ASSAY ABBREVIATION (Assay Name)	BEAKER Reference Interval	BEAKER REPORT COMMENT
ACETA (Acetaminophen)	**NONE (BEAKER Report comment only)**	**Interpretation of this acetaminophen level may require other variables such as time of ingestion or liver function tests. If needed call the Poison Center (1-800-222-1222) for assistance in appropriately interpreting this level.**
ALB (Albumin)	**3.5-5.1 g/dL**	
ALK (Alkaline Phosphate)	**Adults** **Male: 40-129 U/L** **Female: 35-104 U/L** Male Children 0 - 14 days: 83-248 U/L 15 days- < 1 year: 122-469 U/L 1 - < 10 years: 142-335 U/L 10 - < 13 years: 129-417 U/L 13 - < 15 years: 116-468 U/L 15 - < 17 years 82-331 U/L 17 - < 19 years: 55-149 U/L Female Children 0-14 days: 83-248 U/L 15 days- < 1 year: 122-469 U/L 1 - < 10 years: 142-335 U/L 10 - < 13 years: 129-417 U/L 13 -< 15 years: 57-254 U/L 15 - < 17 years 50-117 U/L 17 - < 19 years: 45-87 U/L	
ALT (Alanine Aminotransferase)	**Males** **> or =1 year: 7-55 U/L** No established Reference Intervals for patients who are <12 months of age. **Females** **> or =1 year: 7-45 U/L** No established Reference Intervals for patients who are <12 months of age.	
AST (Aspartate Aminotransferase)	**Males** < 1 year: No established Reference Interval 1 - 14 years: 8-60 U/L **> or =14 years: 8-48 U/L** **Females** < 1 year: No established Reference Interval 1 - < 14 years: 8-50 U/L **> or =14 years: 8-43 U/L**	
CO2 Carbon Dioxide (Bicarbonate)	**21-30 mEq/L**	
CA (Calcium)	Children (0-9 days): 7.6-10.4 mg/dL Children (10 days- < 2 years): 9.0-11.0 mg/dL Children (2- < 12 years): 8.8-10.8 mg/dL Children (12- < 18 years): 8.4-10.2 mg/dL **Adults (>/= 18 years): 8.5-10.2 mg/dL**	
CL (Chloride)	**96-108 mEq/L**	
CREAT (Creatinine)	**Males:** < 1 year: 0.17-0.42 mg/dL 1 - < 6 years: 0.19-0.49 mg/dL 6- < 11 years: 0.26-0.61 mg/dL 11- < 16 years: 0.35-0.86 mg/dL **> or =16 years: 0.50-1.30 mg/dL** **Females:** < 1 year: 0.17-0.42 mg/dL 1 year - < 6 years: 0.19-0.49 mg/dL 6- < 11 years: 0.26-0.61 mg/dL 11- < 16 years: 0.35-0.86 mg/dL **> or =16 years: 0.59-1.04 mg/dL**	
GLU (Glucose)	< 29 days: 50-80 mg/dL **> 29 Days: 70-99 mg/dL**	**"Per ADA guidelines these ranges are for fasting glucose only"**
K (Potassium)	**3.5-5.1 mEq/L**	

NA (Sodium)	**135-145 mEq/L**	
BILIT (Total Bilirubin)	0-6 days: Refer to www.bilitool.org for information on age-specific (postnatal hour of life)serum bilirubin values. 7- 14 days: < 15.0 mg/dL 15 days to 17 years: < or =1.0 mg/dL **> or =18 years: < or =1.2 mg/ dL**	
TPROT (Total Protein)	**6.4-8.3 g/dL**	
BUN (Blood Urea Nitrogen)	**18 - < 60 years : 6-20 mg/dL** **> or = 60 years: 8-23 mg/dL** < 1 year: 4-19 mg/dL 1 year- < 18 years: 5-18 mg/dL	
AG (Anion Gap)	**7-16 mEq/L**	
PHOS (Phosphorous)	**Adults (all genders)** **> 16 years: 2.5-4.5 mg/dL** < 1 month: Male 3.9–6.9 mg/dL Female 4.3–7.7 mg/dL 1 -12 months -Male 3.5–6.6 mg/dL Female 3.7–6.5 mg/dL 1– < 4 Years: Male 3.1–6.0 mg/dL Female 3.4–6.0 mg/dL 4– < 7 Years: Male 3.3–5.6 mg/dL Female 3.2–5.5 mg/dL 7– < 10 Years: Male 3.0–5.4 mg/dL Female 3.1–5.5 mg/dL 10– < 13 Years: Male 3.2–5.7 mg/dL Female 3.3–5.3 mg/dL 13– < 16 Years: Male 2.9–5.1 mg/dL Female 2.8–4.8 mg/dL	
Globulin	**2.0 - 3.5 g/dL**	
AMY (Amylase)	**28-100 U/L**	
BILID (Direct Bilirubin)	**0.0-0.3 mg/dL**	
CRP (C-Reactive Protein)	0-17 years- No established Reference Interval **> or = 18 yrs - 0.0-5.0 mg/L**	**Flagging of abnormals is based on pediatric/AAP Clinical Practice Guidelines.**
HS-CRP/CRPC (C-Reactive Protein Cardiac)	**0 - 3mg/L**	**<1.0 mg/L: low risk** **1.0 - 3.0 mg/L: average risk** **>3.0 mg/L: High Risk** **>10.0 mg/L: Acute inflammation**
CK (Creatine Kinase)	**Men: 39-308 U/L** **Women: 26-192 U/L**	
ETOH (Ethanol)	**0 - 10 mg/dL**	
GGT (Gamma Glutamyl Transferase)	**Female: 7 - 40 U/L** **Male: 7 - 51 U/L**	
LACT (Lactate)	**0.5-2.0 mmol/L**	
LD/LDH (Lactate Dehydrogenase)	< 15 days: 309-1222 U/L 15 days to < 1 year: 163-452 U/L 1 to < 10 years: 192-321 U/L 10 to < 15 years (Male) : 170-283 U/L 10 to < 15 years (Female): 157-272 U/L **> or = 15 years: 130-250 U/L**	
LIP (Lipase)	**13-60 U/L**	
MG (Magnesium)	0-< 5 months -1.5-2.2 mg/dL 5 months-< 6 years: 1.7-2.3 mg/dL 6- < 12 years: 1.7-2.1 mg/dL 12-< 20 years: 1.7-2.2 mg/dL **Adults:** **20 - < 60 years: 1.6-2.6 mg/dL** **60 - < 90 years: 1.6-2.4 mg/dL** **> or = 90 years: 1.7-2.3 mg/dL**	

