% higher than that of adults. Plasma Angiotensin Converting Enzyme (ACE) is significantly reduced in patients on ACE inhibitors (e.g., Vasotec and Captopril).					
Anion Gap	M/F	>0min		5	15	
Anti-Thyroid Peroxidase Antibody (Anti-TPO)	M/F	>0min	IU/mL	<6		
Apolipoprotein B (APO B)	M	0-1yr	g/L	0.16	1.24	
		1-12yr		0.48	1.25	
		12-60yr		0.49	1.73	
		>60yr		0.54	1.63	
	F	0-1yr		0.17	1.20	
		1-12yr		0.51	1.26	
		12-60yr		0.53	1.82	
		>60yr		0.64	1.82	
Aspartate Aminotransferase (AST)	M/F	0-15d	U/L	32	162	
		15d-1yr		20	67	
		>1yr		5	45	
Beta 2 Microglobulin	M	>0min	nmol/L	<194.0		
	F			<201.0		

Clinical Chemistry Blood Tests

Name of Test	Gender	Age	Units	Low	High	Critical
	Interpretive Data: Expected values 95th percentile. If required, the conversion factor from International System of Measurement (SI) to Conventional Units: nmol/L divided by 0.08475=ng/mL ng/mL divided by 1000 =mg/L					
Bicarbonate	M/F	0-15d	mmol/L	5	20	<10 or >40
	M/F	15d-1yr		10	24	
	M/F	1-5yr		14	24	
	M/F	5-15yr		17	26	
	M	15-19yr		18	28	
	F	15-19yr		17	26	
	M/F	>19yr		22	31	
Bilirubin, direct	M/F	0-15d	µmol/L	0.0	12.0	
		>15d		0.0	8.5	
Bilirubin, indirect	M/F	0-19yr	µmol/L	Not established		
		>19yr		0.0	17.9	
Bilirubin, total	M/F	Newborn	µmol/L	Age of Newborn / Premature / Full-term Newborn: < 24 hours: < 136.8 / < 102.6 < 48 hours: < 205.2 / < 171.0 2- 5d: < 256.5 / < 205.2 5-7d: < 256.5 / < 171.0 7-15d: Not established		
		15d - 18yr		0.0	14.9	
		>18yr		0.0	20.4	
BF pH	**Interpretive Data:** Reference ranges vary with fluid type; interpret in the light of relevant published guidelines. A pH of <7.30 in pleural fluid may indicate certain pathologic conditions such as parapneumonic or malignant effusion.					
C-peptide	M/F	0min-1wk	pmol/L	Not established		
		>1wk		260	1730	
Calcium	M/F	0-1yr	mmol/L	2.13	2.74	<1.70 or >3.25
		1-19yr		2.29	2.63	
		>19yr		2.20	2.60	
	Interpretive Data: Reference range based on samples from ambulatory patients. Recumbent: 0.10 mmol/L lower. Total Calcium (TCa) can be adjusted higher by 0.2 mmol/L with decreased albumin by 10 g/L (baseline albumin = 40 g/L). The reliability of adjustment for albumin deteriorates in patients with very low or high albumin concentrations. TCa without adjustment is sufficient in most suspected disorders of calcium homeostasis. However, when the albumin level and/or pH are extremely abnormal, request for ionized calcium should be considered.					
Calcium, Ionized testing includes: pH Calcium, Ionized (7.4)	M/F	>0min	mmol/L	1.03	1.23	<0.75 or >1.60
	M/F	>0min		7.35	7.45	<7.20 or >7.60
	M/F	>0min	mmol/L	1.03	1.23	<0.75 or >1.60

Clinical Chemistry Blood Tests

Name of Test	Gender	Age	Units	Low	High	Critical
	Interpretive Data: Ionized Calcium (7.4) is normalized Ionized Calcium with respect to pH = 7.4.					
Calcitonin	M	>0min	pg/mL	<11		
	F			<7		
Carbamazepine	M/F	>0min	µmol/L			>75
	Interpretive Data: Therapeutic range: 17-51 umol/L Toxic concentration: >64 umol/L Routine determination of the Carbamazepine-10, 11-epoxide, an active metabolite, is not clinically indicated in most patients. However, if its level is considered imperative to clinical decision making, the test should be specifically ordered.					
Carboxyhemoglobin (COHB)	M/F	>0min	%			>20.0
	Interpretive Data: <1.5 (non-smokers) <10.0 (smokers) >20.0 (Toxic) >50.0 (Lethal)					
CA 125	M/F	>0min	U/mL	0.0	35.0	
CA 15-3	M/F	>0min	U/mL	0.0	31.3	
	Interpretive Data: Ca 15-3 test is not sufficiently sensitive or specific to be used for cancer screening. It may be useful for follow up of known breast cancer.					
CA 19-9	M/F	>0min	U/mL	0.0	37.0	
	Interpretive Data: Ca19-9 test is not sufficiently sensitive or specific to be used for cancer screening; modest elevations can be seen in some benign conditions. It may be useful for follow-up of known cancers. However, individuals who are Lewis A/B negative are non-secretors of Ca19-9. If monitoring with Ca19-9, a change in value may be considered to be significant if it is >30% of the baseline.					
Carcinoembryonic Antigen (CEA)	M/F	>0min	µg/L			
	Interpretive Data: Non-Smokers: less than or equal to 5.0 µg/L This test is not sufficiently sensitive or specific for cancer screening.					
Ceruloplasmin	M/F	>0min	mg/L	200	600	
Chloride	M/F	>1yr	mmol/L	100	110	
Cholesterol	M/F	0-18yr	mmol/L	0.00	4.40	
	M/F	>18yr		0.00	5.20	
	Interpretive Data: <u>0-18yr</u>: The stated cut-off values are the clinical decision limits for pediatric patients with acceptable risk relative to dyslipidemia and atherosclerosis, based on the 2022 Canadian Clinical Practice Update on Dyslipidemia in Children and Adolescents recommendations. If limits are exceeded, repeat testing with a fasting sample and review of these guidelines for borderline to abnormal limits is recommended. <u>>18yr</u>: Stated cut-off values are the clinical decision limits for adult patients with intermediate risk for cardiovascular disease (CVD). For details on treatment initiation and targets, please refer to the most recent version of the Canadian Cardiovascular Society Guidelines for the Management of Dyslipidemia for the Prevention of Cardiovascular Disease in the Adult.					
Cholinesterase	M/F	0-15d	U/L	4421	9722	
	M/F	15d-1yr		5182	16027	
	M/F	1-19yr		7769	15206	

Clinical Chemistry Blood Tests

Name of Test	Gender	Age	Units	Low	High	Critical
	M	>19yr		4500	12669	
	F			3000	10928	
Chylomicrons	M/F	>0min		Absent		
Cortisol	M/F	>0min	nmol/L			
	Interpretive Data: Until 9:30 am: 120-550 nmol/L pm: 79-478 nmol/L If Addison's disease is clinically suspected, an AM cortisol result of <240nmol/L cannot exclude this.					
Cortisol (DST)	M/F	>0min	nmol/L	Not established		
	Interpretive Data: Note: This result was following a Dexamethasone Suppression Test.					
Creatine Kinase (CK)	M	>0min	U/L	30	300	
	F			30	200	
	Interpretive Data: Exercise can significantly increase plasma Creatine Kinase (CK) activity. CK activity in the black population is approximately 2 times that of the white/Asian population. Statin treatment can cause elevation of CK activity. Reference ranges are for adults. Reference ranges have not been established for children.					
Creatinine	M/F	0-15d	µmol/L	29	82	>400
	M/F	15d-2yr		9	32	
	M/F	2-5yr		18	38	
	M/F	5-12yr		27	54	
	M/F	12-15yr		40	72	
	M	15-19yr		55	96	
	F	15-19yr		43	74	
	M	>19yr		64	104	
	F	>19yr		49	90	
C-Reactive Protein CRP	M/F	>0min	mg/L	0.00	7.99	
	Interpretive Data: >8mg/L is consistent with acute phase response to inflammation Cardiovascular Risk Assessment: Low Risk: <1 mg/l Average Risk: 1-3 mg/L High Risk: >3 mg/L					
Digoxin	M/F	>0min	nmol/L			>3.00
	Interpretive Data: Therapeutic range: 1.00-2.60 nmol/L Levels >5.10 nmol/L may be potentially life-threatening. Toxicity is enhanced by hypokalemia, hypomagnesemia, hypocalcemia, or renal dysfunction. Digoxin results will be affected for patients undergoing treatment with digibind (antibody fragment therapy)					
Dehydroepiandrosterone sulfate (DHEAS)	M	6mth-1yr	µmol/L	0.20	4.80	
		1-6yr		0.10	3.20	
		6-9yr		0.10	4.10	
		9-13yr		0.90	7.30	
		13-16yr		1.50	12.50	
		16-19yr		3.40	18.20	

Clinical Chemistry Blood Tests

Name of Test	Gender	Age	Units	Low	High	Critical
		19-35yr		4.60	16.10	
		35-55yr		3.70	13.10	
		55-65yr		1.30	9.80	
		65-70yr		6.20	7.70	
		>70yr		6.20	7.70	
	F	6mth-1yr		0.20	4.80	
		1-6yr		0.10	3.20	
		6-9yr		0.10	4.10	
		9-13yr		0.90	7.30	
		13-16yr		1.50	12.50	
		16-19yr		4.00	15.50	
		19-45yr		2.00	13.90	
		45-55yr		1.50	7.70	
		55-65yr		0.80	4.90	
		65-70yr		0.90	2.10	
		>70yr		0.90	2.10	
	Interpretive Data: Ages 5-14 years: Reference range is based on children who are pre-pubertal. If the child has achieved puberty, values may be higher by at least twice the upper limit stated on this report. Ages 15-69 years: Reference range is based on the assumption that the individual has achieved puberty. Ages > 69 years: Please note that stated ranges are for those aged up to 70 years; ranges have not been established for older individuals. Patient age and/or gender not documented: When patient age and/or gender are not documented we are unable to provide a reference range due to the specificity of the reference range related to age and gender.					
Erythropoietin	M/F	>0min	IU/L	4.3	29.0	
	Interpretive Data: If the patient is receiving recombinant erythropoietin, analysis may not be valid and reference ranges are not applicable. **Note:** High circulating biotin levels may reduce results by more than 10% of the true value. Patients must discontinue any biotin supplement at least 3 days prior to testing.					
Estimated Glomerular Filtration Rate (eGFR)	M/F	>=18yr				
	Interpretive Data: Stage of Kidney Disease / eGFR / Description 1 — >=90 — Normal or High 2 — 60-89 — Mildly Decreased 3a — 45-59 — Mildly to Moderately Decreased 3b — 30-44 — Moderately to Severely Decreased 4 — 15-29 — Severely Decreased 5 — <15 — Kidney Failure **Caution:** eGFR should not be used when plasma creatinine is changing rapidly, in pregnancy, for drug dosing, and should be interpreted with caution in extremes of body habitus. eGFR <60 mL/min/1.73mE2 and/or Albumin to Creatinine Ratio (ACR) >= 3 mg/mmol for >3 months are diagnostic criterion for Chronic Kidney Disease (CKD). For more information, refer to the latest Kidney Disease: Improving Global Outcomes (KDIGO) guidelines. **Note:** Reported eGFR is based on the 2021 equation that does not use a race coefficient.					

