GLS.210 – DTH EPIC HCIS Reference Intervals

Applicability This document applies to Central Zone Red Deer EPIC HCIS personnel of AHS Laboratory Services.

Purpose This document states the reference intervals for Central Zone Red Deer EPIC HCIS Laboratory analytes.

Test	Reference Intervals
ACETAMINOPHEN, P/S	No reference interval
ALBUMIN/CREATININE RATIO, U	MALE AND FEMALE mg/mmol <1 m <17.50 1 m – <2 y <4.00 2 – 150 y <3.00
ALBUMIN, P/S	MALE, FEMALE, U/X g/L 0 – 364 d 22 – 45 365 d – 150 y 30 – 45
ALBUMIN, TIMED, 24 Hour Urine	Urine Albumin Excretion Rate MALE AND FEMALE ug/min 0 – 150 y <20
ALKALINE PHOSPHATASE (ALP), P/S	Male U/L Female X/U Age < 15 d 70 – 320 70 – 320 70 - 320 15 d to < 1 y 130 – 500 130 – 500 130 - 500 1 to < 13 y 130 - 430 130 – 430 130 - 430 13 to < 15 y 130 - 500 60 – 225 60 - 500 15 to < 18 y 60 – 250 50 – 140 50 – 250 18 to 150 y 40 – 120 40 – 120 40 - 120
ALANINE AMINOTRANSFERASE (ALT), P/S	M,F,U/X <18 y <40 U/L M ≥ 18 y <70 U/L F ≥ 18 y <50 U/L U/X ≥ 18 y <50 U/L
AMMONIA, P	MALE AND FEMALE µmol/L 0 – <3 m 30-100 3m – 150 y 20-50
ASPARTATE AMINOTRANSFERASE (AST), P/S	MALE AND FEMALE U/X U/L <1 m <115 1m to <1 y <80 1y to <7 y <60 7y to < 18 y <45 18-150 y M U/X <55 18-150 y F <45

Test	Reference Intervals
BETA HUMAN CHORIONIC GONADOTROPIN (BCHG), Urine	Negative
BETA HUMAN CHORIONIC GONADOTROPIN (BHCG), P/S	MALE AND FEMALE IU/L 0 – 150 y < 5
BETA-HYDROXYBUTYRATE, B	MALE AND FEMALE mmol/L 0 - 150 y <0.4
BILIRUBIN – DIRECT, P/S	MALE, FEMALE and U/X µmol/L 0 – 150 y < 7
BILIRUBIN – TOTAL, P/S	MALE, FEMALE and U/X µmol/L 30d to 150 y <20
BILIRUBIN- Neonatal	M F U/X umol/L <7d no range 7 to 15d <250 15 d-<30d <20
BLOOD GASES	Refer to tables on the last page of this document
BNP (B-TYPE NATRIURETIC PEPTIDE), P	MALE AND FEMALE ng/L 0 – 150 y Diagnostic Criteria: <100 CHF Unlikely 100 – 500 CHF Possible >500 CHF Likely
NT -pro BNP, P/S	MALE FEMALE ng/L Age < 1 y 54-556 1y to < 2 y 39-578 2y to < 6 y 20-565 6y to < 12 y 10-340 12y to-< 18 y 6-216 18y to 150 0-300
CALCIUM, 24 Hour Urine	MALE AND FEMALE mmol/d 0 – 150 y 2.50-7.50
CALCIUM, P/S	MALE, FEMALE and UNKNOWN mmol/L 0 – 10 d 1.80 – 2.90 11 – 365 d 2.20 – 2.80 > 1y 2.10 – 2.60
CALCIUM IONIZED, POST FILTER	MALE AND FEMALE mmol/L 0-18 yr 0.35 - 0.45 18 – 150 yr 0.20 – 0.40
CALCIUM, IONIZED, S	MALE AND FEMALE mmol/L 0 – 29 days 0.90 – 1.30 29 days – 150 yr 1.15 – 1.35
CARBAMAZEPINE, P/S	MALE AND FEMALE µmol/L Therapeutic Range 0 – 150 y 17 – 50
CBC (COMPLETE BLOOD COUNT), B	See CBC and Differential Provincial Reference Intervals-Connect Care (albertahealthservices.ca)
CELL COUNT, CSF	Color Colorless Appearance Clear WBC 0 – 5 x10^6/L