NH3 (Ammonia)	**Women: 11-51 umol/L Men: 16-60 umol/L**	
PBNP/BNP (NT-Pro-B-Type Natriuretic Peptide)	**<49 years: 0-450 pg/mL 50 - <75 years:0-900 pg/mL > or = 75 years: 0-1800 pg/mL**	**NT-proBNP levels of <300 pg/mL are associated with a negative predictive value of 98% for excluding heart failure. NT-proBNP levels may be lower in obese individuals and higher with renal failure. NT-proBNP levels above the age associated cut-offs indicate ADHF (Acute Decompensated Heart Failure) is likely.**
G5TNT/HSTNT (High Sensitivity Troponin - T gen 5)	**Female: </= 10 ng/L Male: </= 13 ng/L**	
TSH (Thyroid Stimulating Hormone)	**> or = 20 years: 0.270-4.20 µIU/mL** Female 0- < 5 years: 0.840-6.220 mIU/L 5- < 10 years: 0.480-4.810 mIU/L 10- < 15 years: 0.760-4.200 mIU/L 15- < 20 years: 0.450 - 4.500 mIU/L Male 0- < 5 years: 0.840-6.220 mIU/L 5- < 10 years: 1.180-5.330 mIU/L 10- < 15 years: 0.760-4.200 mIU/L 15- < 20 years: 0.640-5.370 mIU/L	
URIC/URICR (Uric Acid) (Uric Acid Rasburicase)	0- < 15 days: 2.8-12.7 mg/dL 15 days to < 1 year: 1.6-6.3 mg/dL 1 to < 12 years: 1.8-4.9 mg/dL Male 12 to < 19 years: 2.6-7.6 mg/dL Female 12 to < 19 years: 2.6-5.9 mg/dL **Males > or = 19 years: 3.4-7.0 mg/dL Females > or = 19 years: 2.4-5.7 mg/dL**	
CHOL (Total Cholesterol)	**See comment**	< 18 years: Fasting and Non-Fasting: Acceptable: <170 mg/dL Borderline high: 170-199 mg/dL High: > or = 200 mg/dL **> or = 18 years: Fasting and Non-Fasting Desirable: <200 mg/dL Borderline high: 200-239 mg/dL High: > or = 240 mg/dL**
HDL (High-Density Lipoprotein Cholesterol)	**See comment**	< 18 years: Fasting and Non-Fasting Low: <40 mg/dL Borderline low: 40-45 mg/dL Acceptable: >45 mg/dL **> or = 18 years: Fasting and Non-Fasting Males: > or = 40 mg/dL Females: > or = 50 mg/dL**
LDL (Low Density Lipoprotein Cholesterol, Direct)	**< 18 years: < or = 110 mg/dL > or = 18 years: < or = 100 mg/dL**	< 18 years: Fasting and Non-Fasting Acceptable: <110 mg/dL Borderline high: 110-129 mg/dL High: > or = 130 mg/dL **> or = 18 years: Fasting and Non-Fasting Desirable: <100 mg/dL Above desirable: 100-129 mg/dL Borderline high: 130-159 mg/dL High: 160-189 mg/dL Very high: > or = 190 mg/dL**
LDL Cholesterol, Calculation	**0-99 mg/dL**	

