

Mayo Clinic Laboratories Critical Values / Critical Results List

DEFINITION

A Critical Value / Critical Result is defined as: A value/result that represents a pathophysiological state at such variance with normal (expected values) as to be life-threatening unless something is done promptly and for which some corrective action could be taken.

NOTE: The critical values/results do not necessarily correspond directly with normal reference ranges, toxic ranges, or therapeutic ranges.

NOTE: In addition to the critical values identified on this list, critical alerts from testing referred to outside laboratories (non-Mayo) will be communicated to clients in accordance with notification standards once those performing laboratories notify Mayo.

PURPOSE

The purpose of this list is to identify the laboratory tests and their respective critical high and critical low values/results. This list pertains to testing that is performed in Rochester, Arizona, Florida, Mayo Clinic Health System (MCHS) and MCL performing sites.

NOTE: Not all the below mentioned tests are done in each facility. A few of the tests have differing values due to instrumentation/methodology differences and are noted with an *.

PROCEDURE

HEMATOLOGY

Test Report Name	Age	Critical Low	Critical High	Units
Activated Partial Thromboplastin Time, Plasma		–	≥ 150	sec
Fibrinogen		≤ 60	–	mg/dL
Hemoglobin	0 – 7 weeks	≤ 6.0	≥ 24.0	g/dL
Hemoglobin	> 7 weeks	≤ 6.0	≥ 20.0	g/dL
INR (International Normalizing Ratio)		–	≥ 5.0	
Leukocytes		–	≥ 100.0	$\times 10^9/L$
Absolute Neutrophil Count		≤ 0.5	–	$\times 10^9/L$
Neutrophils		≤ 0.5	–	$\times 10^9/L$
Platelets, Blood**		≤ 40	≥ 1000	$\times 10^9/L$
CSF White Blood Cell Count			≥ 100.0	Cells/ μ L

**All Platelet counts ≤ 10 in Arizona will be called at every occurrence.

CHEMISTRY

Test Report Name	Age	Critical Low	Critical High	Units
Ammonia	≥ 1 yr	–	≥ 200	mcmol/L
Ammonia	< 1 yr	–	≥ 100	mcmol/L
Bilirubin Total, Serum	< 1 yr	–	≥ 15.0	mg/dL
Calcium, Total		≤ 6.5	≥ 13.0	mg/dL
Calcium, Ionized, Blood	< 1 yr	≤ 2.0	≥ 6.0	mg/dL
Calcium, Ionized, Blood	≥ 1 yr	≤ 3.0	≥ 6.5	mg/dL
*Calcium, Ionized, Blood - Florida (Deviation due to methodology difference)	< 1yr	≤ 3.0	≥ 5.5	mg/dL
*Calcium, Ionized, Blood - Florida (Deviation due to methodology difference)	≥ 1 yr	≤ 3.0	≥ 6.0	mg/dL
Carbon Monoxide (Carboxyhemoglobin Level)		–	≥ 20	%
Creatinine, Blood/Plasma/Serum	1 day – 4 weeks	–	≥ 1.5	mg/dL
Creatinine, Blood/Plasma/Serum	5 weeks – 23 mos	–	≥ 2.0	mg/dL
Creatinine, Blood/Plasma/Serum	2 yrs – 11 yrs	–	≥ 2.5	mg/dL
Creatinine, Blood/Plasma/Serum	12 yrs – 15 yrs	–	≥ 3.0	mg/dL
Creatinine, Blood/Plasma/Serum	16 yrs – 17 yrs	–	≥ 10.0	mg/dL
Creatine Kinase, Total		–	≥ 10,000	U/L
FT4 (Free Thyroxine)	< 50 yrs	–	≥ 7.8	ng/dL
FT4 (Free Thyroxine)	≥ 50 yrs	–	≥ 6.0	ng/dL
Glucose, Plasma/Serum	< 4 weeks	≤ 40	≥ 400	mg/dL
Glucose, Plasma/Serum	≥ 4 weeks	≤ 50	≥ 400	mg/dL
Magnesium, Serum		≤ 1.0	≥ 9.0	mg/dL
Osmolality		≤ 190	≥ 390	mOsm/Kg
*pH (MCHS and AZ only)		≤ 7.200	≥ 7.600	pH
*pCO ₂ , arterial (MCHS and AZ only)		≤ 20.0	≥ 70.0	mmHg
*pO ₂ (MCHS and AZ only)		≤ 40.0	–	mmHg
Phosphorus		≤ 1.0	–	mg/dL
Potassium		≤ 2.5	≥ 6.0	mmol/L
Sodium		≤ 120	≥ 160	mmol/L