Clinical Chemistry Blood Tests

Name of Test	Gender	Age	Units	Low	High	Critical
Estradiol (E2)	M	>0min	pmol/L	40	162	
	F			Post-Menopausal: not on HR: <37-103 on HR: <37-529 Follicular: 77-921 Midcycle: 139-2382 Luteal: 77-1145		
	Interpretive Data: Reference Ranges based on post-puberty					
Ferritin	M/F	0-4d	µg/L	Not established		
		4-15d		100.0	717.0	
		15d-6mth		14.0	647.0	
		6mth-1yr		8.0	182.0	
		1-5yr		5.0	100.0	
		5-14yr		14.0	79.0	
	M	14-16yr		13.0	83.0	
		16-19yr		11.0	172.0	
		>19yr		22.0	300.0	
	F	14-19yr		5.5	67.0	
		>19yr		6.5	204.0	
	Interpretive Data: Ferritin is an acute phase reactant, hence mild/moderate elevations may be seen in inflammatory conditions					
Folate, Serum	M/F	0-5d	nmol/L	Not established		
		5d-1yr		>23.9		
		1-3yr		>8.7		
		3-6yr		>27.0		
		6-8yr		>29.7		
		8-12yr		>25.9		
		12-14yr		>27.0		
		14-19yr		>18.0		
		>19yr		7.0	47.0	
Follicle-stimulating hormone (FSH)	M	>0min	IU/L	1.0	12.0	
	F	>0min		Follicular: 3.0-9.0 Midcycle: 2.6-16.7 Luteal: 1.4-5.5 Postmenopausal: 27.0-133.0		
	Interpretive Data: Reference Ranges based on post-puberty					
Gamma-Glutamyl Transferase (GGT)	M/F	0-15d	U/L	23	219	
		15d-1yr		8	127	
		1-11yr		6	16	
		11-19yr		7	21	
		>19yr		0	49	
	Interpretive Data: GGT is inducible by drugs such as phenytoin and phenobarbital, and therefore elevations should not be considered indicative of liver disease until drug use is ruled out. Elevations are also seen after ingestion of alcoholic beverages.					
Gastrin	M/F	>0min	ng/L	13	115	
	Interpretive Data: Reference range for FASTING samples only **Note:** High circulating biotin levels may reduce results by more than 10% of the true value. Patients must discontinue any biotin supplement at least 3 days prior to testing.					

Clinical Chemistry Blood Tests

Name of Test	Gender	Age	Units	Low	High	Critical
Gentamicin	M/F	>0min	mg/L			Pre: >3.00 Post: >12.00 Random: >3.00
	Interpretive Data: Divided Daily Dose: PRE Level: <2 mg/L POST Level: 5-8 mg/L (3-5 for UTI or when used for synergy for gram positive organisms) Once Daily Therapy: 6 hour PRE: <1mg/L					
Glucose, AC	M/F	>0min	mmol/L	3.8	6.0	<2.5 or ≤16yr >15.0 or >16yr >25.0
	Interpretive Data: AC = Ante Cibum (Specimen was drawn before eating.) For full diagnostic workup of diabetes mellitus and achieving glycemic control in patients with known diabetes, please refer to the most recent version of the Diabetes Canada Clinical Practice Guidelines.					
Glucose, PC	M/F	>0min	mmol/L	No established range		<2.5 or ≤16yr >15.0 or >16yr >25.0
	Interpretive Data: PC = Post Cibum (Specimen was drawn 2 hours after eating.) For full diagnostic workup of diabetes mellitus and achieving glycemic control in patients with known diabetes, please refer to the most recent version of the Diabetes Canada Clinical Practice Guidelines.					
Glucose, Random	M/F	>0min	mmol/L	3.8	7.8	<2.5 or ≤16yr >15.0 or >16yr >25.0
	Interpretive Data: For full diagnostic workup of diabetes mellitus and achieving glycemic control in patients with known diabetes, please refer to the most recent version of the Diabetes Canada Clinical Practice Guidelines.					
Growth Hormone (GH)	M	>0min	µg/L	<3.00		
	F			<8.00		
	Interpretive Data: Note that random single Growth Hormone (hGH) levels are inadequate, as levels in normal and diseased populations overlap. Therefore, hGH suppression and stimulation tests are needed to evaluate conditions of hGH excess and deficiency. Also stated reference levels do not reflect variations in secretion of hGH from the pituitary gland, that are often episodic and pulsatile.					
HDL Cholesterol	M	0-18yr	mmol/L	≥1.20		
	M	>18yr		≥1.00		
	F	0-18yr		≥1.20		
	F	>18yr		≥1.30		
	Interpretive Data: 0-18yr:					

Clinical Chemistry Blood Tests						
Name of Test	**Gender**	**Age**	**Units**	**Low**	**High**	**Critical**
	The stated cut-off values are the clinical decision limits for pediatric patients with acceptable risk relative to dyslipidemia and atherosclerosis, based on the 2022 Canadian Clinical Practice Update on Dyslipidemia in Children and Adolescents recommendations. If limits are exceeded, repeat testing with a fasting sample and review of these guidelines for borderline to abnormal limits is recommended. <u>>18yr</u>: Stated cut-off values are the clinical decision limits for adult patients with intermediate risk for cardiovascular disease (CVD). For details on treatment initiation and targets, please refer to the most recent version of the Canadian Cardiovascular Society Guidelines for the Management of Dyslipidemia for the Prevention of Cardiovascular Disease in the Adult.					
Human Chorionic Gonadotropin, Beta (quantitative)	M/F	>0min	IU/L			
	Interpretive Data: Reference ranges: Men and Pre-Menopausal Non-Pregnant Women: <5 IU/L Post-Menopausal Women: <8 IU/L **Note:** Suggest repeat testing in 72 hours for borderline high (5 - 25 IU/L) beta-Human Chorionic Gonadotropin (beta hCG) results.					
IgE	M/F	0-6yr	IU/mL	0	110	
		6-15yr		0	360	
		>15yr		0	180	
	Interpretive Data: In ADULTS only; the likelihood of predicting allergy in susceptible individuals is high when IgE level is above 200 IU/mL					
Insulin	M/F	0-1wk	pmol/L	Not established		
		>1wk		<120		
	Interpretive Data: Expected range for FASTING samples only					
Insulin-Like Growth Factor-1 (IGF-1) (also known as Somatomedin-C)	M	0-4yr	µg/L	<189		
		4-7yr		47	231	
		7-10yr		55	222	
		10-12yr		95	315	
		12-14yr		95	460	
		14-16yr		211	512	
		16-19yr		57	426	
		19-22yr		105	346	
		22-25yr		107	367	
		25-30yr		88	537	
		30-35yr		41	246	
		35-40yr		57	241	
		40-45yr		43	209	
		45-50yr		74	196	
		50-55yr		55	248	
		55-60yr		36	200	
		60-65yr		51	187	
		65-70yr		37	219	
		70-80yr		24	200	
		80-90yr		17	323	
		>90yr		Not established		
	F	0-4yr	µg/L	<272		
		4-7yr		55	248	

Clinical Chemistry Blood Tests						
Name of Test	**Gender**	**Age**	**Units**	**Low**	**High**	**Critical**
		7-10yr		80	233	
		10-12yr		96	545	
		12-14yr		147	549	
		14-16yr		208	444	
		16-19yr		176	429	
		19-22yr		105	346	
		22-25yr		107	367	
		25-30yr		88	537	
		30-35yr		41	246	
		35-40yr		57	241	
		40-45yr		43	209	
		45-50yr		74	196	
		50-55yr		55	248	
		55-60yr		36	200	
		60-65yr		51	187	
		65-70yr		37	219	
		70-80yr		24	200	
		80-90yr		17	323	
		>90yr		Not established		
	Interpretive Data: Patient age and/or gender not documented: When patient age and/or gender are not documented we are unable to provide a reference range due to the specificity of the reference range related to age and gender.					
Iron	M/F	0d-14yr	µmol/L	2.80	22.90	
	M	14-19yr		5.50	30.00	
	F	14-19yr		3.50	29.00	
	M	>19yr		9.00	31.30	
	F	>19yr		7.00	30.40	
	Interpretive Data: The circulated iron level can show a 30% diurnal variation, with a peak early in the morning. If patient is not fasting or on iron supplements, this may lead to an erroneously high iron result hence incorrect TIBC and % Saturation.					
Lactate	M/F	>0min	mmol/L	0.50	2.20	>4.00
Lactate Dehydrogenase (LDH)	M/F	0-15d	U/L	309	1222	
	M/F	15d-1yr		163	452	
	M/F	1-10yr		192	321	
	M	10-15yr		170	283	
	F	10-15yr		157	272	
	M/F	15-19yr		130	250	
	M/F	>19yr		120	230	
	Interpretive Data: LDH should only be used for follow up of known hematological malignancies or for the investigation of suspected hemolytic anemia.					
LDL Cholesterol (Calculated and Direct)	M/F	0-18yr	mmol/L	0.00	2.80	
	M/F	>18yr		0.00	3.50	
	Interpretive Data: LDL-Calculated result is based on the National Institutes of Health (NIH) LDL-C equation that has superior accuracy to the Friedewald LDL-C equation when triglycerides are 4.50 - 9.00 mmol/L and/or LDL-C is between 0.50 and 1.50 mmol/L. LDL Direct is directly measured.					

Clinical Chemistry Blood Tests

Name of Test	Gender	Age	Units	Low	High	Critical
	0-18yr: The stated cut-off values are the clinical decision limits for pediatric patients with acceptable risk relative to dyslipidemia and atherosclerosis, based on the 2022 Canadian Clinical Practice Update on Dyslipidemia in Children and Adolescents recommendations. If limits are exceeded, repeat testing with a fasting sample and review of these guidelines for borderline to abnormal limits is recommended. >18yr: Stated cut-off values are the clinical decision limits for adult patients with intermediate risk for cardiovascular disease (CVD). For details on treatment initiation and targets, please refer to the most recent version of the Canadian Cardiovascular Society Guidelines for the Management of Dyslipidemia for the Prevention of Cardiovascular Disease in the Adult.					
Lipase	M/F	0-19yr	U/L	4	39	
		>19yr		8	78	
Lithium	M/F	>0min	mmol/L			>2.20
	Interpretive Data: Therapeutic range: 0.60-1.20 mmol/L (trough concentration) Toxic concentration: >1.50 mmol/L					
Luteinizing Hormone (LH)	M	>0min	IU/L	0.6	12.0	
	F			Follicular: 1.8-11.8 Midcycle: 7.6-90.0 Luteal: 0.6-14.0 Postmenopausal (No HR): 10.0-62.0		
	Interpretive Data: Reference Ranges based on post-puberty					
Magnesium	M/F	0-15d	mmol/L	0.82	1.62	<0.40 and >3.00
		15d-1yr		0.81	1.27	
		1-19yr		0.86	1.17	
		>19yr		0.66	1.07	
Methemoglobin	M/F	>0min	%	0.0	1.5	>30.0
Methotrexate (MTX)	M/F	>0min	µmol/L			
	Interpretive Data: Therapeutic range: protocol dependent Suggested toxic levels after methotrexate treatment: >10.00 µmol/L after 24 hours >1.00 µmol/L after 48 hours >0.10 µmol/L after 72 hours Specimens from patients who have received glucarpidase (carboxypeptidase G2) as a high dose methotrexate rescue therapy should not be tested for the Methotrexate level. Methotrexate should be tested after the patient stops the glucarpidase therapy for at least five to seven days.					
Non-HDL Cholesterol	M/F	0-18yr	mmol/L	0.00	3.10	
	M/F	>18yr		0.00	4.20	
	Interpretive Data: 0-18yr: The stated cut-off values are the clinical decision limits for pediatric patients with acceptable risk relative to dyslipidemia and atherosclerosis, based on the 2022 Canadian Clinical Practice Update on Dyslipidemia in Children and Adolescents recommendations. If limits are exceeded, repeat testing with a fasting sample and review of these guidelines for borderline to abnormal limits is recommended. >18yr: Stated cut-off values are the clinical decision limits for adult patients with intermediate risk for					