TRIG **(Triglycerides)**	**Flagging of Abnormals is based on fasting value** **2 - < 10 years: > 75 mg/dL** **10 - < 18 years: > 90 mg/dL** **> or = 18 years: > 150 mg/dL**	The Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents has set the above guidelines for lipids (total cholesterol, triglycerides, HDL cholesterol, LDL cholesterol, and non HDL cholesterol) in child ages 2-17. 2 - < 10 years: Fasting and Non-Fasting: Acceptable: <75 mg/dL Borderline high: 75-99 mg/dL High: > or = 100 mg/dL 10 - < 18 years: Fasting and Non-Fasting Acceptable: <90 mg/dL Borderline high: 90-129 mg/dL High: > or = 130 mg/dL The National Lipid Association and the National Cholesterol Education Program (NCEP) have set the above guidelines for lipids (total cholesterol, triglycerides, HDL cholesterol, LDL cholesterol, and non HDL cholesterol) in adults ages 18 and up. **> or = 18 years:** **Flagging of Abnormals is based on fasting value** **Fasting** **Normal: <150 mg/dL** **Borderline high: 150-199 mg/dL** **High: 200-499 mg/dL** **Very high: > or = 500 mg/dL** **Non-Fasting** **Males: <200 mg/dL** **Females: <175 mg/dL**
AMIK **(Random Amikacin)**	**NONE** **(BEAKER Report comment only)**	**Therapeutic ranges:** **Trough: <or= 8 mcg/mL** **Pediatric peak: 15-25 mcg/mL** **Adult peak: 20-80 mcg/mL** **Trough concentrations greater than 8 mcg/mL and peakconcentrations greater than 80 mcg/mL are considered to be potentially toxic.**
AMIKP **(Peak Amikacin)**	**</=13 yo: 15.0 - 25.0 ug/mL** **>13 yo: 20.0 - 80.0 ug/mL**	**NO BEAKER REPORT COMMENT**
AMIKT **(Trough Amikacin)**	**</= 8.0 ug/mL**	**NO BEAKER REPORT COMMENT**
CYA **(Cyclosporine)**	**NONE** **(BEAKER Report comment only)**	**Recommended Therapeutic Ranges for Neoral Monitoring on** **12 hour Trough samples:** **Cyclosporine (12 hour TROUGH) for renal transplant:** **< 3 months post-transplant: 235 - 310 ng/mL** **3 - 12 months post-transplant: 160 - 235 ng/mL** **> 12 months post-transplant: 60 - 135 ng/mL** **Potentially toxic value: > 400 ng/mL** **Cyclosporine (12 hour TROUGH) for non-renal transplant:** **100 - 400 ng/mL** **Potentially toxic value: > 400 ng/mL** **Analytical Method: Chemiluminescence Microparticle**
DIG **(DIGOXIN)**	**No Ref Ranges** **(Beaker comment only)**	**Heart Failure: 0.5-0.9 ng/ml** **Atrial fibrillation: 0.8-1.2 ng/ml** **Loading doses given: obtain level with morning labs (prior to dose) in 3-5 days .** **No loading doses or with change in maintenance dose: obtain level with morning labs (prior to dose) in 5-7 days.**
PHENY/DILAN **(Phenytoin/Dilantin)**	**10.0 - 20.0 ug/mL**	**When using FOSPHENYTOIN, it is recommended that PHENYTOIN concentrations not be monitored until conversion of FOSPHENYTOIN to PHENYTOIN is essentially complete. This occurs within approximately 2 hours after the end of IV infusion and 4 hours after IM injection. Serum PHENYTOIN concentrations measured before this conversion is complete will not be accurate.** **"Total phenytoin levels should be drawn as a trough (2 hours prior to the next scheduled dose) after 3-4 days of therapy to ensure steady state is achieved, unless there is concern for toxicity in which case levels can be checked anytime."**
FPHENY **(Free Phenytoin)**	**1.2 - 2.5 ug/mL**	**Free PHENYTOIN levels should be drawn as a trough (2 hours prior to the next scheduled dose) after 3-4 days of therapy to ensure steady state is achieved, unless there is concern for toxicity in which case levels can be checked anytime. Free PHENYTOIN concentration is recommended in patients with uremia, hypoalbuminemia, hyperbilirubinemia, hepatic impairment or concomitant medicactions that may displace PHENYTOIN from its albumin binding sites.**
GENT **(Random)**	**NONE** **(BEAKER Report comment only)**	**See pharmacokinetic consult report. Trough concentrations greater than 2.0 ug/mL and peak concentrations greater than 20.0 ug/mL are considered to be potentially toxic.**
GENTP **(Peak)**	**3.0 - 12.0 ug/mL**	**See pharmacokinetic consult report.** **Peak concentrations greater than 20.0 ug/mL are considered to be potentially toxic.**
GENTT **(Trough)**	**0.0 - 2.0 ug/mL**	**See pharmacokinetic consult report.** **Trough concentrations greater than 2.0 ug/mL are considered to be potentially toxic.**
LI/LITH **(Lithium)**	**No Ref Ranges** **(Beaker comment only)**	**Acute Mania-0.8-1.2 meq/L.** **Bipolar Maintenance: 0.6-1 meq/L.** **Major depressive disorder: 0.6 to 0.9 meq/L.** **Older adults: Consider 0.4-0.8 meq/L.**
PHENO **(Phenobarbitol)**	**15-40 ug/mL**	**A correlation between serum phenobarbital concentrations and therapeutic response has not been clearly demonstrated. To treat or prevent seizures in epilepsy, a trough serum concentration between 15-40 mcg/mL is recommended. For other indications, including alcohol withdrawal or status epilepticus, higher trough serum concentrations may be necessary. Phenobarbital as a half-life of 80 hours so steady-state is achieved after at least two weeks of therapy.**
SALIC **(Salicylate)**	**NONE** **(BEAKER Report comment only)**	**Therapeutic ranges:** **Pediatric: 100-200 mg/L** **Adult: 20-250 mg/L**

