Mayo Clinic Laboratories Critical Values / Critical Results List

PURPOSE

The purpose of this list is to identify the laboratory tests and their respective critical high and critical low values/results.

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.

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	x10(9)/L
Absolute Neutrophil Count		≤ 0.5	-	x10(9)/L
Neutrophils		≤ 0.5	-	x10(9)/L
Platelets, Blood		≤ 40	≥ 1000	x10(9)/L
CSF White Blood Cell Count			≥ 100.0	Cells/mcL

CHEMISTRY

Test Report Name	Age	Critical Low	Critical High	Units
Ammonia – (Florida units are µmol/L, MCHS&RST units are mcmol/L)	≥ 1 yr	-	≥ 200	mcmol/L
*Ammonia – Arizona (Deviation in units)	≥ 1 yr		≥ 500	mcg/dL
Ammonia – (Florida units are µmol/L, MCHS&RST units are mcmol/L)	< 1 yr	-	≥ 100	mcmol/L
*Ammonia – Arizona (Deviation in units)	< 1 yr		≥ 150	mcg/dL
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	-	≥ 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
FT4 (Free Thyroxine) – Florida	All ages	-	≥ 7.8	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
*pC02, arterial (MCHS and AZ only)		≤ 20.0	≥ 70.0	mmHg
*pO2 (MCHS)		≤ 40.0	-	mmHg
*pO2 (AZ)		≤ 45.0	-	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 Phenobarbital		-	 ≥ 15.0 ≥ 60.0	 mcg/mL mcg/mL
Procainamide, S Procainamide N-Acetylprocainamide		-	 > 12 ≥ 40	 mcg/mL 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 Total Valproic Acid		-	 > 30 ≥ 151	 mcg/mL mcg/mL
Valproic Acid, Total, S		-	≥ 151	mcg/mL

MICROBIOLOGY

Result	Specimen source and patient details
Detection (e.g., stain, culture, PCR, antigen detection) of a clinically significant bacterium, fungus, parasite, or virus (except HIV and hepatitis A through E virus)	Blood, cerebrospinal fluid, brain tissue, amniotic fluid, ocular fluid/corneal scrapings
Identification/detection of a select agent (or other highly pathogenic organism) including, but not limited to *Bacillus anthracis*, *Brucella* species, *Burkholderia mallei*, *Burkholderia pseudomallei*, *Clostridium botulinum*, *Corynebacterium diphtheriae*, *Coxiella burnetii*, *Francisella tularensis*, monkeypox virus, variola virus, *Vibrio cholerae*, or *Yersinia pestis*. 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 including, but not limited to members of the Zygomycetes class, dimorphic fungal pathogens (*Histoplasma capsulatum*, *Blastomyces dermatitidis*, or *Coccidioides* species), *Cryptococcus neoformans*, *Cryptococcus gattii*, or *Pneumocystis jiroveci*	Any specimen tested
Detection of *Strongyloides stercoralis* larvae	Non-intestinal specimen
Detection of herpes simplex virus or *Bordetella pertussis*	Any specimen tested from a neonate (< 1 month)

Elements considered but determined to be not applicable for this procedure are: Index, Scope, Principle, Keywords, Specimens, Reagents/Supplies, Equipment, Calibration, Quality Control, Proficiency Testing, Calculations, Reporting/Interpreting Results, Troubleshooting, Procedural Notes, Limitations, Attachments/Appendix/Job Aid, Related Documents, Related Training, References

REVISION/DOCUMENT HISTORY

Effective Date	Version	SC	Synopsis of Change
10/25/2012	001		Created Mayo Enterprise Critical Value List and assigned document number 046404. This document replaces Mayo Clinic Rochester DLMP document number 027509 and replaces Arizona document DOCMAN-0000116209.
04/13/2015	002		Updated Ammonia and Valproic Acid. Approved by DLMP CPC 9/2014
08/24/2015	003		Updated Ammonia to reflect FLA unit of measure. Updated Free T4 (note: or ≥ upper limit of AMR if upper limit is <9.0 ng/dL) – approved by DLMP CPC 6/23/2015. Updated Acetaminophen, Ethosuximide, Procainamide, Theophylline, Free Valproic Acid - approved by DLMP CPC 3/23/2015.
12/01/2015	004		Changes to the Clinical Microbiology tests. Approved by CLMP CPC 4/9/2014, DLMP CPC 4/14/2014. Clarified note on Ammonia reporting units.
Effective Date	**Version**	**SC**	**Synopsis of Change**
03/28/2017	005	Yes	Changes to the CFTL's TCA tests (AMTRP, CLOM, DESPR, DXPIN, IMIPR, NOTRP, TRMP).Approved by DLMP CPC 11/14/2016

REVIEW AND APPROVAL SIGNATURES

Current Version	Annual/Biennial Review	Annual/Biennial Review
Reviewer	Approver	Approver
Approver	Approver	Approver
Approver	Approver	Approver
Approver	Approver	Approver
Approver	Approver	Approver
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