Clinical Chemistry Blood Tests

Name of Test	Gender	Age	Units	Low	High	Critical
	cardiovascular disease (CVD). For details on treatment initiation and targets, please refer to the most recent version of the Canadian Cardiovascular Society Guidelines for the Management of Dyslipidemia for the Prevention of Cardiovascular Disease in the Adult.					
NT-proBNP	M/F	>0min	ng/L	<300		
	Interpretive Data: Values <= 125 ng/L are normal in ambulatory care N-terminal pro Brain Natriuretic Peptide values < 300 ng/L have a 99% negative predictive value for excluding acute congestive heart failure (CHF) CHF is likely in patients presenting with acute dyspnea at the following cut-off values (in the absence of renal failure): Age <50 years and N-terminal pro Brain Natriuretic Peptide >450 ng/L Age 50 – 75 years and N-terminal pro Brain Natriuretic Peptide >900 ng/L Age >75 years and N-terminal pro Brain Natriuretic Peptide >1800 ng/L CHF is possible for values in between the above cut-offs, but other diagnoses should to be considered.					
Osmolality	M/F	>0min	mmol/Kg	283	292	<250 or >325
Parathyroid Hormone, Intact (iPTH)	M/F	0-6d	pmol/L	Not established		
		6d-1yr		0.7	9.4	
		1-9yr		1.7	6.7	
		9-17yr		2.3	9.3	
		17-19yr		1.7	6.4	
		>19yr		1.9	8.7	
	Interpretive Data: It is recommended to measure iPTH on a morning fasting sample					
Phenobarbital	M/F	>0min	µmol/L			>250
	Interpretive Data: Therapeutic concentration: Infants and children: 65-130 µmol/L Adults: 86-172 µmol/L Toxic concentration: >= 259 µmol/L					
Phenytoin	M/F	>0min	µmol/L			>100
	Interpretive Data: Therapeutic response: 40-80 µmol/L Toxic: >119 µmol/L Reference range presupposes a normal plasma albumin. For abnormal albumin, the phenytoin result should be adjusted when comparing to the reference range as follows: Corrected Phenytoin = measured Phenytoin/(0.9(Albumin/40)+0.1) The calculation does not pertain to all patients' conditions. Albumin testing should be required with phenytoin by physicians if the calculation needs to be done.					
Phosphorus	M/F	0-15d	mmol/L	1.80	3.40	<0.40 and >3.50
	M/F	15d-1yr		1.54	2.72	
	M/F	1-5yr		1.38	2.19	
	M/F	5-13yr		1.33	1.92	
	M	13-16yr		1.14	1.99	
	F	13-16yr		1.02	1.79	
	M/F	16-19yr		0.95	1.62	
	M/F	>19yr		0.74	1.52	

Clinical Chemistry Blood Tests

Name of Test	Gender	Age	Units	Low	High	Critical
	Interpretive Data: Phosphorus has a very strong biphasic circadian rhythm. Values are lowest in the morning, peak first in the late afternoon and peak again in the late evening. The second peak is quite elevated, and results may be outside the reference range.					
Potassium	M/F	>0min	mmol/L	3.4	5.0	<2.8 or >6.2
	Interpretive Data: Reference values have not been established for patients that are less than 1 year of age. **Note:** Potassium (K+) reference ranges have been adjusted to accommodate for the possibility of slight leakage of K+ from red blood cells prior to sample separation.					
Prealbumin	M/F	0-15d	mg/L	20	120	
		15d-1yr		50	240	
		1-13yr		120	260	
	M	13-19yr		180	350	
	M	>19yr		180	450	
	F	13-19yr		160	330	
	F	>19yr		160	380	
	Interpretive Data: Prealbumin is only used for monitoring the response to nutritional support in the acutely ill patient.					
Progesterone	M/F	>0min	nmol/L			
	Interpretive Data: Reference Ranges based on post-puberty Male: 0.6 - 2.0 nmol/L Female: Follicular: 0.4 - 2.0 nmol/L Luteal: 3.8 - 51.0 nmol/L Postmenopausal: 0.4 - 2.0 nmol/L First trimester: 9.0 - 468.0 nmol/L Second trimester: 71.6 - 303.0 nmol/L Third trimester: 88.0 - 771.0 nmol/L Day 21 of cycle: minimal level consistent with ovulation = 20.0 nmol/L : level >30.0 nmol/L indicates ovulation is very likely					
Prolactin	M/F	0-4d	µg/L	Not established		
		4-30d		12.6	212.8	
		30d-1yr		6.3	113.7	
		1-19yr		4.2	23.0	
	M	>19yr		3.5	19.4	
	F	>19yr		5.2	27.0	
	Interpretive Data: Female reference range is for non-pregnant					
Prostatic Specific Antigen (PSA)	M/F	>0min	µg/L	0.00	3.00	
	Interpretive Data: Based on the 2019 Canadian Urological Association guidelines, values greater than 3.00 ug/L may require closer serial testing or Urology referral depending on the clinical context. Changes in PSA over time should be taken into consideration, and clinical actions based on a solitary PSA reading are discouraged. Reference values are invalid in patients with an active or prior diagnosis of prostate cancer or in the setting of acute bacterial prostatitis.					
Prostatic Specific Antigen, Free (FPSA)	M/F	>0min	µg/L			
	Interpretive Data: Free PSA is not informative when PSA is <4 µg/L (indicating that prostate cancer is unlikely) or when PSA is >20 µg/L (indicating that prostate cancer is likely). Also see interpretation of the fPSA/PSA ratio.					
PSA Free Ratio	M/F	>0min				

Clinical Chemistry Blood Tests

Name of Test	Gender	Age	Units	Low	High	Critical
	Interpretive Data: Prostate cancer can be excluded with reasonable (90%) confidence when the PSA is >4 and <20 µg/L and the Free PSA/PSA ratio is > 0.20.					
Protein, Total	M/F	>0min	g/L	64	83	
	Interpretive Data: Values may be slightly lower in recumbent patients					
Salicylate	M/F	>0min	mmol/L			>2.2
	Interpretive Data: Analgesia: 0.2-1.1 mmol/L Anti-inflammatory: 0.7-2.2 mmol/L Toxic (adult): >3.6 mmol/L Toxic (children): >2.2 mmol/L					
Saturation (Iron)	M/F	>0min	%	14	55	
	Interpretive Data: In hereditary hemochromatosis, plasma iron is usually >30.00 µmol/L and %Saturation is >60%. In advanced iron overload states, the %Saturation often is >90%. Measurement of iron, total iron binding capacity (TIBC), and %Saturation is often unreliable for iron deficiency. Ferritin is recommended for this purpose.					
Sex Hormone Binding Globulin (SHBG)	M/F	0-18yr	nmol/L	Not established		
	M	>18yr		13.5	71.0	
	F	>18yr		19.8	155.0	
Sodium	M/F	>0min	mmol/L	136	145	<120 or >160
	Interpretive Data: Reference values have not been established for patients less than 1 year of age. Pseudohyponatremia may be caused by specimens with high proteins or lipid concentrations.					
T3, Free	M/F	0-1yr	pmol/L	3.56	7.48	
		1-12yr		4.29	6.79	
	M	12-15yr		4.44	6.65	
		15-19yr		3.46	5.92	
		>19yr		2.89	5.65	
	F	12-15yr		3.84	6.06	
		15-19yr		3.55	5.70	
		>19yr		2.89	5.65	
	Interpretive Data: Please note change in adult reference ranges effective December 6 2019 and children's reference ranges effective December 11 2019.					
T4, Free	M/F	0-5d	pmol/L	Not established		
		5-15d		13.5	41.3	
		15-30d		8.7	32.5	
		30d-1yr		11.4	21.9	
		1-19yr		11.4	17.6	
		>19yr		9.0	19.0	
Testosterone	M	>0min	nmol/L	8.00	32.00	
	F			0.40	1.85	
	Interpretive Data: Male reference range applies to post-puberty and is based on a morning sample, since levels tend to decline through the day					
Testosterone, Bioavailable	M	>0min	nmol/L	2.50	10.00	
	F			0.00	0.25	
Theophylline	M/F	>0min	µmol/L			>110

Clinical Chemistry Blood Tests						
Name of Test	**Gender**	**Age**	**Units**	**Low**	**High**	**Critical**
	Interpretive Data: Therapeutic: Children and adults: 45-110 µmol/L Neonatal apnea: 33-61 µmol/L Toxic concentration: >= 111 µmol/L					
Thyroglobulin High Sensitivity	M/F	>0min	ug/L			
	Interpretive Data: Note: Change in formulation of the High-Sensitivity Thyroglobulin (Tg-HS) assay occurred on December 21, 2022. Results that are < or = 0.2 ug/L are noted to be up to 35% higher compared to the previous formulation. A new baseline for thyroid cancer patient monitoring may need to be established. Tg-HS is mainly used for follow-up of patients with differentiated thyroid carcinoma (DTC). While a Tg-HS <0.2 ug/L or around <50% increase in value indicates that recurrence of DTC is unlikely, these results should only be interpreted as per ATA guidelines for management of thyroid cancer, in conjunction with other clinical/imaging information, as well as with results of Anti-Thyroglobulin Antibody (Tg-Antibody) as their presence can interfere with Tg-HS results. Reference ranges: Intact thyroid : 3.50 – 77.00 ug/L Athyrotic: <0.20 ug/L					
Thyroglobulin Antibody	M/F	>0min	IU/mL	<40		
Thyroid Stimulating Hormone	M/F	0-4d	mIU/L	Not established		
		4d-6mth		0.73	4.77	
		6mth-14yr		0.70	4.17	
		14-19yr		0.47	3.41	
		>19yr		0.35	4.30	
	Interpretive Data: Female 16-55 years: Thyroid Stimulating Hormone (TSH) reference range during pregnancy may be lower by up to 0.20 mIU/L of the lower limit and 1.00 mIU/L of the upper limit of stated reference range, particularly during the first trimester. Refer to American Thyroid Association (ATA) guidelines for more information.					
Tobramycin	M/F	>0min	mg/L			Pre: >3.00 Post: >12.00 Random: >3.00
	Interpretive Data: NON - Cystic Fibrosis Patients Expected Values: Divided Daily Dose: PRE Level: <2 mg/L POST Level: 5-8 mg/L (4-6 UTI) Once Daily Therapy 6 hour PRE: <1 mg/L Cystic Fibrosis Patients Expected Values:					

Clinical Chemistry Blood Tests

Name of Test	Gender	Age	Units	Low	High	Critical
	2 hour post tobramycin (2 h after the end of the infusion): 18-20 mg/L 8 hour post tobramycin (8 h after the end of the infusion): 3-6 mg/L					
Total Iron Binding Capacity	M/F	>0min	µmol/L	43.40	76.50	
Triglyceride	M/F	0-10yr	mmol/L	0.00	1.10	
	M/F	10-18yr		0.00	1.50	
	M/F	>18yr		0.00	1.70	
	Interpretive Data: 0-18yr: **Note:** The reference cut-off is for fasting triglyceride level. Triglyceride > 15.00 mmol/L can lead to abdominal pain and may be life-threatening due to chylomicron-induced pancreatitis. The stated cut-off values are the clinical decision limits for pediatric patients with acceptable risk relative to dyslipidemia and atherosclerosis, based on the 2022 Canadian Clinical Practice Update on Dyslipidemia in Children and Adolescents recommendations. If limits are exceeded, repeat testing with a fasting sample and review of these guidelines for borderline to abnormal limits is recommended. >18yr: **Note:** Triglyceride > 15.00 mmol/L can lead to abdominal pain and may be life-threatening due to chylomicron-induced pancreatitis. Interpretation of fasting triglyceride result: Normal: <1.70 mmol/L Borderline High: 1.70-2.25 mmol/L High: 2.26-5.64 mmol/L Very High: >5.65 mmol/L Stated cut-off values are the clinical decision limits for adult patients with intermediate risk for cardiovascular disease (CVD). For details on treatment initiation and targets, please refer to the most recent version of the Canadian Cardiovascular Society Guidelines for the Management of Dyslipidemia for the Prevention of Cardiovascular Disease in the Adult.					
Troponin T (High Sensitivity)	M	>0min	ng/L	<14		>50
	F			<9		
	Interpretive Data: High Sensitivity Troponin T Normal Values: 14 ng/L (Male), 9 ng/L (Female) Suggested Time Intervals for Serial Testing: 0, 3, 6 hours Rule-in Acute Myocardial Infarction: Result >50 ng/L Or >= 20 ng/L change in results during serial sampling plus signs of ischemia Rule-out Acute Myocardial Infarction: Two (2) results with a difference of <15 ng/L at least six (6) hours apart **Note:** Change of Troponin-T HS reference interval for females commenced on November 17, 2021 based on the new recommendations from Clinical Chemistry 64:4 645- 655 (2018).						
Unsaturated Iron Binding Capacity	M	>0min	µmol/L	12.50	55.50	
	F			12.40	43.00	