TACRO (Tacrolimus)	**3.0 - 15.0 ng/mL**	Therapeutic Ranges for 12 hour Trough samples: <= 3 months post renal transplant: 12.0-15.0 ng/mL 3-12 months post renal transplant: 8.0-12.0 ng/mL >12 months post renal transplant: 3.0-6.0 ng/mL Potentially toxic: 15.1-20.0 ng/mL Toxic: > 20.0 ng/mL Analytical Method: Chemiluminescence Microparticle Immunoassay (CMIA) Method Platform: Abbott Architect
TEG/CARB (Tegretol/Carbamazepine)	**4.0 - 12.0 ug/mL**	Carbamazepine levels should be drawn as a trough (2 hours prior to the next scheduled dose). Oral absorption is slow, peak levels occur 8 to 65 hours after ingestion of the first dose; the half-life ranges from 8 to 60 hours, therefore, steady-state is achieved in 2 to 5 days. Serum levels are particularly important during the first few weeks of therapy when autoinduction is occurring. (TK)
THEO (Theopylline)	**No Ref Ranges (Beaker comment only)**	Therapeutic ranges: Pediatric apnea: 5.0 - 20.0 ug/mL Pediatric asthmatic: 10.0 - 20.0 ug/mL Adult: 10.0 - 20.0 ug/mL
TOBCF (Tobramycin Cystic Fibrosis)	**15.0 - 30.0 ug/mL**	NO BEAKER REPORT COMMENT
TOBRA (Random Tobramycin)	**NONE (BEAKER Report comment only)**	Therapeutic ranges: Trough: Less than or equal to 2.0 mcg/mL Peak: 5-10 mcg/mL Cystic Fibrosis Treatment: 15-30 mcg/mL Trough concentrations greater than 2.0 mcg/mL and peak concentrations greater than 25.0 (30.0 for cystic fibrosis treatment) mcg/mL are considered to be potentially toxic.
TOBRAP (Peak Tobramycin)	**5.0 - 10.0 ug/mL**	NO BEAKER REPORT COMMENT
TOBRAT (Trough Tobramycin)	**0.0 - 2.0 ug/mL**	NO BEAKER REPORT COMMENT
VALPF (Free Valproate)	**5.0 - 15.0 ug/mL**	Free valproic acid levels should be drawn as a trough (2 hours prior to the next scheduled dose) after 3-4 days of therapy to ensure steady-state is achieved, unless there is concern for toxicity in which case levels can be checked any time. Free valproate serum concentration is recommended in the setting of hypoalbuminemia, uremia, free fatty acid adminstration (e.g., propofol or clevidipine or lipid emulsion), or medications that may displace valproate from albumin (e.g., aspirin or NSAIDs). Free valproate serum concentration is curvilinear and increases exponentially with higher total serum concentrations due to saturation of albumin binding sites. (TK)
VALPR (Valproate/Depakote)	**50-125 ug/mL**	Therapeutic range: 50 - 100 ug/mL. Therapeutic range for psychiatric uses: 50 - 125 ug/mL. Valproic acid levels should be drawn as a trough (2 hours prior to the next scheduled dose) after 3-4 days of therapy to ensure steady-state is achieved, unless there is concern for toxicity in which case levels can be checked any time. Total valproic acid levels should be interpreted with caution in the setting of hypoalbuminemia, uremia, free fatty acid adminstration (e.g., propofol or clevidipine or lipid emulsion), or medications that may displace valproate from albumin (e.g., aspirin or NSAIDs).
VANC (Random Vancomycin)	**NONE (BEAKER Report comment only)**	Therapeutic ranges: Trough: 5-15 ug/ml. - For patients on meningitis, osteomyelitis, endocarditis, and pneumonia therapy: Vancomycin Trough: 15-20 ug/mL - Trough concentrations greater than 30.0 are considered potentially toxic
VANCP (Peak Vancomycin)	**25 - 40 ug/mL**	NO BEAKER REPORT COMMENT
VANCT (Trough Vancomycin)	**NONE (BEAKER Report comment only)**	Therapeutic ranges: Trough: 5-15 ug/ml. - For patients on meningitis, osteomyelitis, endocarditis, and pneumonia therapy: Vancomycin Trough: 15-20 ug/mL - Trough concentrations greater than 30.0 are considered potentially toxic

Reference Intervals and Report comments were validated by a review of vendor method sheets and literature based ranges, by an assessment using NorDx historical patient data and Roche and NorDx analyzer validation studies. Approved June 1, 2024