Test	Reference Intervals
	RBC 0 x 10^6/L
CELL COUNT, Fluid	Transudates Color Colorless Clarity Clear RBC < 10,000 x 10^6/L WBC < 1,000 x 10^6/L Exudates Color Variable Clarity Turbid RBC > 10,000 x 10^6/L WBC > 1,000 x 10^6/L
CHLAMYDIA/GONORRHOEAE PROBE NUCLEIC ACID AMPLIFICATION TEST (NAAT)	Negative
CHOLESTEROL, TOTAL, P/S	MALE AND FEMALE: mmol/L <2 y 2.36 – 5.32 2 – <18 y 2.70 – 5.89 The following comment will be attached to the result: Acceptable limit relative to dyslipidemia and atherosclerosis risk is < 4.40 mmol/L. 18 – 150 y No reference range The following comment will be attached to the result: Desirable < 5.17 mmol/L High >= 6.21 mmol/L
CLOSTRIDIUM DIFFICILE	Negative
CO-OXIMETRY	Refer to tables on the last page of this document
CREATINE KINASE (CK), P/S	MALE U/X U/L 0-150y 30-350 FEMALE U/L 0-150 y 30-200
C-REACTIVE PROTEIN (CRP), P/S	MALE AND FEMALE mg/L 0 – 150 y <8.1
CREATININE, 24 Hour Urine	MALE FEMALE U/X mmol/d Age < 3 y no range 3 to < 8 y 1.0-6.0 9 to < 12 y 5.0-12.5 13 to < 17 y 7.0-16.5 18 to 150 y M 9.0-18.0 18 to 150 y F 7.0-16.0 18 to 150 y U/X 7.0-18.0
CREATININE, P/S	MALE, FEMALE, U/X umol/L <1d no range 1d to <2 y 10 – 40 2y to <6 y 20 – 45

Test	Reference Intervals
	6y to <13 y 20 – 75 13y to <15 y 30 – 95 15-150 y M 50-120 15-150 y F 40-100 15-150 y U/X 40-120
CREATININE CLEARANCE, 24 Hour Urine + P/S	MALE AND FEMALE mL/min/1.73 m2 78.00-138.00
CRYOGLOBULIN, S	Negative
D-Dimer, Quantitative, P	0.00 - 0.50 mg/L FEU A D-Dimer BELOW the 0.50 mg/L FEU cutoff may be used with a standardized Clinical Assessment and/or imaging studies to help exclude venous thromboembolism (VTE). Values above the cutoff are not diagnostically useful in VTE assessment.
D-DIMER QUANTITATIVE (Triage Meter), B	0.5 mg/L A D-Dimer level BELOW the 0.5 mg/L cutoff may be used with the standardized clinical assessment and/or imaging studies to help exclude venous thromboembolism (VTE). Values above the cutoff are not diagnostically useful in VTE assessment.
DIFFERENTIAL, B	See CBC and Differential Provincial Reference Intervals-Connect Care (albertahealthservices.ca).
DIGOXIN, P/S	MALE AND FEMALE nmol/L 0 – 150 y Suggested Ranges: Heart failure 0.6 – 1.2 Atrial Fibrillation Not Defined Caution: Results > 1.5 nmol/L are associated with a higher risk of toxicity in heart failure patients.
DNA DOUBLE STRAND ANTIBODY, S	Negative
eGFR (CKD-EPI)	MALE FEMALE U/X 18 -150 y >59 mL/min/1.73m2 The following Interpretive Comment will be appended to all eGFR results on adults (≥18 years) with eGFR results <60 mL/min/1.73 m^2. "eGFR <60 mL/min/1.73 m^2 or urine Albumin/creatinine ratio ≥3.00 mg/mmol for more than 3 months suggests chronic kidney disease. For information on diagnosis, management and referral see www.diagnoseckd.ca." The following Interpretive Comment will be appended to all eGFR results on adults (≥18 years) “Reduced muscle mass will lead to overestimation, and increased muscle mass underestimation of eGFR.”