Clinical Chemistry Blood Tests						
Name of Test	**Gender**	**Age**	**Units**	**Low**	**High**	**Critical**
Urea	M/F	0-15d	mmol/L	1.0	8.2	<16yr>25.0 ≥16yr>35.0
		15d-1yr		1.2	6.0	
		1-10yr		3.2	7.9	
	M	10-19yr		2.6	7.5	
	F	10-19yr		2.6	6.8	
	M/F	>19yr		2.5	9.2	
Uric Acid	M/F	0-15d	µmol/L	164	757	
		15d-1yr		94	377	
		1-12yr		106	289	
	M	12-19yr		156	454	
	F	12-19yr		153	349	
	M	>19yr		210	450	
	F	>19yr		150	360	
	Interpretive Data: High normal uric acid level does not rule out gout, especially if sample taken during an acute attack. If on treatment for chronic gout, recommended levels are <360. Note that falsely lower results may be seen in patients on Rasburicase.					
Valproic Acid	M/F	>0min	µmol/L			>1400
	Interpretive Data: Therapeutic range: 350-700 µmol/L Toxic concentration: >832 µmol/L					
Vancomycin	M/F	>0min	mg/L			Pre: >25.00 Post: >40.00 Random: >30.00
	Interpretive Data: The target pre-dose (trough) vancomycin level depends on the microorganism and type of infection: 10-15 mg/L is recommended for most infections including those due to MRSA. For CNS infections, osteomyelitis, and other deep seated MRSA infections, the target trough concentrations is closer to 15 mg/L. Trough levels exceeding 15 mg/L are associated with increased risk of nephrotoxicity. Staphylococcus aureus isolates with vancomycin MIC ≥ 2 mg/L have a high treatment failure rate; consider an alternative agent and ID consult.					
Vitamin B12	M/F	>0min	pmol/L	138	652	
	Interpretive Data: Consider B12 replacement for symptomatic patients with B12 levels between 138 and 220 pmol/L and hematological or neurological abnormalities.					
Vitamin D	M/F	>18yr	nmol/L			
	Interpretive Data: Reference ranges for adults only: <25.0 nmol/L: severe vitamin D deficiency 25.0-49.9 nmol/L: vitamin D deficiency possible 50.0-75.0 nmol/L: likely vitamin D replete >200.0 nmol/L: vitamin D toxicity possible For children's ranges, register and sign in: https://app3.ccb.sickkids.ca/caliper/caliperlogin					

Hematopathology Blood Tests				
Test Name	**Gender**	**Age**	**Range**	**Critical**
Routine				
WBC x 10^9/L	M	0-15 days	8.04 - 15.4	>100.00
	F	0-15 days	8.16 – 14.56	>100.00
	M	15 days – 1 month	7.8 – 15.91	>100.00
	F	15 days – 1 month	8.36 – 14.42	>100.00
	M	1 – 2 months	8.14 – 14.99	>100.00
	F	1 – 2 months	7.05 – 14.68	>100.00
	M	2 – 6 months	6.51 – 13.32	>100.00
	F	2 – 6 months	6.0 – 13.25	>100.00
	M	6 months – 2 years	5.98 – 13.51	>100.00
	F	6 months – 2 years	6.48 – 13.02	>100.00
	M	2 – 6 years	5.14 – 13.38	>100.00
	F	2 – 6 years	4.86 – 13.18	>100.00
	M	6 – 12 years	4.31 – 11.0	>100.00
	F	6 – 12 years	4.27 – 11.4	>100.00
	M	12 – 18 years	3.84 – 9.84	>100.00
	F	12 – 18 years	4.19 – 9.43	>100.00
	M	18 – 150 years	4.5 – 11	>100.00
	F	18 – 150 years	4.5 - 11	>100.00
RBC x 10^{12}/L	M	0-15 days	4.1 – 5.55	
	F	0-15 days	4.12 – 5.74	
	M	15 days – 1 month	3.16 – 4.63	
	F	15 days – 1 month	3.32 – 4.8	
	M	1 – 2 months	3.02 – 4.22	
	F	1 – 2 months	2.93 – 3.87	
	M	2 – 6 months	3.43 – 4.8	
	F	2 – 6 months	3.45 – 4.75	
	M	6 months – 2 years	4.03 – 5.07	
	F	6 months – 2 years	3.97 – 5.01	
	M	2 – 6 years	3.89 – 4.97	
	F	2 – 6 years	3.84 – 4.92	
	M	6 – 12 years	3.96 – 5.03	
	F	6 – 12 years	3.9 – 4.96	
	M	12 – 18 years	4.00 – 6.00	
	F	12 – 18 years	3.70 – 5.20	
	M	18 – 150 years	4.5 – 6.5	
	F	18 – 150 years	3.8 – 5.8	
HGB g/L	M	0-15 days	139 - 191	<60
	F	0-15 days	134 - 200	<60
	M	15 days – 1 month	100 - 153	<60
	F	15 days – 1 month	108 - 146	<60
	M	1 – 2 months	89 - 127	<60
	F	1 – 2 months	92 - 114	<60
	M	2 – 6 months	96 - 124	<60
	F	2 – 6 months	99 - 124	<60

Hematopathology Blood Tests				
Test Name	**Gender**	**Age**	**Range**	**Critical**
	M	6 months – 2 years	101 - 125	<60
	F	6 months – 2 years	102 - 127	<60
	M	2 – 6 years	102 - 127	<60
	F	2 – 6 years	102 - 127	<60
	M	6 – 12 years	107 - 134	<60
	F	6 – 12 years	106 - 132	<60
	M	12 – 18 years	110 - 180	<60
	F	12 – 18 years	105 - 150	<60
	M	18 – 150 years	140 - 180	<60
	F	18 – 150 years	120 - 160	<60
HCT L/L	M	0-15 days	0.398 - 0.536	
	F	0-15 days	0.396 - 0.572	
	M	15 days – 1 month	0.305 – 0.450	
	F	15 days – 1 month	0.320 – 0.445	
	M	1 – 2 months	0.268 – 0.375	
	F	1 – 2 months	0.277 – 0.351	
	M	2 – 6 months	0.286 – 0.372	
	F	2 – 6 months	0.295 – 0.371	
	M	6 months – 2 years	0.308 – 0.378	
	F	6 months – 2 years	0.309 – 0.379	
	M	2 – 6 years	0.310 – 0.377	
	F	2 – 6 years	0.312 – 0.378	
	M	6 – 12 years	0.322 – 0.398	
	F	6 – 12 years	0.324 – 0.395	
	M	12 – 18 years	0.340 - 0.540	
	F	12 – 18 years	0.340 – 0.460	
	M	18 – 150 years	0.420 – 0.540	
	F	18 – 150 years	0.370 – 0.470	
MCV fL	M	0-15 days	91.3 – 103.1	
	F	0-15 days	92.7 – 106.4	
	M	15 days – 1 month	89.4 – 99.7	
	F	15 days – 1 month	90.1 – 103.0	
	M	1 – 2 months	84.3 – 94.2	
	F	1 – 2 months	83.4 – 96.4	
	M	2 – 6 months	74.1 – 87.5	
	F	2 – 6 months	74.8 – 88.3	
	M	6 months – 2 years	69.5 – 81.7	
	F	6 months – 2 years	71.3 – 82.6	
	M	2 – 6 years	71.3 – 84.0	
	F	2 – 6 years	72.3 – 85.0	
	M	6 – 12 years	74.4 – 86.1	

Hematopathology Blood Tests				
Test Name	**Gender**	**Age**	**Range**	**Critical**
	F	6 – 12 years	75.9 – 87.6	
	M	12 – 18 years	77.0 – 94.0	
	F	12 – 18 years	77.0 – 94.0	
	M	18 – 150 years	80.0 – 97.0	
	F	18 – 150 years	80.0 – 97.0	
MCH pg	M	0-15 days	31.3 – 35.6	
	F	0-15 days	31.1 – 35.9	
	M	15 days – 1 month	29.9 – 34.1	
	F	15 days – 1 month	30.4 – 35.3	
	M	1 – 2 months	27.8 – 32.0	
	F	1 – 2 months	28.0 – 32.5	
	M	2 – 6 months	24.4 – 28.9	
	F	2 – 6 months	24.4 – 29.5	
	M	6 months – 2 years	22.7 – 27.2	
	F	6 months – 2 years	23.2 – 27.5	
	M	2 – 6 years	23.7 – 28.3	
	F	2 – 6 years	23.7 – 28.6	
	M	6 – 12 years	24.9 – 29.2	
	F	6 – 12 years	24.8 – 29.5	
	M	12 – 18 years	25.6 – 32.6	
	F	12 – 18 years	24.4 – 33.6	
	M	18 – 150 years	28.0 – 32.0	
	F	18 – 150 years	28.0 – 32.0	
MCHC g/L	M	0-15 days	330 – 357	
	F	0-15 days	334 – 354	
	M	15 days – 1 month	327 – 351	
	F	15 days – 1 month	332 – 350	
	M	1 – 2 months	323 – 348	
	F	1 – 2 months	325 – 349	
	M	2 – 6 months	319 – 344	
	F	2 – 6 months	321 – 344	
	M	6 months – 2 years	316 – 344	
	F	6 months – 2 years	319 – 342	
	M	2 – 6 years	320 – 347	
	F	2 – 6 years	318 – 346	
	M	6 – 12 years	322 – 349	
	F	6 – 12 years	318 – 346	
	M	12 – 18 years	318 – 360	
	F	12 – 18 years	310 – 353	
	M	18 – 150 years	315 – 350	
	F	18 – 150 years	315 - 350	
RDW %	M	0-15 days	14.8 – 17	
	F	0-15 days	14.6 – 17.3	
	M	15 days – 1 month	14.3 – 16.8	
	F	15 days – 1 month	14.4 – 16.2	
	M	1 – 2 months	13.8 – 16.1	
	F	1 – 2 months	13.6 – 15.8	
	M	2 – 6 months	12.4 – 15.3	