ABL Reference Intervals

Arterial Blood Gases

pH	7.35 – 7.45	
pCO_2	F: 32 – 45 M: 35 - 48	mmHg
HCO_3 (arterial, venous)	21 - 30	mEq/L
pO_2	<60 years: 83 - 108 60 to <70: 80 - 108 70 to <80: 70 - 108 80 to <90: 60 - 108 90 and older: 50 - 108	mmHg
Total Hb All sources (Arterial, Venous, Capillary)	Males: 1 -3 days: 12.8 - 19.7 4 - 7 days: 13.3 - 19.3 8 - 14 days: 11.0 - 17.5 15 - 30 days: 9.8 - 15.4 31 - 60 days: 9.0 - 12.9 61 - 180 days: 10.1 - 13.2 6 months - <2 years: 10.1 - 13.6 2 - <6 years: 10.2 - 13.7 6 - <12 years: 10.3 - 14.3 12 - <18 years: 11.2 - 16.4 ≥ 18 years: 13.0 - 16.5 Females: 1-3 days: 12.8 - 19.2 4 -7 days: 13.0 - 19.4 8 - 14 days: 12.0- 18.3 15 - 30 days: 10.2- 15.8 31 - 60 days: 8.9 - 12.7 61 - 180 days: 10.0- 14.1 6 months - <2 years: 10.1- 13.7 2 - <6 years: 10.3 - 13.7 6 - <12 years: 10.6 - 14.7 12 - <18 years: 10.4 - 14.6 ≥ 18 years: 11.5 – 15.0	g/dL
Saturation	95 - 100	%
Base Excess (arterial, venous)	F: -2 to 3 M: -3 to 2	mEq/L
Content	15 - 23	Vol%
CarboxyHb (All sources)	0.5 – 1.5	%
MetHb (All sources)	0.1 – 1.5	%

Venous Blood Gases

pH	7.32 – 7.43	
pCO_2	40 - 52	mmHg
pO_2	30 - 50	mmHg

Capillary Blood Gases

No established reference range for all analytes but Carboxyhemoglobin. Use Arterial reference range for HBCO.

Venous Cord Gas

pH	7.25 – 7.45	
pCO_2	34 - 48	mmHg
pO_2	17 - 41	mmHg
HCO_3	16 - 27	mEq/L
Base Excess	-6 to 2	mEq/L

Arterial Cord Gas

pH	7.18 – 7.38	
pCO_2	43 - 63	mmHg
pO_2	6 - 31	mmHg
HCO_3	16 - 27	mEq/L
Base Excess	-7 to 2	mEq/L

Ionized Calcium (Bramhall only)

IONCA, CAION	<20 years: 1.10 – 1.40 ≥20 years: 1.10 – 1.35	mmol/L
ICAR	No reference range established	mmol/L

pH Fluid and Whole Blood Lactate

LACWB	0.5 – 2.0	mmol/L
PHFL	> 7.60	

CBCD: Adults (≥ 18 years)

	ADULT MALES		ADULT FEMALES	
ANALYTE	**LOWER**	**UPPER**	**LOWER**	**UPPER**
WBC THOU/uL	3.60	11.82	3.71	12.66
RBC MIL/uL	3.97	5.93	3.69	5.28
HEMOGLOBIN g/dL	13.0	16.5	11.5	15.0
HEMATOCRIT %	40.0	49.0	35.0	45.0
MCV fL	79.0	97.0	79.0	97.0
MCH pg	24.1	32.4	21.9	32.6
MCHC g/dL	30.7	35.7	29.7	34.9
PLATELETS THOU/uL	142	390	158	429
MPV fL	9.0	12.9	9.1	12.9
RDW-SD fL	37.0	48.0	37.0	48.0
RDW-CV %	11.5	16.0	11.5	17.6
DIFFERENTIAL RELATIVE %				
NEUTROPHILS %	36.9	73.3	37.0	74.7
LYMPHOCYTES %	14.5	50.2	15.2	50.1
MONOCYTES %	4.9	14.3	4.5	12.5
EOSINOPHILS %	0.2	7.7	0.2	7.7
BASOPHILS %	0.2	1.1	0.2	1.2
IMMATURE GRANULOCYTES %	0.0	1.2	0.0	0.9
NRBC %	<1.0	None	<1.0	None
DIFFERENTIAL ABSOLUTE # Thou/uL				
NEUTROPHILS	1.50	8.40	1.50	8.40
LYMPHOCYTES	1.02	3.55	1.12	3.82
MONOCYTES	0.26	1.07	0.27	0.97
EOSINOPHILS	0.00	0.57	0.00	0.54
BASOPHILS	0.00	0.08	0.00	0.08
IMMATURE GRANULOCYTES	0.00	0.10	0.00	0.08
NRBC	0.00	0.00	0.00	0.00