Test	Reference Intervals
	eGFR results will not be reported on patients <18 years of age or dialysis patients. The following comment will be added to all eGFR results on patients of unknown gender. “Unable to calculate as the gender is unknown.”
ELECTROLYTES, P/S	MALE, FEMALE, U/X mmol/L Sodium 0 – 150 y 135 – 145 Potassium 0 – <29 d 3.5 – 6.0 29d – <1 y 3.5 – 5.5 1y – <18 y 3.5 – 5.0 18-150 y 3.5 – 5.0 NOTE: Potassium concentration is 0.2 to 0.5 mmol/L higher in serum (gold top). Chloride 0 – 150 y 98- 112 CO2 0 – 150 y 20 -s32
ELECTROLYTES, 24 Hour Urine	MALE AND FEMALE mmol/d Intake dependent Sodium 0-150 y 45-250 Potassium 0 – 150 y 25- 125 Chloride 0-150 y 110-250
ESR (ERYTHROCYTE SEDIMENTATION RATE), B	0 – 17 y 0 – 10 mm/h FEMALE 18 – 150 y 0 – 20 mm/h MALE 18 – 150 Y 0 – 15 mm/h
ETHANOL, P/S	MALE AND FEMALE mmol/L 0 – 150 y <2
FERRITIN, P/S	MALE, FEMALE U/X µg/L 0 – <6 m 50-500 6m– <16 y 15-100

<table>
<tr><th>Test</th><th>Reference Intervals</th></tr>
<tr><td></td><td>MALE,
16-150 y 30-500

FEMALE
16-150 y 20-300

U/X
16-150 y 20-500</td></tr>
<tr><td>FIBRINOGEN, QUANTITATIVE, P</td><td>1.62 – 4.24 g/L</td></tr>
<tr><td>FSH (FOLLICLE STIMULATING HORMONE), P/S</td><td>IU/L

<table>
<tr><td>Female and Unknown</td><td></td></tr>
<tr><td>Age</td><td>Interval</td></tr>
<tr><td><2y</td><td><8.0</td></tr>
<tr><td>2-5y</td><td><5.0</td></tr>
<tr><td>6-10y</td><td><4.0</td></tr>
<tr><td>11-150y</td><td>See comment
Follicular: 2.0-10.0
Luteal: 1.0-9.0
Midcycle: 3.0-33.0
Post menopausal: 23.0-116.0</td></tr>
<tr><td>Male</td><td></td></tr>
<tr><td>Age</td><td>Interval</td></tr>
<tr><td><11y</td><td><3.0</td></tr>
<tr><td>11-12y</td><td><9.0</td></tr>
<tr><td>13-150y</td><td>1.0-18.0</td></tr>
</table></td></tr>
<tr><td>GAMMA-GLUTAMYL TRANSFERASE (GGT), P/S</td><td>MALE, FEMALE, U/X U/L
0 – <15 d 20 – 200
15 d – 1 y <100
1yr - <18 y <27