Hematopathology Blood Tests				
Test Name	**Gender**	**Age**	**Range**	**Critical**
	F	2 – 6 months	12.2 – 14.3	
	M	6 months – 2 years	12.9 – 15.6	
	F	6 months – 2 years	12.7 – 15.1	
	M	2 – 6 years	12.5 – 14.9	
	F	2 – 6 years	12.4 – 14.9	
	M	6 – 12 years	12.3 – 14.1	
	F	6 – 12 years	12.2 – 14.4	
	M	12 – 18 years	11.0 – 15.0	
	F	12 – 18 years	11.0 – 15.0	
	M	18 – 150 years	11.5 – 14.5	
	F	18 – 150 years	11.5 – 14.5	
PLT x 10^9/L	M	0-15 days	218 – 419	<20
	F	0-15 days	144 – 449	<20
	M	15 days – 1 month	248 – 586	<20
	F	15 days – 1 month	279 - 571	<20
	M	1 – 2 months	229 – 562	<20
	F	1 – 2 months	331 – 597	<20
	M	2 – 6 months	244 – 529	<20
	F	2 – 6 months	247 – 580	<20
	M	6 months – 2 years	206 – 445	<20
	F	6 months – 2 years	214 – 459	<20
	M	2 – 6 years	202 – 403	<20
	F	2 – 6 years	189 - 394	<20
	M	6 – 12 years	206 – 369	<20
	F	6 – 12 years	199 – 367	<20
	M	12 – 18 years	130 – 400	<20
	F	12 – 18 years	130 – 400	<20
	M	18 – 150 years	150 – 350	<20
	F	18 – 150 years	150 - 350	<20
MPV fL	M	0-15 days	10.2 – 11.9	
	F	0-15 days	10.4 – 12.0	
	M	15 days – 1 month	10.1 – 12.1	
	F	15 days – 1 month	10.0 – 12.2	
	M	1 – 2 months	9.2 – 10.8	
	F	1 – 2 months	9.4 – 11.1	
	M	2 – 6 months	8.9 – 10.6	
	F	2 – 6 months	9.0 – 10.9	
	M	6 months – 2 years	8.7 – 10.5	
	F	6 months – 2 years	8.8 – 10.6	
	M	2 – 6 years	9.0 – 10.9	
	F	2 – 6 years	8.9 – 11.0	
	M	6 – 12 years	9.2 – 11.4	
	F	6 – 12 years	9.3 – 11.3	
	M	12 – 18 years	8.0 – 12.0	
	F	12 – 18 years	8.0 – 12.0	
	M	18 – 150 years	9.0 – 12.5	
	F	18 – 150 years	9.0 – 12.5	
LYMPH %	M	0-15 days	33.7 – 67.6	

Hematopathology Blood Tests				
Test Name	**Gender**	**Age**	**Range**	**Critical**
	F	0-15 days	24.9 – 68.5	
	M	15 days – 1 month	33.6 – 76.8	
	F	15 days – 1 month	31.9 – 82.7	
	M	1 – 2 months	42.5 – 85.7	
	F	1 – 2 months	37.8 – 86.7	
	M	2 – 6 months	40.7 – 83.7	
	F	2 – 6 months	30.4 – 85.6	
	M	6 months – 2 years	26.0 – 79.6	
	F	6 months – 2 years	27.4 – 79.9	
	M	2 – 6 years	18.4 – 66.6	
	F	2 – 6 years	18.1 – 68.6	
	M	6 – 12 years	15.5 – 56.6	
	F	6 – 12 years	16.7 – 57.8	
	M	12 – 18 years	16.4 – 52.7	
	F	12 – 18 years	18.2 – 49.8	
	M	18 – 150 years	15.0 – 41.0	
	F	18 – 150 years	15.0 – 41.0	
MONO %	M	0-15 days	6.7 – 19.9	
	F	0-15 days	5.2 – 20.6	
	M	15 days – 1 month	4.3 – 18.3	
	F	15 days – 1 month	5.6 – 13.8	
	M	1 – 2 months	4.4 – 14.0	
	F	1 – 2 months	3.8 – 15.5	
	M	2 – 6 months	3.8 – 13.4	
	F	2 – 6 months	3.8 – 12.6	
	M	6 months – 2 years	4.4 – 13.4	
	F	6 months – 2 years	3.8 – 12.8	
	M	2 – 6 years	4.2 – 12.2	
	F	2 – 6 years	4.2 – 11.4	
	M	6 – 12 years	4.2 – 12.3	
	F	6 – 12 years	4.2 – 11.3	
	M	12 – 18 years	4.4 – 12.3	
	F	12 – 18 years	4.1 – 10.9	
	M	18 – 150 years	2.0 - 10.0	
	F	18 – 150 years	2.0 – 10.0	
NEUT %	M	0-15 days	20.2 – 46.2	
	F	0-15 days	15.2 – 66.1	
	M	15 days – 1 month	14.0 – 54.6	
	F	15 days – 1 month	10.6 – 57.3	
	M	1 – 2 months	10.2 – 48.7	
	F	1 – 2 months	8.9 – 68.2	
	M	2 – 6 months	10.9 – 47.8	
	F	2 – 6 months	14.1 - 76.0	
	M	6 months – 2 years	17.5 – 69.5	
	F	6 months – 2 years	16.9 – 74.0	
	M	2 – 6 years	22.4 – 69.0	
	F	2 – 6 years	22.4 – 69.0	
	M	6 – 12 years	28.6 – 74.5	

Hematopathology Blood Tests				
Test Name	**Gender**	**Age**	**Range**	**Critical**
	F	6 – 12 years	29.8 – 71.4	
	M	12 – 18 years	32.5 – 74.7	
	F	12 – 18 years	39.0 – 73.6	
	M	18 – 150 years	45.0 – 70.0	
	F	18 – 150 years	45.0 – 70.0	
EOS %	M	0-15 days	0.3 – 5.2	
	F	0-15 days	0.4 – 4.6	
	M	15 days – 1 month	0.2 – 5.4	
	F	15 days – 1 month	0.0 – 5.3	
	M	1 – 2 months	0.0 – 4.5	
	F	1 – 2 months	0.0 – 4.1	
	M	2 – 6 months	0.0 – 4.0	
	F	2 – 6 months	0.0 – 3.6	
	M	6 months – 2 years	0.0 – 3.7	
	F	6 months – 2 years	0.0 – 3.2	
	M	2 – 6 years	0.0 – 4.1	
	F	2 – 6 years	0.0 – 3.3	
	M	6 – 12 years	0.0 – 4.7	
	F	6 – 12 years	0.0 – 4.0	
	M	12 – 18 years	0.0 – 4.0	
	F	12 – 18 years	0.0 – 3.4	
	M	18 – 150 years	0.0 – 7.0	
	F	18 – 150 years	0.0 – 7.0	
BASO %	M	0-15 days	0.1 – 0.8	
	F	0-15 days	0.1 – 0.6	
	M	15 days – 2 months	0.0 – 0.6	
	F	15 days – 2 months	0.0 – 0.5	
	M	2 months - 6 years	0.0 – 0.6	
	F	2 months - 6 years	0.0 – 0.6	
	M	6 – 18 years	0.0 – 0.7	
	F	6 – 18 years	0.0 – 0.6	
	M	18 – 150 years	0.0 – 1.5	
	F	18 – 150 years	0.0 – 1.5	
IG %	M	0 -150 years	0 – 5	
	F	0 -150 years	0 – 5	
LYMPH Absolute $x10^9/L$	M	0-15 days	2.07 – 7.53	
	F	0-15 days	1.75 – 8.0	
	M	15 days – 1 month	2.11 – 8.38	
	F	15 days – 1 month	2.42 – 8.2	
	M	1 – 2 months	2.47 – 7.95	
	F	1 – 2 months	2.29 – 9.14	
	M	2 – 6 months	2.45 – 8.89	
	F	2 – 6 months	2.14 – 8.99	
	M	6 months – 2 years	1.56 – 7.83	
	F	6 months – 2 years	1.52 – 8.09	
	M	2 – 6 years	1.13 – 5.52	
	F	2 – 6 years	1.25 – 5.77	
	M	6 – 12 years	0.97 – 3.96	

Hematopathology Blood Tests				
Test Name	**Gender**	**Age**	**Range**	**Critical**
	F	6 – 12 years	1.16 – 4.28	
	M	12 – 18 years	0.97 – 3.26	
	F	12 – 18 years	1.16 – 3.33	
	M	18 – 150 years	1.5 – 4.0	
	F	18 – 150 years	1.5 – 4.0	
MONO Absolute $x10^9/L$	M	0-15 days	0.52 – 1.77	
	F	0-15 days	0.57 – 1.72	
	M	15 days – 1 month	0.28 – 1.38	
	F	15 days – 1 month	0.42 – 1.21	
	M	1 – 2 months	0.28 – 1.05	
	F	1 – 2 months	0.28 – 1.21	
	M	2 – 6 months	0.28 – 1.07	
	F	2 – 6 months	0.24 – 1.17	
	M	6 months – 2 years	0.25 – 1.15	
	F	6 months – 2 years	0.26 – 1.08	
	M	2 – 6 years	0.19 – 0.94	
	F	2 – 6 years	0.24 – 0.92	
	M	6 – 12 years	0.19 – 0.85	
	F	6 – 12 years	0.19 – 0.81	
	M	12 – 18 years	0.18 – 0.78	
	F	12 – 18 years	0.19 – 0.72	
	M	18 – 150 years	0.1 – 0.9	
	F	18 – 150 years	0.1 – 0.9	
NEUT Absolute $x10^9/L$	M	0 – 15 days	1.6 – 6.06	<0.20
	F	0 – 15 days	1.73 – 6.75	
	M	15 days – 1 month	1.18 – 5.45	
	F	15 days – 1 month	1.23 – 4.8	
	M	1 – 2 months	0.83 – 4.23	
	F	1 – 2 months	1.0 – 4.68	
	M	2 – 6 months	0.97 – 5.45	
	F	2 – 6 months	1.04 – 7.2	
	M	6 months – 2 years	1.19 – 7.21	
	F	6 months – 2 years	1.6 – 8.29	
	M	2 – 6 years	1.54 – 7.92	
	F	2 – 6 years	1.6 – 8.29	
	M	6 – 12 years	1.63 – 7.55	
	F	6 – 12 years	1.64 – 7.87	
	M	12 – 18 years	1.54 – 7.04	
	F	12 – 18 years	1.82 – 7.47	
	M	18 – 150 years	2.0 – 7.50	
	F	18 – 150 years	2.0 – 7.50	
EOS Absolute $x10^9/L$	M	0-15 days	0.12 – 0.66	
	F	0-15 days	0.09 – 0.64	
	M	15 days – 1 month	0.08 – 0.8	
	F	15 days – 1 month	0.06 – 0.75	
	M	1 – 2 months	0.05 – 0.57	

Hematopathology Blood Tests				
Test Name	**Gender**	**Age**	**Range**	**Critical**
	F	1 – 2 months	0.04 – 0.63	
	M	2 – 6 months	0.03 – 0.61	
	F	2 – 6 months	0.02 – 0.74	
	M	6 months – 2 years	0.02 – 0.82	
	F	6 months – 2 years	0.02 – 0.58	
	M	2 – 6 years	0.03 – 0.53	
	F	2 – 6 years	0.03 – 0.46	
	M	6 – 12 years	0.03 – 0.52	
	F	6 – 12 years	0.03 – 0.47	
	M	12 – 18 years	0.04 – 0.38	
	F	12 – 18 years	0.02 – 0.32	
	M	18 – 150 years	0.0 – 0.5	
	F	18 – 150 years	0.0 – 0.5	
BASO Absolute $x10^9$/L	M	0-15 days	0.02 – 0.11	
	F	0-15 days	0.02 – 0.07	
	M	15 days – 1 month	0.01 – 0.07	
	F	15 days – 1 month	0.01 – 0.06	
	M	1 – 2 months	0.01 – 0.07	
	F	1 – 2 months	0.01 – 0.05	
	M	2 – 6 months	0.01 – 0.06	
	F	2 – 6 months	0.01 – 0.07	
	M	6 months – 6 years	0.01 – 0.06	
	F	6 months – 6 years	0.01 – 0.06	
	M	6 – 12 years	0.01 – 0.06	
	F	6 – 12 years	0.01 – 0.05	
	M	12 – 150 years	0 – 0.1	
	F	12 – 150 years	0 – 0.1	
IG Absolute $x10^9$/L	M	0-2 days	0 – 0.28	
	F	0-2 days	0 – 0.28	
	M	2 days – 14 days	0 – 0.27	
	F	2 days – 14 days	0 – 0.27	
	M	14 days – 1 month	0 – 0.22	
	F	14 days – 1 month	0 – 0.22	
	M	1 – 3 months	0 – 0.09	
	F	1 – 3 months	0 – 0.09	
	M	3 – 6 months	0 – 0.06	
	F	3 – 6 months	0 – 0.06	
	M	6 months – 2 years	0 – 0.14	
	F	6 months – 2 years	0 – 0.14	
	M	2 – 6 years	0 – 0.06	
	F	2 – 6 years	0 – 0.06	

