

YNHH Laboratory Manual

Critical Results

A critical laboratory result is a test result that is significantly outside of “normal limits” (that is, the reference range) and that has significant medical implications for the patient that might require clinical action within a very short time span. Note that these critical results may differ depending on the clinical setting in which the patient is being cared for, the age or other demographic features.

These critical results are determined by the Medical Directors of the various laboratory sections in conjunction with YNHH Medical Staff. Due to the diverse nature of our laboratory sections each area is also required to have their own detailed policy for these results and how they are handled when generated. Regardless of the laboratory section, all critical results are called to an appropriate health care provider and must be ‘read back’ by that provider to assure accurate transmission of information. If the lab person calling panic values cannot reach anyone or if the lab feels the person reached does not understand the significance of panic data, the clinical pathology resident will be contacted. It will then be the resident's responsibility to pursue the doctor and discuss the results.

Test		Result	Call Frequency
Blood Bank			
1	Urgent need for transfusion	Compatible Blood not Available	Each occurrence
2	Transfusion reaction due to labeling error or involving hematuria; positive culture or gram stain on blood involved in a transfusion reaction	Labeling error, Hematuria, Positive culture/gram stain	Each occurrence
3	Stem cells	Positive Culture	Each occurrence
Blood Gas			
1	pH (arterial, venous, and mixed venous)	<7.3 or > 7.55	Each occurrence
2	pO ₂ (arterial)	< 55 mmHg	Each occurrence
3	pCO ₂ (arterial)	> or equal to 50 mmHg	Each occurrence
4	pCO ₂ (venous and mixed venous)	>56 mmHg	Each occurrence
5	Carboxyhemoglobin	> 25 %	Each occurrence
6	Methemoglobin	> 25 %	Each occurrence
7	Whole blood, ionized calcium	<3.0 or >6.5 mg/dL	Each occurrence
8	Whole blood glucose	<50 or > 500 mg/dL	Each occurrence
9	Whole blood HCT	<20 or > 60%	Each occurrence
10	Whole blood HbG	<6.5 g/dL	Each occurrence
11	Whole blood K ⁺	<2.8 or > 6.0 mmol/L	Each occurrence
Chemistry			
1	Ammonia	>100	Each occurrence
2a	Bilirubin, Total (Pediatric: <1 year)	≥ 10 mg/dL	Each occurrence
2b	Bilirubin, Total (Pediatric: ≥ 1-17)	≥ 15 mg/dL	Each occurrence
3	Calcium	≤ 6.5 mg/dL	Each occurrence
		≥ 13.0 mg/dL	Each occurrence

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4	CO ₂ , Total	≤ 12 mmol/L	Each occurrence
		≥ 45 mmol/L	Each occurrence
5	Creatinine	≥ 5.0 mg/dL	Outpatient first time only
6	Glucose	≤ 50 mg/dL	Each occurrence
		≥ 400 mg/dL	Each occurrence
7	Ionized Calcium	< 3.0 mg/dL	Each occurrence
		> 6.5 mg/dL	Each occurrence
8	Iron (Pediatrics)	≥ 180 mg/dL	Each occurrence
9	Magnesium	≤ 1.0 mg/dL	Each occurrence
		≥ 5.0 mg/dL	Each occurrence
10	Phosphate	≤ 1.2 mg/dL	Each occurrence
11	Potassium	≤ 2.5 mmol/L	Each occurrence
		≥ 6.0 mmol/L	Each occurrence
12	Sodium	≤ 120 mmol/L	Each occurrence
		≥ 160 mmol/L	Each occurrence

Toxicology/Therapeutic Drug Monitoring Critical Values

1	Acetaminophen	> 150 ug/mL	Each occurrence
2	Acetone	≥ 100 mg/dL	Each occurrence
3	Amikacin	> 40 ug/mL (peak)	Each occurrence
4	Amikacin	> 8 ug/mL (trough)	Each occurrence
5	Caffeine	> 30 ug/mL	Each occurrence
6	Carbamazepine	≥ 15 ug/mL	Each occurrence
7	Carboxyhemoglobin	≥ 25%	Each occurrence
8	Cyclosporine	≥ 1500 ng/mL	Each occurrence
9	Digoxin	≥ 3 ng/mL	Each occurrence
10	Ethanol, Adult	≥ 400 mg/dL	Each occurrence
11	Ethanol, Pediatric	All positives (>10 mg/dL)	Each occurrence
12	Ethylene Glycol	All first time positive values	Each occurrence
13	Gentamicin	> 12 ug/mL (peak)	Each occurrence
14	Gentamicin	> 2 ug/mL (trough)	Each occurrence
15	Isopropanol	≥ 50 mg/dL	Each occurrence
16	Lead	≥ 20 mg/dL	Each occurrence
17	Lithium	≥ 2 mEq/L	Each occurrence
18	Methanol	≥ 10 mg/dL	Each occurrence
19	Methemoglobin	≥ 25%	Each occurrence