MALE U/X
18 – 150 y <80

FEMALE
18 – 150 Y <50</td></tr>
<tr><td>GENTAMICIN – 8 hour INTERVAL, P/S
GENTAMICIN – post, P/S
GENTAMICIN – OTHER, P/S
GENTAMICIN – PRE, P/S</td><td>
<table>
<tr><td colspan="2">Therapeutic Target for Multiple daily dosing</td></tr>
<tr><td>Pre -dose</td><td><2.0 mg/L</td></tr>
<tr><td>Post- dose</td><td>5.0-10.0 mg/L</td></tr>
<tr><td colspan="2">Therapeutic target for extended Interval dosing</td></tr>
<tr><td>Pre-dose</td><td>0.0-1.0 mg/L</td></tr>
<tr><td>Post-dose</td><td>Contraindicated for adults with normal renal function.</td></tr>
</table></td></tr>
<tr><td>GLUCOSE, CSF</td><td>MALE AND FEMALE mmol/L
0 - 150 y 2.2 – 4.4</td></tr>
<tr><td>GLUCOSE – FASTING, P/S</td><td>MALE AND FEMALE mmol/L
< 30 d 2.5 – 5.5
30 d – 150 y 3.3 – 6.0</td></tr>
</table>

Test	Reference Intervals
GLUCOSE – RANDOM, P/S	MALE AND FEMALE mmol/L 0 – 29 d 2.5 – 11.0 30 d – 150 y 3.3 – 11.0
GLUCOSE – GESTATIONAL DIABETIC SCREEN, P/S	Gestational Diabetic Screen Interpretive Guidelines (Canadian Diabetes Guidelines 2013): Normal: < 7.8 mmol/L Follow-up with GTT-2h Pregnant: 7.8-11.0 mmol/L Gestational Diabetes: >= 11.1 mmol/L
GLUCOSE – GESTATIONAL TOLERANCE TEST, P/S	Gestational Glucose Tolerance Test Interpretive Guidelines (Canadian Diabetes Guidelines (2013)): Gestational Diabetes Mellitus - glucose results meet ONE of the criteria below: Fasting: >= 5.3 mmol/L 1h Glucose: >= 10.6 mmol/L 2h Glucose: >= 9.0 mmol/L
GLUCOSE – TOLERANCE TEST – 2 h, P/S	Glucose Tolerance Test Interpretive Guidelines (Non-pregnant; Canadian Diabetes Guidelines (2013)): Normal Glucose Tolerance: Fasting Glucose: 3.3 - 6.0 mmol/L AND 2h Glucose < 7.8 mmol/L Impaired Fasting Glucose and Impaired Glucose Tolerance: Fasting Glucose: 6.1 - 6.9 mmol/L AND 2h Glucose 7.8 - 11.0 mmol/L Diabetes Mellitus: Fasting Glucose: > 6.9 mmol/L OR 2h Glucose > 11.0 mmol/L
HIV Rapid Antibody Screen, S	MALE AND FEMALE Non-Reactive
IMMUNOGLOBULINS (QUANTITATIVE), P/S	**IgG** MALE AND FEMALE g/L 1d – 2 m 2.60 – 14.00 3m – 11 m 2.80 – 16.00 1 – 2 y 4.00 – 16.00 3 – 5 y 5.40 - 16.00 6 – 7 y 5.80 - 16.00 8 – 10 y 6.20 - 17.00 11 – 15 y 6.40 - 17.00 16 – 150 y 6.80 - 18.00 **IgA** MALE AND FEMALE g/L 1d – 2 m <1.21 3m – 5 m 0.05 – 1.20 6m – 12 m 0.10 – 1.20