Hematopathology Blood Tests				
Test Name	**Gender**	**Age**	**Range**	**Critical**
	M	6 – 12 years	0 – 0.04	
	F	6 – 12 years	0 – 0.04	
	M	12 – 16 years	0 – 0.03	
	F	12 – 16 years	0 – 0.03	
	M	16 – 150 years	0 – 0.09	
	F	16 – 150 years	0 – 0.09	
Retic %	M	0 – 4 days	3.47 – 5.4	
	F	0 – 4 days	3.47 – 5.4	
	M	4 days – 1 month	1.06 – 2.37	
	F	4 days – 1 month	1.06 – 2.37	
	M	1 – 2 months	2.12 – 3.47	
	F	1 – 2 months	2.12 – 3.47	
	M	2 – 6 months	1.55 – 2.7	
	F	2 – 6 months	1.55 – 2.7	
	M	6 months – 2 years	0.99 – 1.82	
	F	6 months – 2 years	0.99 – 1.82	
	M	2 – 6 years	0.82 – 1.45	
	F	2 – 6 years	0.82 – 1.45	
	M	6 – 12 years	0.98 – 1.94	
	F	6 – 12 years	0.98 – 1.94	
	M	12 – 18 years	0.90 – 1.49	
	F	12 – 18 years	0.90 – 1.49	
	M	18 – 150 years	0.50 – 1.46	
	F	18 – 150 years	0.56 – 1.52	
Retic Absolute x 10^9/L	M	0 – 4 days	147.5 – 216.4	
	F	0 – 4 days	147.5 – 216.4	
	M	4 days – 1 month	51.3 – 110.4	
	F	4 days – 1 month	51.3 – 110.4	
	M	1 – 2 months	51.8 – 77.9	
	F	1 – 2 months	51.8 – 77.9	
	M	2 – 6 months	48.2 – 88.2	
	F	2 – 6 months	48.2 – 88.2	
	M	6 months – 2 years	43.5 – 111.1	
	F	6 months – 2 years	43.5 – 111.1	
	M	2 – 6 years	36.4 – 68.0	
	F	2 – 6 years	36.4 – 68.0	
	M	6 – 12 years	42.4 – 70.2	
	F	6 – 12 years	42.4 – 70.2	
	M	12 – 18 years	41.6 – 65.1	
	F	12 – 18 years	41.6 – 65.1	
	M	18 – 150 years	26.1 – 96.7	
	F	18 – 150 years	28.8 – 94.1	

Hematopathology Blood Tests				
Test Name	**Gender**	**Age**	**Range**	**Critical**
ESR	M	0 – 150	0 – 20 mm/hr	
	F	0 – 150	0 – 26 mm/hr	
Haptoglobin	M/F	>0min	0.47 – 2.03 g/L	
Plasma Hemoglobin		0 – 150 years	0 – 30 mg/dL	
Transferrin	M/F	>0min	1.81 – 3.31 g/L	
Coagulation				
INR		0 – 150	0.8 – 1.2	≥6.0
PTT		0 – 150	26 – 38 sec	>80 (not on heparin)
Thrombin Time		0 – 150	11.0 - 18.0 sec	
Dade PTT		0 – 150	21 – 33 sec	
D-Dimer		0 – 150	<500 ng/mL-Negative	
Fibrinogen		0 – 150	2.15 - 4.79 g/L	
Manual INR		0 – 150	0.8 - 1.2	
Manual PTT		0 – 150	28 – 40 sec	
Manual TT		0 – 150	14.4 – 22.4 sec	
FII		0 - 89 days	0.33 - 0.93 U/mL	
		89 days – 1 year	0.45 - 1.05 U/mL	
		1 – 6 years	0.71 - 1.16 U/mL	
		6 – 11 years	0.67 - 1.07 U/mL	
		11 – 16 years	0.61 - 1.04 U/mL	
		16 – 150	0.75 – 1.41 U/mL	
FV		0 - 89 days	0.45 - 1.45 U/mL	
		89 days – 1 year	0.48 - 1.32 U/mL	
		1 – 6 years	0.79 - 1.27 U/mL	
		6 – 11 years	0.63 - 1.16 U/mL	
		11 – 16 years	0.57 - 0.99 U/mL	
		16 – 150	0.54 – 1.47 U/mL	
FVII		0 – 150	0.50 – 1.63 U/mL	
FVIII		0 – 150	0.50 – 1.50 U/mL	
FIX		0 - 89 days	0.15 - 0.91 U/mL	
		89 days – 1 year	0.21 - 1.13 U/mL	
		1 – 6 years	0.47 - 1.04 U/mL	
		6 – 11 years	0.63 - 0.89 U/mL	
		11 – 16 years	0.59 - 1.22 U/mL	
		16 – 150	0.68 – 1.74 U/mL	
FX		0 - 89 days	0.19 - 0.79 U/mL	
		89 days – 1 year	0.35 - 1.07 U/mL	
		1 – 6 years	0.58 - 1.16 U/mL	
		6 – 11 years	0.55 - 1.01 U/mL	
		11 – 16 years	0.50 - 1.17 U/mL	
		16 – 150	0.53 – 1.57 U/mL	
FXI		0 - 89 days	0.23 - 0.87 U/mL	
		89 days – 1 year	0.41 - 0.97 U/mL	
		1 – 6 years	0.56 - 1.50 U/mL	
		6 – 11 years	0.52 - 1.20 U/mL	

Hematopathology Blood Tests				
Test Name	**Gender**	**Age**	**Range**	**Critical**
		11 – 16 years	0.50 - 0.97 U/mL	
		16 – 150	0.59 – 1.57 U/mL	
FXII		0 - 89 days	0.11 - 0.83 U/mL	
		89 days – 1 year	0.25 - 1.09 U/mL	
		1 – 6 years	0.64 - 1.29 U/mL	
		6 – 11 years	0.60 - 1.40 U/mL	
		11 – 16 years	0.34 - 1.37 U/mL	
		16 – 150	0.44 – 1.55 U/mL	
vWF Antigen (U/mL)		0 – 150	Blood Group: **O** – 0.44-1.39 **A, B, AB** – 0.54-2.00	
vWF Ristocetin Cofactor	M/F	0 – 150	≥0.40 U/mL	
Protein C		0 - 89 days	0.2 – 0.64 U/mL	
		89 days - 1 year	0.4 – 0.92 U/mL	
		1 – 6 years	0.45 – 0.93 U/mL	
		6 – 11 years	0.55 – 1.11 U/mL	
		0 – 150	0.74 – 1.64 U/mL	
Protein S		0 - 89 days	0.23 - 0.88 U/mL	
		89 days - 1 year	0.56 - 1.28 U/mL	
		1 – 6 years	0.56 - 1.28 U/mL	
		6 – 11 years	0.43 – 1.24 U/mL	
	M	6 – 150	0.70 – 1.47 U/mL	
	F	6 – 150	0.55 – 1.47 U/mL	
AT		0 - 89 days	0.41 - 0.93 U/mL	
		89 days – 1 year	0.73 - 1.21 U/mL	
		1 – 6 years	0.82 - 1.39 U/mL	
		6 – 11 years	0.90 - 1.31 U/mL	
		11 – 16 years	0.77 - 1.32 U/mL	
		16 – 150	0.80 – 1.40 U/mL	
Lupus Anticoagulant Ratio		0 – 150	0.8 – 1.2	
PFA 200		>37 weeks up to 2.5 years	COL/EPI 61-108 sec COL/ADP 48-65 sec	
		2.5 years – 17 years	COL/EPI 82-165 sec COL/ADP 70-110 sec	
		Adult (18+ years)	COL/EPI 80-152 sec COL/ADP 60-116 sec	
Anti-Xa		0 – 150	* No therapeutic range. Ballpark range is 0.5-1.0 U/mL	
Immunology				
A1C (%)		0 – 150yr	4.6 – 5.9	
ASOT (IU/mL)	M/F	>0min	0.0 – 200.0	

Hematopathology Blood Tests				
Test Name	**Gender**	**Age**	**Range**	**Critical**
	Interpretive Data: Normal values can vary with the season of the year. Higher titres are suggestive of recent infection. A two-fold or greater rise in ASO titre over 2 to 4 weeks is indicative of a streptococcal infection.			
C3 (g/L)	M/F	>0min	0.80 – 1.64	
C4 (g/L)	M/F	>0min	0.140 – 0.350	
CRP (mg/L)	M/F	>0min	0.00 – 7.99	
	Interpretive Data: >8 mg/L is consistent with acute phase response to inflammation. Cardiovascular Risk assessment: Low risk: <1 mg/L Average risk: 1-3 mg/L High risk: >3 mg/L			
IgA (g/L)	M/F	0 – 2mth	0.01 – 0.52	
		2 – 3mth	0.03 – 0.47	
		3 – 4mth	0.05 – 0.46	
		4 – 5mth	0.04 – 0.73	
		5 – 6mth	0.08 – 0.83	
		6 – 7mth	0.08 – 0.67	
		7-10mth	0.11 – 0.90	
		10mth–1yr	0.16 – 0.83	
		1 – 2yr	0.14 – 1.05	
		2 – 3yr	0.14 – 1.22	
		3 – 4yr	0.22 – 1.57	
		4 – 6yr	0.25 – 1.52	
		6 – 9yr	0.33 – 2.00	
		9 – 11yr	0.45 – 2.34	
		>11yr	0.95 – 3.59	
	Interpretive Data: Immunoglobulin testing results must be interpreted in the clinical context. Elevations are often due to benign causes such as inflammation or infection. Unexplained elevations, especially isolated to a single class, warrant clinical evaluation for CRAB criteria. If a plasma cell proliferative disorder is clinically suspected, you may contact CZClinicalChemist@nshealth.ca to discuss possible further investigations.			
IgG (g/L)	M/F	0 – 2mth	2.40 – 8.60	
		2 – 3mth	1.90 – 5.80	
		3 – 4mth	1.70 – 5.60	
		4 – 5mth	1.90 – 5.40	
		5 – 6mth	1.60 – 7.80	
		6 – 7mth	2.10 – 6.70	
		7 - 10mth	2.10 – 8.60	
		10mth – 1yr	2.80 – 10.30	
		1 – 2yr	3.40 – 11.60	
		2 – 3yr	4.00 – 10.10	
		3 – 4yr	4.20 – 10.90	
		4 – 6yr	4.40 – 11.90	
		6 – 9yr	6.05 – 12.30	
		9 – 11yr	5.90 – 15.10	