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20	Methylmalonic Acid	≥ 10 umol/L	Each occurrence
21	Phenobarbital	≥ 45 ug/mL	Each occurrence
22	Phenytoin	≥ 30 ug/mL	Each occurrence
23	Phenytoin, Free	≥ 3.0 ug/mL	Each occurrence
30	Propylene Glycol	≥ 100 mg/dL	Each occurrence
31	Salicylate	> 30 mg/dL	Each occurrence
32	Sirolimus (Rapamycin)	≥ 25 ng/mL	Each occurrence
33	Tacrolimus	≥ 25 ng/mL	Each occurrence
34	Theophylline	≥ 30 ug/mL	Each occurrence
35	Tobramycin	> 12 ug/mL (peak)	Each occurrence
36	Tobramycin	> 2 ug/mL (trough)	Each occurrence
37	Tricyclic Screen	≥ 300 ng/mL	Each occurrence
38	Valproic Acid	≥ 200 ug/mL	Each occurrence
39	Vancomycin	≥ 60 ug/mL (peak)	Each occurrence
40	Vancomycin	≥ 20 ug/mL (trough)	Each occurrence
41	Voriconazole	> 6.0 ug/ml	Each occurrence
42	Oxcarbazepine	> 40 ug/ml	Each occurrence
Hematology			
1	White Blood Count (WBC)	< 1.5 or $> 50.0 \times 10^3/\mu\text{L}$	First occurrence, then after 5 days
1a	WBC (Smilow oncology)	≤ 0.7 or $> 50.0 \times 10^3/\mu\text{L}$	First occurrence, then after 5 days
2	Hemoglobin (Hgb)	< 6.5 gm/dL	First occurrence, then after 5 days
3	Hematocrit (Hct)	$< 20.0\%$ or $> 60.0\%$	First occurrence, then after 5 days
3a	Hematocrit (Hct) in newborn < 7 days old	$> 70.0\%$	First occurrence, then after 5 days
4	Platelets (Plts)	< 50 or $> 1,000 \times 10^3/\mu\text{L}$	First occurrence, then after 5 days
4a	Platelets (Plts) (Smilow oncology)	≤ 10 or $> 1,000.0 \times 10^3/\mu\text{L}$	First occurrence, then after 5 days
5	Absolute Neutrophil Count (ANC) (ED)	$< 500/\mu\text{L}$	Each occurrence
6	Manual differential containing any of the following:		
	a. Blasts	Any	First occurrence, then after 7 days
	b. Bands	$> 40.0\%$	First occurrence, then after 5 days
	c. Parasites (malaria,ehrlichia,anaplasma,babesia, etc)	Any	First occurrence
	d. Bacteria, Yeast, Fungi	Any	First occurrence, then after 5 days
8	Sterile Body Fluid containing:		
	a. Bacteria, Yeast, Fungi	Any	First occurrence
9	CSF, Ascites, Peritoneal and Dialysate fluids only		

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	a. Absolute Neutrophil Count (ANC)	$\geq 250/\mu\text{L}$	First occurrence, then after 3rd occurrence call the lab resident
	b. CSF Total Nucleated Count (TNC)	$> 1,000$ TNC	Each occurrence
10	Partial Thromboplastin Time (PTT)	>120 secs	Each occurrence
11	Partial Thromboplastin Time (PTT)	No Clot	Each occurrence
12	International Normalized Ratio (INR)	>5.00	Each occurrence
13	Fibrinogen	<100 mg/dL	Each occurrence
14	Inhibitor Titer	> 0.5 Bethesda Unit	Each occurrence
15	PT/PTT Factor Assay	$<5.0\%$	Each occurrence
Microbiology			
1	Positive Blood Cultures	Positive Gram Stain	First positive bottle per set per organism
2	Priority Specimens (CSF, synovial, invasive eye, brain and heart)	Positive Gram Stain or Culture	Each occurrence
3	Cryptococcal Ag	Positive Result	Each occurrence
4	Dimorphic Fungi	Positive Result	Each occurrence
5	AFB Smears	Positive Result	Each occurrence
6	Mycobacteria Tuberculosis	Growth in culture/PCR Positivity	Each occurrence
7	Suspected Agents of Bioterrorism	Any Positive or Suspected	Each occurrence
8	Strep pneumo Antigen (CSF)	Positive Result	Each occurrence
Immunology			
1	Serum Viscosity	≥ 4.0 cP	Each occurrence
Virology			
1	HSV PCR or Culture	Positive CSF or Brain Biopsy	Each occurrence
2	HSV test <2 months old	Positive Findings	Each occurrence

Updated: March 28, 2019