Test	Reference Intervals
	1 y 0.20 – 1.60 2 y 0.30 – 2.00 3 – 5 y 0.35 – 2.40 6 – 7 y 0.40 – 2.80 8 – 10 y 0.45– 3.20 11 – 15 y 0.50 – 3.80 16 – 150 y 0.60 – 4.20 **IgM** MALE AND FEMALE g/L <5 m 0.14 – 1.40 5 m- 3 y 0.20 – 1.60 4 –6 y 0.20 – 2.10 7 – 11 y 0.30 – 2.10 12 – 19 y 0.30 – 2.40 20 – 150 y 0.40 – 3.00
IRON, TOTAL IRON BINDING CAPACITY (TIBC), AND IRON SATURATION INDEX, S	IRON µmol/L MALE FEMALE U/X 18 – 150 y 8 – 35 TIBC µmol/L MALE AND FEMALE 0 – <18 y 50 – 80 18 – 150 y 40 – 75 IRON SATURATION INDEX: MALE FEMALE U/X <18 y 0.10-0.50 18 – 150 y M 0.12 – 0.60 18-150 y F 0.10 -0.55 18-150 U/X 0.10-0.60
LACTATE, Arterial	0.5 – 2.2 mmol/L
LACTATE, P	MALE AND FEMALE mmol/L 0 – 150 y 0.5 – 2.2
LACTATE, CSF	MALE AND FEMALE mmol/L <3 d 1.1-6.7 3 to < 10d 1.1-4.4 10d to 150 y 1.1-2.4
LACTOSE, P/S - TOLERANCE TEST - 2 h	Lactose Tolerance Interpretive Criteria: Normal: Rise in glucose of >1.1 or greater mmol/L at any time post-lactose. Abnormal (query lactase deficiency): Rise in glucose of < =1.1 mmol/L at any time post-lactose.
LACTATE DEHYDROGENASE (LD), P/S	MALE AND FEMALE U/L <1y 200-420 1 to 9 y 140-320 10 to 14 y 120-300 15 to 150 y 120-250
LACTATE DEHYDROGENASE (LD), CSF	No reference range

<table>
<tr><th>Test</th><th>Reference Intervals</th></tr>
<tr><td>LUTEINIZING HORMONE (LH), P/S</td><td>IU/L
<table>
<tr><th colspan="2">Female and X/U</th></tr>
<tr><th>Age</th><th>Interval</th></tr>
<tr><td><11y</td><td><7.0</td></tr>
<tr><td>11-150 y</td><td>See comment
Follicular: 1.0 – 13.0 IU/L
Luteal: 1.0 – 17.0 IU/L
Midcycle: 8.0 – 76.0 IU/L
Post-menopausal: 16.0-54.0 IU/L</td></tr>
<tr><th colspan="2">Male</th></tr>
<tr><th>Age</th><th>Interval</th></tr>
<tr><td><11y</td><td><7.0</td></tr>
<tr><td>11y to <70y</td><td>1.0-9.0</td></tr>
<tr><td>70y to 150 y</td><td>3.0-35.0</td></tr>
</table></td></tr>
<tr><td>LIPASE, P/S</td><td>MALE AND FEMALE U/L
0-<18 y <50
18-150 y <80</td></tr>
<tr><td>LIPID PROFILE, P/S</td><td><u>Pediatric Lipid Profile (0 – 17 yr)</u>
Total Cholesterol No reference range
HDL-C No reference range
LDL-C No reference range
Triglycerides No reference range
Non-HDL-C No reference range

The following comment will be attached to the Non-HDL-C result:

Lipid Profile acceptable limits relative to dyslipidemia and atherosclerosis risk:
Total Cholesterol Acceptable <4.40 mmol/L
HDL-C Acceptable >1.16 mmol/L
LDL-C Acceptable <2.84 mmol/L
Triglycerides Acceptable <0.85 mmol/L (0-9 years) OR <1.02 mmol/L (10-17 years)
Non-HDL-C Acceptable <3.10

<u>Adult Lipid Profile (18 – 150 yr)</u>
Total Cholesterol No reference range
HDL-C No reference range
LDL-C 0.0 – 3.4 mmol/L
Triglycerides 0.0 – 1.7 mmol/L
Non-HDL-C 0.0 – 4.2 mmol/L

The following comment will be attached to the Non-HDL-C result:

For patients 30 years of age or older, the Framingham Risk Score (FRS), modified for family history, is recommended for risk assessment (2016 CCS Guideline, Can J Cardiol 2016):</td></tr>
</table>