Hematopathology Blood Tests				
Test Name	**Gender**	**Age**	**Range**	**Critical**
		>11yr	6.50 – 15.20	
	Interpretive Data: Immunoglobulin testing results must be interpreted in the clinical context. Elevations are often due to benign causes such as inflammation or infection. Unexplained elevations, especially isolated to a single class, warrant clinical evaluation for CRAB criteria. If a plasma cell proliferative disorder is clinically suspected, you may contact CZClinicalChemist@nshealth.ca to discuss possible further investigations.			
IgM (g/L)	M/F	0 – 2mth	0.19 – 0.83	
		2 – 3mth	0.16 – 1.00	
		3 – 4mth	0.23 – 0.85	
		4 – 5mth	0.26 – 0.96	
		5 – 6mth	0.31 – 1.03	
		6 – 7mth	0.33 – 0.97	
		7 - 10mth	0.32 – 1.20	
		10mth –1yr	0.39 – 1.42	
		1 – 2yr	0.41 – 1.64	
		2 – 3yr	0.46 – 1.60	
		3 – 4yr	0.45 – 1.90	
		4 – 6yr	0.41 – 1.86	
		6 – 9yr	0.46 – 1.97	
		9 – 11yr	0.49 – 2.30	
		>11yr	0.46 – 3.04	
	Interpretive Data: Immunoglobulin testing results must be interpreted in the clinical context. Elevations are often due to benign causes such as inflammation or infection. Unexplained elevations, especially isolated to a single class, warrant clinical evaluation for CRAB criteria. If a plasma cell proliferative disorder is clinically suspected, you may contact CZClinicalChemist@nshealth.ca to discuss possible further investigations.			
Free Kappa (mg/L)		0 – 150yr	3.30 – 19.40	
Free Lambda (mg/L)		0 – 150yr	5.71 – 26.30	
Free Kappa/Free Lambda		0 – 150yr	0.26 – 1.65	
	Interpretive Data: Renal impairment reduces renal clearance of both free kappa and free lambda light chains with a relative increase of kappa light chains. Therefore, the suggested kappa: lambda ratio reference range for individuals with renal disease should extend up to 3.10. Elevation of free kappa light chains and kappa:lambda ratio may be due to contributions from either of both a plasma cell dyscrasia and reduced renal function. Interpret in light of presence or absence of renal impairment, clinical and other laboratory findings.			
Rheumatoid Factor (IU/mL)	M/F	>0min	0.0 – 30.0	
	Interpretive Data: Normal: <30.0 IU/mL Weakly positive: 30.0-50.0 IU/mL Positive: >50.0 IU/mL			
SPE - Albumin		0 – 150yr	36.0 - 49.0 g/L	
SPE – Alpha 1		0 – 150yr	2.0 - 3.7 g/L	
SPE – Alpha 2		0 – 150yr	4.7 - 8.5 g/L	
SPE – Beta 1		0 – 150yr	3.4 - 5.2 g/L	

Hematopathology Blood Tests				
Test Name	**Gender**	**Age**	**Range**	**Critical**
SPE – Beta 2		0 – 150yr	2.1 - 4.7 g/L	
SPE – Gamma		0 – 150yr	5.9 - 14.5 g/L	
UPE	No reference range			
UIFE	No reference range			
M Protein Scan	No reference range			

Microbiology Blood Tests					
Name of Test	**Specimen Type**	**Units**	**Low**	**High**	**Critical**
Lyme Disease Antibody Screen	Serum (SST)	Qualitative	NA	NA	NA
Anti EBNA Serology	Serum (SST)	Qualitative	NA	NA	NA
EBV IgM Serology	Serum (SST)	Qualitative	NA	NA	NA
HTLV 1 and 2	Serum (SST)	Qualitative	NA	NA	NA
Measles Antibody IgG	Serum (SST)	Qualitative	NA	NA	NA
Measles Antibody IgM	Serum (SST)	Qualitative	NA	NA	NA
Treponema Pallidum Pa	Serum (SST)	Qualitative	NA	NA	NA
Mumps Antibody IgG	Serum (SST)	Qualitative	NA	NA	NA
Mumps Antibody IgM	Serum (SST)	Qualitative	NA	NA	NA
Parvovirus B19 IgG	Serum (SST)	Qualitative	NA	NA	NA
Parvovirus B19 IgM	Serum (SST)	Qualitative	NA	NA	NA
Rapid Plasma Reagin Titre	Serum (SST)	Titer	NA	NA	NA
Varicella zoster Immune status	Serum (SST)	Qualitative	NA	NA	NA
Cytomegalovirus Antibody IgM	Serum (SST)	Qualitative	NA	NA	NA
CMV Antibody IgG	Serum (SST)	Qualitative	NA	NA	NA
HIV 1 and 2 Screening Test	Serum (SST)	Qualitative	NA	NA	NA
HIV Immunoblot Confirmatory	Serum (SST)	Qualitative	NA	NA	NA
Hepatitis B Core Antibody	Serum (SST)	Qualitative	NA	NA	NA
Hepatitis B Surface Antibody	Serum (SST)	Qualitative	NA	NA	NA
Hepatitis B Surface Antigen	Serum (SST)	Qualitative	NA	NA	NA
Hepatitis C Antibody	Serum (SST)	Qualitative	NA	NA	NA
Hepatitis C Antibody RIBA Confirmation	Serum (SST)	Qualitative	NA	NA	NA
Hepatitis C Genotyping	Serum (SST)	Qualitative	NA	NA	NA
Hepatitis A Antibody IgM	Serum (SST)	Qualitative	NA	NA	NA
Hepatitis A Antibody IgG	Serum (SST)	Qualitative	NA	NA	NA
Rubella Antibody IgG	Serum (SST)	Qualitative	NA	NA	NA
Rubella Antibody IgM	Serum (SST)	Qualitative	NA	NA	NA
Syphilis Screening EIA	Serum (SST)	Qualitative	NA	NA	NA
Toxoplasma Antibody IgG	Serum (SST)	Qualitative	NA	NA	NA
Toxoplasma Antibody IgM	Serum (SST)	Qualitative	NA	NA	NA
ANA	Serum (SST)	Qualitative	NA	NA	NA
Anti-Cardiolipin IgG	Serum (SST)	GPL unit/mL	NA	NA	NA
Anti-Cyclic Citrullinated Peptide	Serum (SST)	U/mL	NA	NA	NA
Anti-Mitochondrial 2	Serum (SST)	Qualitative	NA	NA	NA
Anti-Tissue Transglutaminase IgA	Serum (SST)	U/mL	NA	NA	NA
Vasculitis Panel	Serum (SST)	AI	NA	NA	NA

Microbiology Blood Tests					
Name of Test	**Specimen Type**	**Units**	**Low**	**High**	**Critical**
Hepatitis C Viral Load	Serum (SST)	log IU/ml	NA	NA	NA
HIV Viral Load	Plasma (EDTA)	Copies/mL	NA	NA	NA
Cytomegalovirus Quantitative PCR	Plasma (EDTA)	IU/mL	NA	NA	NA

Clinical Chemistry Arterial Blood Gas Tests						
Name of Test	**Specimen Type**	**Units**	**Low**	**High**	**Interpretive Data**	**Critical**
pH	Arterial Blood (Heparinized syringe)		7.35	7.45	pH, pCO2 and pO2 are calculated based on the default temperature at 37°C. When body temperature is higher than 37°C, the reported PO2 and PCO2 measured at 37°C will be lower than the actual values in the patient; the converse holds when body temperature is below 37°C.	<7.20 or >7.60
PCO2		mmHg	35	45		<20 or >70
PO2		mmHg	80	100		<60
pH (cor)			7.35	7.45	Corrected pH, pCO2 and pO2 are calculated based on the patient actual body temperature.	<7.20 or >7.60
pCO2 (cor)		mmHg	35	45		<20 or >70
pO2 (cor)		mmHg	80	100		<60
HCO3		mmol/L	21.0	28.0		<10.0 or >40.0
Base Excess		mmol/L	-2.0	3.0		
O2 Saturation (SO2)		%	94	98	Hemoglobin oxygen saturation	
Total Hemoglobin		g/L	140 M 120 F	180 M 160 F		<60

Clinical Chemistry Arterial Blood Gas Tests						
Name of Test	**Specimen Type**	**Units**	**Low**	**High**	**Interpretive Data**	**Critical**
Carboxyhemoglobin (COHgb)		%			<1.5 (non-smokers) <10.0 (smokers) >20.0 (Toxic) >50.0 (Lethal)	>20.0
Methemoglobin (METHgb)		%		1.5		>30.0
Sodium		mmol/L	136	145		<120 or >160
Potassium		mmol/L	3.4	5.0		<2.8 or >6.2
Chloride		mmol/L	98	107		
Anion Gap			8	16		
Ionized Calcium		mmol/L	1.15	1.27	Reference values are for adults.	<0.75 or >1.60
Glucose		mmol/L	3.8	7.8		≤16y <2.5 and >15.0 >16y <2.5 and >25.0
Lactate		mmol/L	0.5	1.7		>4.0

Clinical Chemistry Venous Blood Gas Tests						
Name of Test	**Specimen Type**	**Units**	**Low**	**High**	**Interpretive Data**	**Critical**
pH	Venous Blood (Heparinized syringe)		7.32	7.43	pH, pCO2 and pO2 are calculated based on the default temperature at 37°C. When body temperature is higher than 37°C, the reported PO2 and PCO2 measured at 37°C will be lower than the actual values in the patient; the converse holds when body temperature is below 37°C.	
PCO2		mmHg	38	50		
PO2		mmHg			Reference ranges are not established for venous blood	
pH (cor)			7.32	7.43	Corrected pH, pCO2 and pO2 are calculated based on the patient actual	

Clinical Chemistry Venous Blood Gas Tests						
Name of Test	**Specimen Type**	**Units**	**Low**	**High**	**Interpretive Data**	**Critical**
					body temperature.	
pCO2 (cor)		mmHg	38	50		
pO2 (cor)		mmHg			Reference ranges are not established for venous blood	
HCO3		mmol/L	22.0	29.0		<10.0 or >40.0
Base Excess		mmol/L			Reference ranges are not established for venous blood	
O2 Saturation (SO2)		%			Hemoglobin oxygen saturation Reference ranges are not established for venous blood	
Total Hemoglobin		g/L	140 M 120 F	180 M 160 F		<60
Carboxyhemoglobin (COHgb)		%			<1.5 (non-smokers) <10.0 (smokers) >20.0 (Toxic) >50.0 (Lethal)	>20.0
Methemoglobin (METHgb)		%		1.5		>30.0
Sodium		mmol/L	136	145		<120 or >160
Potassium		mmol/L	3.4	5.0		<2.8 or >6.2
Chloride		mmol/L	98	107		
Anion Gap			8	16		
Ionized Calcium		mmol/L	1.15	1.27	Reference values are for adults.	<0.75 or >1.60
Glucose		mmol/L	3.8	7.8		≤16y <2.5 and >15.0 >16y <2.5 and >25.0
Lactate		mmol/L	0.5	2.2		>4.0

Clinical Chemistry Urine Tests						
Name of Test	**Specimen Type**	**Gender**	**Units**	**Low**	**High**	**Critical**
Alb/Creat Ratio	Random	M/F	mg/mmol	<3.0 mg/mmol		
		Interpretive Data:				

Clinical Chemistry Urine Tests

Name of Test	Specimen Type	Gender	Units	Low	High	Critical
		URINE ALBUMIN/CREATININE RATIO = ALB/CREAT RATIO = (U ACR) (Previously referred to as microalbuminuria) Normal-mildly increased: <3.0 mg/mmol Moderately increased: 3.0-30.0 mg/mmol Severely increased: >30.0 mg/mmol For more information, refer to the latest Kidney Disease: Improving Global Outcomes (KDIGO) guidelines.				
Amylase	24 Hr & timed	M/F	U/Hr	0	16	
			U/TV	Not established		
		Interpretive Data: Reference Values are for adults; reference ranges have not been established for children.				
Calcium	24 Hr & random	M	mmol/TV	0.0	7.4	
		F		0.0	6.8	
		Interpretive Data: Reference ranges are based on individuals consuming an average daily intake of 600 to 800 mg of calcium per day. Reference ranges are for adults; reference ranges have not been established for children.				
Calcium/Creatinine Ratio	Random	M/F 0-18yr	mmol/mmol	Not established		
		18-83yr		<0.56		
		>83yr		Not established		
		Interpretive Data: Reference values have not been established for patients <18 years or >83 years of age.				
Catecholamines: Epinephrine	24 Hr	M/F >18yr	nmol/TV	0.0	136.5	
		M/F	µmol/mol urine creatinine	0-1yr: 0.0	231.0	
				1-4yr: 0.0	51.0	
				4-11yr: 3.0	57.0	
				11-18yr: 2.0	36.0	
				>18yr: 0.0	13.0	
Catecholamines: Norepinephrine	24 Hr	M/F >18yr	nmol/TV	0	591	
		M/F	µmol/mol urine creatinine	0-1yr: 17.0	207.0	
				1-4yr: 17.0	194.0	
				4-11yr: 18.0	72.0	
				11-18yr: 3.0	70.0	
				>18yr: 0.0	30.0	
Catecholamines: Dopamine	24 Hr	M/F >18yr	nmol/TV	392	2500	
		M/F	µmol/mol urine creatinine	0-1yr: 177.0	952.0	
				1-4yr: 59.0	900.0	
				4-11yr: 162.0	531.0	
				11-18yr: 89.0	332.0	
				>18yr: 0.0	185.0	
Chloride	24 Hr & random	M/F	mmol/TV	110	250	
		Interpretive Data: Reference Values are for adults; reference ranges have				