TOXICOLOGY/TDM

Test Report Name	Age	Critical Low	Critical High	Units
Acetaminophen, S		—	> 150 4 hours after dose	mcg/mL
Acetone (Volatile Screen), applies to all specimen types		—	Any value detected	mg/dL
Amitriptyline and Nortriptyline, S		—	> 500	ng/mL
Butalbital, S		—	≥ 10	mcg/mL
Caffeine, S		—	≥ 30	mcg/mL
Carbamazepine, Total, S		—	≥ 15.0	mcg/mL
Carbamazepine, Free, S		—	≥ 4.0	mcg/mL
Clomipramine + Norclomipramine, S		—	> 450	ng/mL
Cyanide, B		—	≥ 2.0	mcg/mL
Desipramine, S		—	>400	ng/mL
Digoxin, S		—	≥ 4.0	ng/mL
Disopyramide, S		—	≥ 7.0	mcg/mL
Doxepin and Nordoxepin, S		—	> 500	ng/mL
Ethanol, Blood		—	≥ 400	mg/dL
Ethanol, Serum		—	≥ 400	mg/dL
Ethosuximide, S		—	> 150	mcg/mL
Ethylene Glycol, S		—	≥ 20	mg/dL
Imipramine and Desipramine, S		—	> 400	ng/mL
Isopropanol (Volatile Screen), applies to all specimen types		—	Any value detected	mg/dL
Lidocaine, S		—	> 6.0	mcg/mL
Lead, Blood	0 – 15 yrs	—	≥ 20	mcg/dL
Lead, Blood	≥ 16 yrs	—	≥ 70	mcg/dL
Lithium, S		—	> 1.6	mmol/L
Methanol (Volatile Screen), applies to all specimen types		—	Any value detected	mg/dL
Nortriptyline, S		—	> 500	ng/mL
Phenobarbital, S		—	≥ 60.0	mcg/mL
Phenytoin, Total, S		—	≥ 30.0	mcg/mL
Phenytoin, Free, S		—	≥ 2.5	mcg/mL
Primidone and Phenobarbital, S				
Primidone		—	≥ 15.0	mcg/mL
Phenobarbital		—	≥ 60.0	mcg/mL
Procainamide, S				
Procainamide		—	> 12	mcg/mL
N-Acetylprocainamide		—	≥ 40	mcg/mL
Quinidine, S		—	≥ 6.0	mcg/mL
Salicylates, S		—	≥ 50.0	mg/dL
Theophylline, S		—	> 20	mcg/mL
Trimipramine, S		—	> 500	ng/mL
Valproic Acid, Free and Total, S				
Free Valproic Acid		—	> 30	mcg/mL
Total Valproic Acid		—	≥ 151	mcg/mL
Valproic Acid, Total, S		—	≥ 151	mcg/mL

MICROBIOLOGY

Result	Specimen Source and patient details
Detection (e.g., stain, culture, nucleic acid, antigen or metabolomic detection) of a clinically significant bacterium, fungus, parasite, or virus (except HIV, hepatitis A through E virus, BK virus, cytomegalovirus, Epstein-Barr virus)	Blood/plasma/serum, cerebrospinal fluid, brain tissue, amniotic fluid, ocular fluid/corneal scrapings
Identification/detection of a select agent (or other highly pathogenic organism), such as <i>Bacillus anthracis</i> , <i>Brucella</i> species, <i>Burkholderia mallei</i> , <i>Burkholderia pseudomallei</i> , <i>Clostridium botulinum</i> , <i>Corynebacterium diphtheriae</i> , <i>Coxiella burnetii</i> , <i>Francisella tularensis</i> , monkeypox virus, variola virus, or <i>Yersinia pestis</i> . In the event of an outbreak of a novel contagious microorganism, detection of such an organism may fall into this category.	Any specimen tested
Detection of clinically significant fungi, such as members of the Mucorales (Zygomycetes) order, dimorphic fungal pathogens (e.g., <i>Histoplasma capsulatum</i> , <i>Blastomyces dermatitidis</i> , <i>Coccidioides</i> species), <i>Cryptococcus neoformans</i> , <i>Cryptococcus gattii</i> , or <i>Pneumocystis jirovecii</i>	Any specimen tested
Detection of <i>Strongyloides stercoralis</i> larvae	Non-intestinal specimen
Detection of herpes simplex virus or <i>Bordetella pertussis</i>	Any specimen tested from a neonate (< 1 month)