Test	Reference Intervals
	FRS Calculation Resources can be found at https://myhealth.alberta.ca/Alberta/Pages/Heart-Disease-Risk-Calculator.aspx. Low Risk (FRS < 10%) Treatment advised if LDL-C >= 5.0 mmol/L Treatment target: > 50% reduction LDL-C Intermediate Risk (FRS 10 - 19%) Treatment advised if LDL-C >= 3.5 mmol/L OR Non-HDL-C >= 4.3 mmol/L OR ApoB >= 1.2 g/L; Consider treatment for men>=50 and women>=60 yrs with one additional CV risk factor Treatment targets: LDL-C < 2.0 mmol/L OR decrease by > 50% OR Non-HDL-C < 2.6 mmol/L OR ApoB < 0.8 g/L High Risk (FRS >= 20% or presence of high risk features) Treatment advised in all patients Treatment targets: LDL-C < 2.0 mmol/L OR decrease by > 50% OR Non-HDL-C < 2.6 mmol/L OR ApoB < 0.8 g/L
LITHIUM, S	MALE AND FEMALE mmol/L 0 – 150 y Suggested Range: Acute Mania Therapy 1.00 – 1.50 Bipolar Maintenance Therapy 0.60 – 1.20
MAGNESIUM, 24 Hour Urine	MALE AND FEMALE mmol/d 0 – 150 y 2.00 -8.00
MAGNESIUM, P/S	MALE, FEMALE, U/Xmmol/L 0-150y 0.70-1.00
MALARIAL PARASITE SCREEN, B	Negative
MONONUCLEOSIS TEST, S	Negative
OCCULT BLOOD, F	Negative
OSMOLALITY, P/S	MALE AND FEMALE mmol/kg 0 – 150 y 280 – 300
OSMOLALITY, U	MALE AND FEMALE mmol/kg 0 – 150 Y 50 – 1400
pH, Arterial – Cord Blood	pH 7.20 - 7.40
pH, Venous – Cord Blood	pH 7.30 - 7.40
PHENOBARBITAL, P/S	MALE AND FEMALE µmol/L Therapeutic Range 0 – 150 y 45 – 170
PHENYTOIN, P/S	MALE AND FEMALE µmol/L Therapeutic Range <3 m 25 - 55 3 m – 150 y 40 – 80
PHOSPHATE, 24 Hour Urine	MALE AND FEMALE mmol/d 0 – 150 yr 15.0-50.0

Test	Reference Intervals
PHOSPHATE, P/S	MALE, FEMALE and U/X mmol/L 0 – 15 d 1.40 – 2.70 15 d – <1 m 1.60 – 2.70 1 m – <5 y 1.20 – 2.20 5 – <13 y 1.10 – 1.90 13 – <18 y 0.90 – 1.70 18 – 150 y 0.70 – 1.50
PROLACTIN, P/S	MALE ug/L 0 – 150 yr 4.0-15.0 FEMALE ug/L 0 – 150 y 4.0-25.0 X/U 4.0-25.0
PROTEIN – TOTAL, 24 Hour Urine	MALE AND FEMALE g/d 0 – 150 y < 0.20
PROTEIN – TOTAL, CSF	MALE AND FEMALE g/L 0 – <31d 0.14 – 1.12 31 d– 150 y 0.15 – 0.45
PROTEIN – TOTAL, P/S	MALE, FEMALE and UNKNOWN g/L 0 – 364 d 40 – 70 365 d – 150 y 62 – 82
PROTEIN CREATININE RATIO, U	MALE AND FEMALE mg/mmol 2- 12 y 2.0-20.0 13-150 y <13.0
PT (PROTHROMBIN TIME), INR, P	0.8 - 1.2 Therapeutic Range: 2.0 - 3.0 **NOTE:** For some indications a higher target therapeutic range is required. Reference: February 2012, 141(2_suppl) Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Practice Guidelines.
PTT (PARTIAL THROMBOPLASTIN TIME), P	Reference Range and Therapeutic Range varies with instrument. Please refer to patient report for current value.
RETICULOCYTE COUNT, B	RELATIVE (%): 0 – 1 mo 2.0 – 6.0 1 mo – 11 y 0.9 – 2.7 12y – 150 yr (F) 1.2 – 2.7 12y – 150 yr(M) 0.9 – 2.1 ABSOLUTE: Birth 78 – 110 x 10^9/L 1d – 1wk 78 – 396 x 10^9/L 1wk – 1m 60 – 372 x 10^9/L 1m – 6m 24 – 132 x 10^9/L 6m – 5y 33 – 143 x 10^9/L 6y – 11y 36 – 140 x 10^9/L 12y – 17y (F) 47 – 138 x 10^9/L 12y – 17y (M) 39 – 111 x 10^9/L 18 – 150 yr (F) 49 – 140 x 10^9/L 18 – 150 yr (M) 42 – 122 x 10^9/L