Clinical Chemistry Urine Tests						
Name of Test	**Specimen Type**	**Gender**	**Units**	**Low**	**High**	**Critical**
		not been established for children.				
Citrate	24 Hr	M/F	mmol/TV	1.7		
		Interpretive Data: Reference Values are for adults; reference ranges have not been established for children.				
Cortisol	24 hr	M/F	nmol/TV	12	486	
		Interpretive Data: Reference ranges are for adults; reference ranges have not been established for children.				
Cortisol/Creatinine ratio	calculation	M/F	ratio	Not established		
Creatinine	24 Hr & timed	M	mmol/TV	8.4	22.0	
		F		6.3	14.6	
		Interpretive Data: Reference Values are for adults; reference ranges have not been established for children.				
Creatinine Clearance	24 Hr & timed	M/F	mL/min/1.73m2	70	138	
		Interpretive Data: Reference range has not been established for children 0-17 years. Creatinine clearance has not been corrected to reflect the patient's height and weight. It has been calculated with the assumption of a normalized body surface area of 1.73m2. eGFR based on Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation is more accurate in assessing patient's glomerular filtration function.				
Creatinine Clearance BSA corrected	24 Hr & timed	M/F	mL/min/BSA	70	138	
		Interpretive Data: Reference range has not been established for children 0-17 years. Creatinine clearance has been calculated using the patient's height and weight provided with this request. It has been standardized to 1.73m2 body surface area.				
Magnesium	24 Hr & random	M/F	mmol/TV	3.0	5.0	
		Interpretive Data: Reference Values are for adults; reference ranges have not been established for children.				
Osmolality	24 Hr & random	M/F	mmol/Kg	0-15yr: 50 ≥16yr: 50	0-15yr: 600 ≥16yr: 1400	
Oxalate	24 Hr	M	µmol/TV	80	490	
		F		40	320	
		Interpretive Data: Reference Values are for adults; reference ranges have not been established for children. Very high ascorbic acid (Vitamin C) can interfere at levels over 16 umol/TV. Patients should refrain from taking excessive amounts of Vitamin C or Vitamin C rich food for at least 48 hours prior to urine collection.				
Phosphorus	24 Hr & random	M/F	mmol/L	Not established		
		Interpretive Data: Reference ranges have not been established. Interpretation of urinary phosphorus excretion is dependent upon the clinical situation and should be interpreted in conjunction with the plasma phosphorus concentration.				
		M/F	mmol/TV	13	42	
		Interpretive Data: Reference Values are for adults; reference ranges have not been established for children.				
Potassium	24 Hr & random	M/F	mmol/TV	25	125	<2 or >200
		Interpretive Data: Reference Values are for adults; reference ranges have not been established for children.				

Clinical Chemistry Urine Tests						
Name of Test	**Specimen Type**	**Gender**	**Units**	**Low**	**High**	**Critical**
Pro/Creat Ratio	Random	M/F	mg/mmol	<24		
		Interpretive Data: U PROT/CREAT RATIO = U PCR (Previously referred to as Proteinuria) For evaluation of preeclampsia in pregnant persons, the Society of Obstetricians and Gynaecologists of Canada (SOGC) recommends a cut-off of 30 mg/mmol.				
Protein	24 Hr & random	M/F	mg/L	10	140	
		Interpretive Data: Reference values are for adults; reference ranges have not been established for children. 24 hour at rest: 50 - 80 mg/TV 24 hour excretion: <300 mg/TV This cut-off is recommended by the National Kidney Foundation - Kidney Disease Outcomes Quality Initiative (K/DOQI).				
Sodium	24 Hr & random	M/F	mmol/TV	40	220	
		Interpretive Data: Reference Values are for adults; reference ranges have not been established for children.				
Urea	24 Hr & random	M/F	mmol/TV	428	714	
		Interpretive Data: Reference Values are for adults; reference ranges have not been established for children.				
Uric Acid	24 Hr	M/F	mmol/TV	1.5	4.4	
		Interpretive Data: Reference Values are for adults; reference ranges have not been established for children.				

Clinical Chemistry Urinalysis					
Name of Test	**Specimen Type**	**Units**	**Low**	**High**	**Critical**
Color	random		Yellow	Dark Yellow	
Clarity	random		Clear		
Leukocyte Esterase	random	Leu/uL	Negative		
Occult Blood	random	Ery/uL	Negative		
Nitrite	random		Negative		
pH	random		5.0	8.0	
Specific Gravity	random		1.010	1.025	
Protein	random	g/L	Negative		
Glucose	random	mmol/L	Negative		
Ketones	random	mmol/L	Negative	Trace	
Urobilinogen	random	umol/L	3.2	16	
Bilirubin	random		Negative		
Interpretive Data: Urine examined for color, clarity and chemical analysis (by dipstick). Microscopic analysis will only be performed if urine is cloudy, turbid or if chemical analysis demonstrates an abnormality in color, blood, protein, leukocyte esterase or nitrite. Note: Only elements that were seen microscopically will be appear on the report.					
Non Squamous Epithelial	sediment	/LPF	None Seen		
Squamous Epithelial	sediment	/LPF	Male: None Female: None	Male: Few Female: Moderate	

Clinical Chemistry Urinalysis

Name of Test	Specimen Type	Units	Low	High	Critical
Hyaline Cast	sediment	/LPF	0	5	
Granular Cast	sediment	/LPF	None Seen		
Renal Tubular Cells Cast	sediment	/LPF	None Seen		
RBC Cast	sediment	/LPF	None Seen		
WBC Cast	sediment	/LPF	None Seen		
Crystal Cast	sediment	/LPF	None Seen		
Microorganism Cast	sediment	/LPF	None Seen		
Fatty Cast	sediment	/LPF	None Seen		
Waxy Cast	sediment	/LPF	None Seen		
Mixed Cast	sediment	/LPF	None Seen		
WBC	sediment	/HPF	0	5	
RBC	sediment	/HPF	0	3	
Bacteria	sediment	/HPF	None	Few	
Yeast	sediment	/HPF	None Seen		
Trichomonas	sediment	/HPF	None Seen		
Calcium Oxalate Crystals	sediment	/HPF	None Seen	Few	
Triple Phosphate Crystals	sediment	/HPF	None Seen		
Uric Acid Crystals	sediment	/HPF	None Seen	Few	
Calcium Phosphate Crystals	sediment	/HPF	None Seen	Few	
Cystine Crystals	sediment	/HPF	None Seen		
Leucine Crystals	sediment	/HPF	None Seen		
Tyrosine Crystals	sediment	/HPF	None Seen		
Atypical Crystals	sediment	/HPF	None Seen		
Amorphous Urate Crystals	sediment	/HPF	None Seen	Few	
Amorphous Phosphate Crystals	sediment	/HPF	None Seen	Few	
Oval Fat Bodies	sediment	/HPF	None Seen		
Cholesterol Crystals	sediment	/HPF	None Seen		
Sperm	sediment	/HPF	None Seen		

Clinical Chemistry Stool Tests

Name of Test	Specimen Type	Units	Low	High	Critical
Occult Blood	Stool		negative		
	Interpretive Data: Please note that this test cannot be considered to provide conclusive evidence for the presence or absence of gastrointestinal bleeding in view of limited sensitivity and specificity.				

Clinical Chemistry CSF Tests

Name of Test	Specimen Type	Units	Low	High	Critical
Glucose	CSF	mmol/L	0-6yr: 3.33 >6yr: 2.22	0-6yr: 4.44 >6yr: 3.89	
	Interpretive Data: Spinal fluid (CSF) glucose concentration is about 60% that of plasma. Approximately 2-4 hours are required for the CSF glucose to reflect any change in plasma glucose.				
Lactate	CSF	mmol/L	2wk-18yr: 1.10 >18yr: 1.10	2wk-18yr: 2.80 >18yr: 2.40	
	Interpretive Data: Results greater than 3.90 mmol/L are suggestive of bacterial meningitis and lower results suggestive of viral meningitis. CSF lactate concentrations decrease after treatment with antibiotics; therefore, specimens should be collected prior to initiation of antibiotics.				
Protein, Total	CSF	g/L	Premature: 0.15 Full term: 0.40 0-1mth: 0.20 >1mth: 0.15	Premature: 1.30 Full term: 1.20 0-1mth: 0.80 >1mth: 0.45	

Clinical Chemistry Body Fluid Tests

Name of Test	Specimen Type	Units	Low	High	Critical
BF Albumin	Body Fluid	g/L	No reference range established		
BF Amylase	Body Fluid	U/L	No reference range established		
	Interpretive Data: No reference range has been established so interpretation is qualitative and thought to be positive for pancreatitis if >1250 U/L (10 times the plasma normal range).				
BF Bili T	Body Fluid	umol/L	No reference range established		
	Interpretive Data: The test result should be integrated into the clinical context for interpretation. Elevated body fluid bilirubin is suggestive of an exudative fluid.				
BF Chylomicrons	Pleural Fluid Peritoneal Fluid		Absent		
	Note: The specimen will also be tested for Triglyceride, therefore, see also BF Trig interpretive data.				
BF Creatinine	Body Fluid	umol/L	No reference range established		
BF Glucose	Body Fluid	mmol/L	No reference range established		
BF LD	Body Fluid	U/L	No reference range established		
BF Potassium	Body Fluid	mmol/L	No reference range established		
BF Sodium	Body Fluid	mmol/L	No reference range established		
BF TP	Body Fluid	g/L	No reference range established		
Name of Test	**Specimen Type**	**Units**	**Low**	**High**	**Critical**

Clinical Chemistry Body Fluid Tests				
BF Trig	Pleural Fluid Peritoneal Fluid	mmol/L	No reference range established	
	Interpretive Data: Pleural Fluid: Triglyceride concentrations over 1.24 mmol/L are consistent with a chylous effusion. Triglyceride concentrations below 0.57 mmol/L are usually not due to chylous effusions. Peritoneal Fluid: Triglyceride concentrations over 2.11 mmol/L are most consistent with chylous effusion.			
BF Urea	Body Fluid	mmol/L	No reference range established	
DF CRE mMperL DF CRE mMperTV	Dialysate Fluid	mmol/L mmol/TV	No reference range established	
DF GLU per L DF GLU per TV	Dialysate Fluid	mmol/L mmol/TV	No reference range established	
DF NA per L DF NA per TV	Dialysate Fluid	mmol/L mmol/TV	No reference range established	
DF UREA per L DF UREA per TV	Dialysate Fluid	mmol/L mmol/TV	No reference range established	
PCF Amylase	Pancreatic Cyst Fluid	U/L	No reference range established	
	Interpretive Data: Concentration of greater than 250 U/L is nonspecific and occurs both in pseudocysts and some mucin-producing cystic neoplasms. Concentration of less than 250 U/L indicates a low risk of a pseudocyst and is more consistent with cystic neoplasms.			
Synovial Analysis Crystals	Synovial fluid		NA	

Notes:

Qualitative = Result Positive or Negative

NA = No Reference Range