CBCD: Pediatric (< 18 years)
CBCD: Pediatric (< 18 years) Continued

Analyte/Age	Pediatric Males		Pediatric Females		Analyte/Age	Pediatric Males		Pediatric Females	
WBC Thou/uL	**Lower**	**Upper**	**Lower**	**Upper**	**RBC Mil/uL**	**Lower**	**Upper**	**Lower**	**Upper**
1-3 days	7.56	21.26	7.97	23.17	1-3 days	3.57	5.50	3.58	5.42
4-7 days	7.54	14.91	7.93	17.11	4-7 days	3.89	5.64	3.80	5.76
8-14 days	7.80	17.07	8.00	16.82	8-14 days	3.30	5.30	3.47	5.37
15-30 days	6.54	15.44	6.59	15.58	15-30 days	3.00	4.70	3.22	4.76
31-60 days	5.85	14.49	6.52	14.75	31-60 days	2.87	4.09	2.95	4.17
61-180 days	4.40	14.77	5.51	14.63	61-180 days	3.21	5.48	2.98	4.68
6 months - <2 years	3.74	14.67	4.76	14.43	6 months - <2 years	3.65	5.51	3.54	5.31
2-<6 years	3.97	13.45	4.19	13.63	2-<6 years	3.34	5.41	3.65	5.34
6-<12 years	3.44	12.71	3.75	13.09	6-<12 years	3.11	5.34	3.41	5.40
12-<18 years	3.13	12.43	3.78	12.06	12-<18 years	3.97	5.93	3.38	5.28
HGB g/dL	**Lower**	**Upper**	**Lower**	**Upper**	**HCT %**	**Lower**	**Upper**	**Lower**	**Upper**
1-3 days	12.8	19.7	12.8	19.2	1-3 days	37.6	56.6	37.4	55.7
4-7 days	13.3	19.3	13.0	19.4	4-7 days	37.9	55.7	36.1	54.7
8-14 days	11.0	17.5	12.0	18.3	8-14 days	32.8	50.5	35.4	53.0
15-30 days	9.8	15.4	10.2	15.8	15-30 days	29.2	45.2	30.0	45.9
31-60 days	9.0	12.9	8.9	12.7	31-60 days	26.3	36.9	27.3	38.6
61-180 days	10.1	13.2	10.0	14.1	61-180 days	25.8	43.8	27.8	40.8
6 months - <2 years	10.1	13.6	10.1	13.7	6 months - <2 years	28.4	41.2	25.4	40.2
2-<6 years	10.2	13.7	10.3	13.7	2-<6 years	27.4	40.3	28.3	40.9
6-<12 years	10.3	14.3	10.6	14.7	6-<12 years	25.6	42.6	28.4	44.4
12-<18 years	11.2	16.4	10.4	14.6	12-<18 years	33.7	48.7	27.8	43.8
MCV fL	**Lower**	**Upper**	**Lower**	**Upper**	**MCH pg**	**Lower**	**Upper**	**Lower**	**Upper**
1-3 days	95.7	110.8	96.4	112.4	1-3 days	33.2	37.9	33.3	38.7
4-7 days	93.0	105.4	91.6	104.1	4-7 days	32.6	36.4	31.9	36.4
8-14 days	91.8	103.5	94.0	105.6	8-14 days	31.7	36.2	32.1	36.9
15-30 days	89.5	101.3	90.0	101.7	15-30 days	30.7	35.0	30.6	34.9
31-60 days	86.2	96.8	86.5	97.2	31-60 days	29.3	33.3	29.4	33.4
61-180 days	68.2	92.2	74.2	96.9	61-180 days	21.2	31.4	23.8	32.0
6 months - <2 years	68.2	88.4	70.5	87.6	6 months - <2 years	19.4	29.1	20.1	29.6
2-<6 years	68.1	87.8	67.8	88.6	2-<6 years	20.3	29.8	19.5	29.9
6-<12 years	70.2	89.9	70.9	92.7	6-<12 years	22.8	30.7	21.6	31.1
12-<18 years	74.2	93.7	70.7	96.0	12-<18 years	23.1	31.7	21.0	32.1
MCHC g/dL	**Lower**	**Upper**	**Lower**	**Upper**	**PLAT Thou/uL**	**Lower**	**Upper**	**Lower**	**Upper**
1-3 days	33.0	36.0	33.1	35.8	1-3 days	114	295	120	327
4-7 days	33.8	36.0	33.8	36.0	4-7 days	142	400	127	391
8-14 days	33.4	35.8	33.4	35.8	8-14 days	184	530	206	555
15-30 days	33.2	35.8	33.2	35.8	15-30 days	200	480	202	544
31-60 days	33.0	35.5	33.0	35.5	31-60 days	252	535	267	564
61-180 days	29.8	35.8	29.8	35.8	61-180 days	204	576	196	591
6 months - <2 years	30.2	35.0	30.2	35.0	6 months - <2 years	169	543	175	562
2-<6 years	30.3	35.6	30.3	35.6	2-<6 years	168	492	171	504
6-<12 years	31.0	35.2	31.0	35.2	6-<12 years	167	462	176	500
12-<18 years	30.6	35.3	30.6	35.3	12-<18 years	152	426	159	424