Test	Reference Intervals
RHEUMATOID FACTOR QUANTITATIVE, P/S	MALE AND FEMALE kU/L 0 – 150 yr < 21
ROTAVIRUS	Negative
RSV (RESPIRATORY SYNCYTIAL VIRUS)	Negative
RSV and INFLUENZA A/B	Negative
SALICYLATE, P/S	No reference range
SEMINAL FLUID ANALYSIS, FERTILITY, Semf	Liquefaction Normal (complete within 60 minutes of collection) Volume > 1.4 mL Viscosity Normal (< 2 cm thread) pH > 7.1 Sperm concentration > 14.9 M/mL Total sperm count > 38.9 M RBC 0/hpf WBC 0/hpf Sperm Motility > 31% Progressive or > 39% Progressive and Non-progressive within 60 minutes of ejaculation Vitality > 57% live
SEMINAL FLUID ANALYSIS, POST VASECTOMY, Semf	None seen
T3 – FREE, P/S	MALE AND FEMALE pmol/L 0 – 29 d 4.2-13.0 30 d – <1 y 5.1-8.6 1 – 13 y 4.4-8.1 14 – 17 y 3.5-7.4 18 – 150 y 3.0– 6.5
THROMBIN TIME, P	Reference interval varies with instrument/testing location. Please refer to the patient report or look in NetCare or the EMR.
THYROXINE FREE (T4), P/S	MALE AND FEMALE pmol/L 0 – 14 d 13.5 – 50.0 15 d – 29d 8.7-32.5 ≥30d 10.0-25.0
TOBRAMYCIN P/S	mg/L Pre-dose: <2.0 Post-dose: 5.0-10.0 8 hr interval: comment
TRIGLYCERIDE, P/S	MALE AND FEMALE: mmol/L 0 – 17 y < 1.50 The following comment will be attached to the result: Acceptable limit relative to dyslipidemia and atherosclerosis risk <0.85 mmol/L (0-9 years) OR <1.02 mmol/L (10-17 years). 18 – 150 y 0.00 – 1.70
TROPONIN I (TnI), P/S	Reference range varies with instrument. Please refer to patient report for current value(s).

