

The University of Michigan Health System (UMHS) has established critical values for the following tests; this Critical Value policy is approved by the UMHS Executive Committee on Clinical Affairs. MLabs will notify the client by telephone of results that are **less than** the specified Lower Limit or **greater than** the specified Upper Limit, immediately upon verification of result accuracy.

Test Name	Units	Lower Limit	Upper Limit
Chemistry			
Bilirubin, Total (newborn)	mg/dL	-	15
Calcium	mg/dL	6	14
Calcium, Ionized	mmol/L	0.75	1.55
Carbon Dioxide, Total	mMol/L	10	40
Chloride	mMol/L	80	130
Chloride (newborn)	mMol/L	90	120
Glucose (adult)	mg/dL	50	500
Glucose (newborn)	mg/dL	40	200
Glucose, CSF	mg/dL	30	300
Lead, Blood	µg/dL		75
Magnesium (obstetrics)	mg/dL		8
Potassium	mMol/L	2.5	6
Potassium (newborn)	mMol/L	2.5	6.5
Sodium	mMol/L	120	160
Drug Levels			
Acetaminophen	µg/mL	-	40
Amikacin (peak or random)	µg/mL	-	30
Amikacin (trough)	µg/mL	-	10.1
Amitriptyline	ng/mL	-	500
Carbamazepine	µg/mL	-	15
Carbamazepine, Free	µg/mL	-	3.5
Clomipramine	ng/mL	-	500
Digoxin	ng/mL	-	2.0
Doxepin	ng/mL	-	500
Ethanol	mg/dL	-	450
Ethosuximide	µg/mL	-	150
Gentamicin (peak or random)	µg/mL	-	10.5

Test Name	Units	Lower Limit	Upper Limit
Gentamicin (trough)	µg/mL	-	2.6
Imipramine	ng/mL	-	500
Lidocaine	µg/mL	-	7
Lithium	mEq/L	-	1.5
N-Acetylprocainamide (NAPA)	µg/mL	-	30
Nortriptyline	µg/mL	-	500
Pentobarbital	µg/mL	-	60
Phenobarbital	µg/mL	-	60
Phenytoin	µg/mL	-	30
Primidone	µg/mL	-	15
Procainamide	µg/mL	-	12
Quinidine	µg/mL	-	7
Salicylate	mg/dL	-	30
Sirolimus	ng/mL	-	30
Tacrolimus	ng/mL	-	30
Theophylline	µg/mL	-	25
Tobramycin (peak or random)	µg/mL	-	10.5
Tobramycin (trough)	µg/mL	-	2.6
Valproic Acid	µg/mL	-	150
Valproic Acid, Free	µg/mL	-	15
Vancomycin (peak or random)	µg/mL	-	60
Vancomycin (trough)	µg/mL	-	20.1
Volatiles Group by GLC			
Acetone	mg/dL	-	20
Ethanol	mg/dL	-	450
Isopropanol	mg/dL	-	340
Methanol	mg/dL	-	20
Ethylene Glycol	mg/dL	-	20
Coagulation			
Anti-Xa, LMWH	IU/mL	-	2.0
Anti-Xa, UFH	IU/mL	-	1.0

Test Name	Units	Lower Limit	Upper Limit
Factor 8 Inhibitor Assay	Bethesda units	-	1 (if no prior inhibitor present)
Factor 9 Inhibitor Assay	Bethesda units	-	1 (if no prior inhibitor present)
Fibrinogen	mg/dL	100	-
PT (Prothrombin Time)	INR	-	5.0
PTT (Activated Partial Thromboplastin Time)	seconds	-	90
Hematology			
Differential Count (Outpatient)*		Absolute Neutrophil Count <0.5 K/uL and/or presence of Blasts or suspicious cells	
Differential Count (Inpatient)*		>5% Blasts or suspicious cells	
Hematocrit (Outpatient)*	%	18	60 (age > 3 months)
Hematocrit (Inpatient)*	%	15	
Hemoglobin (Outpatient)	g/dL	6	20 (age > 3 months)
Hemoglobin (Inpatient)	g/dL	5	
Platelet Count (Outpatient)*	K/uL	20	1,000
Platelet Count (Inpatient)*	K/uL	10	
White Blood Cell Count (Outpatient)*	K/uL		100
Urinalysis		Positive Glucose and/or Ketones (age <30 days)	

* called the first time the specified test parameter is critical or if the most recent previous value was not critical.

Microbiology

MLabs will notify the client by telephone of positive results for any of the following tests, immediately upon verification of accuracy. Notification will occur each day unless otherwise specified. Note that as a courtesy the client may be notified of the results of other Microbiology tests not listed below at the technologist's discretion or physician request.

- AFB Smear (positive Respiratory smear)
- Blood Culture (positive stain and/or culture) (every 5 days)
- Body Fluid Culture – Synovial Fluid, Pericardial Fluid (positive stain and/or culture) (every 5 days)
- Cerebrospinal Fluid Culture (positive stain and/or culture) (every 5 days)
- Clostridium perfringens (positive Extremity culture)
- Clostridium septicum (positive culture)
- Cryptococcus Antigen Screen
- Fungus Smear (non septate hyphae in Nasal smear)
- Fusobacterium necrophorum (positive Head or Neck culture)
- Gram Stain – Sterile Fluids or Tissues
- Herpes simplex Encephalitis Detection by PCR
- Malaria Smear
- Microfilaria Smear
- Mycobacterium tuberculosis DNA Amplification, Respiratory
- Staphylococcus aureus (Vancomycin intermediate or resistant)
- Tissue Culture – Internal Tissue/Abscess, Bone Marrow, Bone (positive stain and/or culture) (every 5 days)
- Quantitative Wound Culture where colony count is greater than 10E3

Anatomic Pathology

MLabs will notify the client or caregiver by telephone or e-mail of any anatomic pathology result with potential to negatively impact patient care if not communicated in an urgent or timely fashion.

- any significant or unexpected diagnosis of malignancy (or vice versa) for which no equally timely and effective communication method (e.g. daily patient-based interaction with clinical colleagues) exists
- any significant disagreement with outside interpretation of TS cases for which no equally timely and effective communication method (e.g. daily patient-based interaction with clinical colleagues) exists
- any significant difference in final versus frozen section diagnosis
- any amended report reflecting a significant change in diagnosis
- bacteria or fungi in CSF
- pneumocystis, fungi, or viral cytopathic changes in BAL, wash, or brush
- discovery of clinically significant infections
- unexpected absence of chorionic villi in uterine curettings
- any findings likely to reflect either unrecognized perforation of an organ (e.g. fat in endometrial curettage or endoscopic polypectomy specimen), or unintended surgical consequences or misidentification of a specimen (e.g. ureter in specimen submitted as fallopian tube)
- suspicion of wrong-site surgery
- biopsies from transplant patients showing either rejection or graft-versus-host disease
- crescents in kidney biopsies
- evidence of an acute necrotizing vasculitic syndrome
- malignancy (suspected or not) in critical places (SVC syndrome, risk of spinal cord injury) in any cytology specimen
- significant disagreement between immediate interpretation and final interpretation in fine needle aspirate specimen that would alter immediate patient care