CBCD: Pediatric (< 18 years) Continued

Analyte/Age	Pediatric Males		Pediatric Females		Analyte/Age	Pediatric Males		Pediatric Females	
MPV fL	**Lower**	**Upper**	**Lower**	**Upper**	**RDWCV %**	**Lower**	**Upper**	**Lower**	**Upper**
1-3 days	9.1	11.1	9.1	11.2	1-3 days	15.4	19.9	15.2	19.8
4-7 days	9.5	11.9	9.5	11.9	4-7 days	14.7	18.9	14.6	18.4
8-14 days	9.8	12.1	10.1	12.2	8-14 days	14.1	17.6	14.1	16.8
15-30 days	9.9	12.4	9.6	12.0	15-30 days	13.8	17.2	13.7	16.8
31-60 days	9.2	11.3	9.3	11.4	31-60 days	13.3	16.2	13.1	16.5
61-180 days	8.4	12.1	8.4	12.3	61-180 days	11.8	19.7	11.6	17.3
6 months - <2 years	8.4	11.7	8.5	11.9	6 months - <2 years	11.9	20.6	11.4	20.7
2-<6 years	8.4	12.0	8.5	12.1	2-<6 years	11.8	18.5	11.7	17.6
6-<12 years	8.8	12.3	8.8	12.6	6-<12 years	11.6	21.1	11.6	17.0
12-<18 years	8.9	12.8	9.0	12.6	12-<18 years	11.5	16.5	11.5	19.3
					RDWSD All Ages fL	37.0	48.0	37.0	48.0
Neutrophil %	**Lower**	**Upper**	**Lower**	**Upper**	**Lymphocyte %**	**Lower**	**Upper**	**Lower**	**Upper**
1-3 days	34.2	76.3	33.2	75.8	1-3 days	15.6	40.2	15.0	48.2
4-7 days	20.4	59.7	23.2	66.2	4-7 days	30.1	57.9	19.2	57.8
8-14 days	21.7	62.2	20.1	57.2	8-14 days	25.2	60.6	30.2	61.3
15-30 days	16.6	55.7	18.6	61.8	15-30 days	34.1	64.4	34.0	65.0
31-60 days	16.0	63.0	17.8	62.0	31-60 days	27.9	66.4	30.9	64.5
61-180 days	13.2	51.5	17.5	61.0	61-180 days	37.6	76.4	24.4	73.9
6 months - <2 years	15.8	71.4	17.2	60.2	6 months - <2 years	17.6	73.0	29.1	73.9
2-<6 years	23.2	69.1	23.3	70.4	2-<6 years	16.6	65.4	17.6	66.4
6-<12 years	28.4	71.3	27.6	70.9	6-<12 years	14.3	58.8	13.8	59.9
12-<18 years	32.2	73.1	35.7	72.7	12-<18 years	14.0	53.3	15.0	52.4
Monocyte %	**Lower**	**Upper**	**Lower**	**Upper**	**Eosinophils %**	**Lower**	**Upper**	**Lower**	**Upper**
1-3 days	5.5	15.2	5.7	15.3	1-3 days	0.3	5.5	0.2	5.0
4-7 days	8.1	17.3	8.2	16.9	4-7 days	1.4	7.4	1.1	7.1
8-14 days	7.7	19.9	7.9	17.5	8-14 days	1.1	6.3	0.8	6.1
15-30 days	8.3	20.0	7.0	19.2	15-30 days	0.8	6.9	0.9	7.5
31-60 days	7.5	18.6	6.7	17.8	31-60 days	0.4	5.2	0.2	5.3
61-180 days	7.3	17.8	2.9	14.7	61-180 days	0.5	12.8	0.0	6.2
6 months - <2 years	5.2	20.5	4.4	15.4	6 months - <2 years	0.0	10.4	0.0	6.1
2-<6 years	5.0	15.3	4.5	13.5	2-<6 years	0.2	11.3	0.0	11.4
6-<12 years	5.1	15.0	4.3	13.2	6-<12 years	0.1	12.7	0.0	10.3
12-<18 years	5.3	15.1	4.6	13.5	12-<18 years	0.2	11.2	0.2	7.7
Basophils %	**Lower**	**Upper**	**Lower**	**Upper**	**Immature Grans %**	**Lower**	**Upper**	**Lower**	**Upper**
1-3 days	0.2	1.0	0.3	1.0	1-3 days	0.4	3.0	0.4	3.7
4-7 days	0.2	1.0	0.2	1.1	4-7 days	0.3	3.6	0.4	3.3
8-14 days	0.2	0.9	0.2	0.9	8-14 days	0.2	1.9	0.2	2.2
15-30 days	0.1	0.7	0.1	0.7	15-30 days	0.2	1.1	0.1	1.3
31-60 days	0.1	0.5	0.1	0.7	31-60 days	0.1	1.2	0.1	1.2
61-180 days	0.1	1.2	0.2	0.5	61-180 days	0.1	0.4	0.0	1.3
6 months - <2 years	0.1	1.0	0.1	0.8	6 months - <2 years	0.0	1.7	0.0	0.7
2-<6 years	0.1	1.2	0.1	1.0	2-<6 years	0.0	0.7	0.0	0.8
6-<12 years	0.2	1.2	0.1	1.2	6-<12 years	0.0	1.1	0.0	0.9
12-<18 years	0.2	1.4	0.2	1.2	12-<18 years	0.0	0.8	0.0	0.8