Test	Reference Intervals
HS TROPONIN T P/S	MALE FEMALE <14 ng/L
TSH (THYROID STIMULATING HORMONE), P/S	MALE AND FEMALE mU/L 0 – 7d 1.23 – 25.00 30 d – <1y 1.00 – 6.80 >=1 y 0.20-6.50
TSH PROGRESSIVE (THYROID STIMULATING HORMONE), P/S	MALE AND FEMALE mU/L 0 – 29 d 1.23 – 25.00 8 d – <1y 1.00 – 6.80 >=1 y 0.20-6.50
URATE, 24 Hour Urine	MALE AND FEMALE mmol/d 0 – 150 y 1.5 – 4.5
URATE, P/S	MALE FEMALE U/X µmol/L <5y 100 – 300 5 y to <10 y 140 – 330 10– <18 y M 160-500 18-150y M 200-500 10 – <70y F 150-400 70-150y F 150-500 10-150y U/X 150-500
UREA, 24 Hour Urine	MALE AND FEMALE mmol/d 0 – 150 y 430-710
UREA, P/S	MALE, FEMALE, U/Xmmol/L <2 y 1.0 – 7.5 2 – <18y 2.0 – 7.0 MALE 18-<55 y 3.0 – 8.0 >55 y 3.0 – 9.0 FEMALE 18-<55 y 2.0– 7.0 >55 y 3.0 – 8.0 U/X 18-<55 2.0-8.0 >55 3.0-9.0
URINALYSIS, U	MALE & FEMALE 0 – 150 y Blood: Negative Clarity: Clear Color: Colorless,Yellow, Amber Glucose: Negative Ketone: Negative Leukocytes: Negative Nitrite: Negative pH: 5 – 8 Protein: Negative

Test	Reference Intervals
	SG: 1.005 – 1.030
URINALYSIS MICROSCOPIC, U	MALE AND FEMALE 0 – 150 yr WBC: 0 – 5/hpf RBC: 0 – 2/hpf Squamous/Transitional epithelial cells: 0 – 5/hpf Renal epithelial cells: Negative Bacteria: 0-20/ hpf Casts, hyaline: 0 – 2/lpf All other cast types: Negative Oval Fat Bodies, Trichomonas and Yeast: Negative
VALPROATE (VALPROIC ACID), P/S	MALE AND FEMALE µmol/L 0 – 150 y Therapeutic Range 350 – 700 **NOTE:** Concentrations up to 1040 µmol/L may be required for some patients with complex partial seizures and secondarily generalized tonic-clonic seizures.
VANCOMYCIN, P - RANDOM	No range
VANCOMYCIN, P – TROUGH PRE	MALE AND FEMALE mg/L Therapeutic Range 0 – 150 y 10.0 – 20.0
VITAMIN B12, P/S	MALE, FEMALE & U/X pmol/L 0 – <10 y ≥250 10-150 y ≥160

Blood Gases and Co-oximetry Reference Intervals

Test Name	Adult / Pediatric			
	Arterial	Venous	Mixed Venous	Capillary
pH	7.35 – 7.45	7.32 - 7.42	7.33 – 7.43	7.34 - 7.44

pCO_2 (mmHg)	35 – 45	40 - 50	37 – 47	37 – 47
pO_2 (mmHg)	70 – 90	30 - 50	35 – 45	40 – 60
HCO_3 (mmol/L)	20 – 26	22 - 28	21 – 27	21 – 27
tCO_2 (mmol/L)	21 – 28	23 - 30	22 – 29	22 – 29
Base Excess (mmol/L)	- 2 to +2	- 2 to +2	-2 to +2	- 2 to +2
O_2 Saturation (%)	92 – 98	60 - 80	70 – 80	90 – 95
tHb (g/L)	120 – 180	120 – 180		120 – 180
O_2Hb (%)	92 – 98	64 – 74		90 – 95
COHb (%)	0 – 3	0 – 3		0 – 3
MetHb (%)	0 – 1.5	0 – 1.5		0 – 1.5
HHb (%)	0 – 5	23 – 33		0 – 7
O2CT (mL/dL)	16 – 24	7 – 18		13 – 22
Aa DO2 (mmHg)	<15 Room Air <100 100% O2			

Test Name	Cord Blood	
	Arterial Cord Blood	**Venous Cord Blood**
pH	7.20 – 7.40	7.25 - 7.45
pCO_2 (mmHg)	32 – 66	27 – 49
pO_2 (mmHg)	6 – 30	17 – 41
HCO_3 (mmol/L)	17 – 27	16 – 25
tCO_2 (mmol/L)	19 – 29	18 – 27
Base Excess (mmol/L)	- 8 to +2	- 8 to +2
O_2 Saturation (%)	5 – 60	15 – 75