Analyte/Age	Pediatric Males		Pediatric Females	
Abs Neut Thou/uL	**Lower**	**Upper**	**Lower**	**Upper**
1-3 days	3.03	11.01	3.02	11.02
4-7 days	1.96	4.71	1.98	6.68
8-14 days	1.87	5.63	6.68	5.92
15-30 days	1.29	4.30	1.37	4.93
31-60 days	1.24	4.64	1.31	5.61
61-180 days	1.06	7.62	1.17	5.24
6 months - <2 years	1.12	8.76	1.20	7.29
2-<6 years	1.29	8.46	1.35	8.92
6-<12 years	1.27	8.69	1.24	9.22
12-<18 years	1.35	8.54	1.51	9.19
Abs Mono Thou/uL	**Lower**	**Upper**	**Lower**	**Upper**
1-3 days	0.53	1.63	0.56	1.46
4-7 days	0.57	1.90	0.31	1.53
8-14 days	0.68	1.69	0.58	2.18
15-30 days	0.63	1.49	0.54	1.47
31-60 days	0.53	1.41	0.50	1.43
61-180 days	0.56	1.47	0.18	1.30
6 months - <2 years	0.31	1.52	0.35	1.44
2-<6 years	0.33	1.33	0.30	1.30
6-<12 years	0.29	1.22	0.28	1.17
12-<18 years	0.28	1.15	0.26	1.07
Abs Baso Thou/uL	**Lower**	**Upper**	**Lower**	**Upper**
1-3 days	0.00	0.13	0.00	0.14
4-7 days	0.00	0.12	0.00	0.10
8-14 days	0.00	0.11	0.00	0.11
15-30 days	0.00	0.06	0.00	0.08
31-60 days	0.00	0.05	0.00	0.06
61-180 days	0.00	0.09	0.00	0.04
6 months - <2 years	0.00	0.09	0.00	0.07
2-<6 years	0.00	0.10	0.00	0.08
6-<12 years	0.00	0.09	0.00	0.09
12-<18 years	0.00	0.09	0.00	0.09
Abs NRBC Thou/uL	**Lower**	**Upper**	**Lower**	**Upper**
1-3 days	0.00	3.72	0.00	2.82
4-7 days	0.00	0.63	0.00	0.15
8-14 days	0.00	0.11	0.00	0.09
15-30 days	0.00	0.08	0.00	0.06
31-60 days	0.00	0.05	0.00	0.03
61-180 days	0.00	0.03	0.00	0.05
6 months - <2 years	0.00	0.04	0.00	0.04
2-<6 years	0.00	0.02	0.00	0.02
6-<12 years	0.00	0.02	0.00	0.02
12-<18 years	0.00	0.00	0.00	0.03
NRBC %	**Lower**	**Upper**	**Lower**	**Upper**
12-<18 years	<1.0	None	<1.0	None

Analyte/Age	Pediatric Males		Pediatric Females	
Abs Lymph Thou/uL	**Lower**	**Upper**	**Lower**	**Upper**
1-3 days	1.75	4.35	1.77	4.52
4-7 days	2.42	5.83	1.43	5.47
8-14 days	2.25	5.58	3.01	5.65
15-30 days	2.36	5.87	2.57	5.84
31-60 days	1.91	5.59	1.76	5.67
61-180 days	2.67	5.94	1.51	5.38
6 months - <2 years	0.68	6.37	2.49	8.17
2-<6 years	1.31	5.75	1.35	5.80
6-<12 years	1.08	4.64	0.94	5.01
12-<18 years	1.03	3.71	1.09	3.94
Abs Eos Thou/uL	**Lower**	**Upper**	**Lower**	**Upper**
1-3 days	0.00	0.70	0.00	0.57
4-7 days	0.00	0.72	0.00	0.80
8-14 days	0.00	0.67	0.00	0.74
15-30 days	0.00	0.71	0.00	0.65
31-60 days	0.00	0.53	0.00	0.52
61-180 days	0.00	1.03	0.00	0.52
6 months - <2 years	0.00	0.98	0.00	0.54
2-<6 years	0.00	0.92	0.00	0.75
6-<12 years	0.00	0.94	0.00	0.77
12-<18 years	0.00	0.72	0.00	0.54
Abs IG Thou/uL	**Lower**	**Upper**	**Lower**	**Upper**
1-3 days	0.00	0.41	0.00	0.56
4-7 days	0.00	0.37	0.00	0.32
8-14 days	0.00	0.16	0.00	0.25
15-30 days	0.00	0.12	0.00	0.11
31-60 days	0.00	0.10	0.00	0.11
61-180 days	0.00	0.05	0.00	0.12
6 months - <2 years	0.00	0.13	0.00	0.07
2-<6 years	0.00	0.08	0.00	0.09
6-<12 years	0.00	0.08	0.00	0.07
12-<18 years	0.00	0.08	0.00	0.08

Reticulocytes: ALL AGES

Analyte/Age	MALES		FEMALES	
RETICULOCYTE %	**LOWER**	**UPPER**	**LOWER**	**UPPER**
1-3 days	2.7	10.2	3.4	21.0
4-7 days	1.0	3.6	0.5	4.7
8-14 days	0.5	5.8	0.8	9.9
15-30 days	0.7	4.7	0.4	5.5
31-60 days	1.1	6.4	1.0	4.6
>60 days	0.5	2.5	0.5	2.5
RETICULOCYTE ABS	No Reference Interval			

Erythrocyte Sedimentation Rate: ALL AGES

Analyte/Age	MALES		FEMALES	
ESR mm/h	**LOWER**	**UPPER**	**LOWER**	**UPPER**
< 50 years	0	15	0	20
≥ 50 years	0	20	0	30

COAGULATION REFERENCE INTERVALS AND REPORTABLE RANGES

TEST	IL ACL TOP NORDX REFERENCE INTERVAL	NORDX REPORTABLE RANGE
PT / INR	PT NOT REPORTED	PT NOT REPORTED
	0.9 - 1.2	INR > 20.0
APTT	26 - 37 seconds	16 to >200 seconds
FIBRINOGEN	160 - 450 mg/dL	<35 mg/dL to >1000 mg/dL
D-DIMER	<230 ng/mL DDU	<150 to >20,000 ng/mL DDU