CRITICAL RESULTS

POLICY STATEMENT

Physicians rely on accurate and timely responses from the laboratory for abnormal lab values to make critical patient care decisions. The laboratory has a plan of action to respond to those needs 24 hours a day. To ensure that necessary treatment is rendered to a patient, specific test results are considered to be Alert or Critical Values. Alert or Critical Values will be defined by the Laboratory Medical Director with consultation from the Medical Staff. These values have been established as being among those that should be immediately communicated to the licensed caregiver for further patient management.

PROCEDURE

BLOOD BANK		
Positive transfusion reaction investigation findings, such as positive direct antiglobulin test, discrepancy in ABO/Rh typing, clerical discrepancies, or post transfusion hemolysis, are reported immediately to the Medical Director or on call pathologist. The Medical Director or assigned pathologist will assess the investigation and decide on further course of action.		
BLOOD GAS		
pO_2, Arterial	Less than 46 mm Hg	
pO2 (CV, PA only)	Less than 26 mmHg	
Arterial, Venous, Capillary, PV & CV		
pH	Less than 7.21 or Greater than 7.59	
pCO2	Less than 21 or Greater than 70	
Methemoglobin	Greater than 4.9%	
Carboxyhemoglobin	Greater than 19.9%	
HCO3 (Calc), Arterial, Venous	Less than 11 or Greater than 44 mmol/L	
Total Hemoglobin (THb)	Less than 6.5 g/dL or Greater than 19.9 g/dL	
Ionized Calcium (Ca++)	Less than 3.21 or Greater than 6.99	
Sodium	Less than 121 or Greater than 159 mmol/L	
Potassium	Greater than 6.1 mmol/L	
Chloride	Less than 76 or Greater than 129	
Cord Blood, pH	Less than 7.10	
Cord Gas, Arterial/Venous or Capillary Base Excess	Less than -11 mmol/L	
Sepsis Lactate	Greater than 3.9 mmol/L	
CHEMISTRY		
	Adult >=18 years	**Pediatric <18 years**
Acetaminophen	>49 mcg/mL	>= 5 mcg/mL
Albumin	None	<2 g/dL
ALT	None	>600 Units/L
Ammonia	None	>200 mcmol/L
AST	None	>600 Units/L
Bilirubin, Total	>14.9 mg/dL	>14.9 mg/dL

Calcium	<6.6 or >12.9 mg/dL	<6.6 or >12.9 mg/dL
Carbamazepine	>12.9 mcg/mL	>12.9 mcg/mL
Chloride	None	<76 or >129 mmol/L
CK	>9999 Units/L	>5000 Units/L
CO2	<11 or >44 mmol/L	<11 or >44 mmol/L
Digoxin	>2.3 ng/mL	>2.3 ng/mL
Ferratin	None	>4999 ng/dL
Ethanol	>299 mg/dL	>299 mg/dL
Gentamicin, Random	>44.9 mcg/mL	>44.9 mcg/mL
Gentamicin, Trough	>2.0 mcg/mL	>2.0 mcg/mL
Glucose	<55 or >449 mg/dL	<45 or >449 mg/dL
Glucose, CSF	<41 mg/dL	<20 mg/dL
Iron	None	>400 mcg/dL
Lactate	>3.9 mmol/L	>3.9 mmol/L
LDH	None	>2000 Units/L
Lidocaine	>5.9 mcg/mL	>5.9 mcg/mL
Lipase	None	>100 Units/L
Lithium	>1.50 mmol/L	>1.50 mmol/L
Magnesium	<1.0 or >4.8 mg/dL	<1.0 or >4.8 mg/dL
Magnesium, L&D	<1.0 or >=7.3 mg/dL	None
Osmo Blood	<261 or >329 mOsm/kg	None
Phenobarbital	>50.9 mcg/mL	>50.9 mcg/mL
Phenytoin	>29.9 mcg/mL	>29.9 mcg/mL
Phosphorous	<1.1 or >9.9 mg/dL	0 to 30d <1.1 or >10.9 mg/dL 30d to 18yr <1.1 or >7.9 mg/dL
Protein, Total	None	<3.0 g/dL
Protein, Total CSF	>149 mg/dL	>149 mg/dL
Potassium	<2.6 or >6.1mmol/L	<2.6 or >6.5 mmol/L
Salicylate	>19.9 mg/dL	>=9.0 mg/dL
Sodium	<121 or >159 mmol/L	<121 or >159 mmol/L
Theophylline	>24.9 mcg/mL	>24.9 mcg/mL
Tobramycin, Random	>44.9 mcg/mL	>44.9 mcg/mL
Tobramycin, Trough	>2.0 mcg/mL	>2.0 mcg/mL
Troponin T	>200 ng/L <-9 or >9 ng/L 2hr Delta <-19 or >19% 2hr pct Delta <-10 or >10 ng/L 4hr Delta	None

	<-19 or >19% 4hr pct Delta <-11 or >11 ng/L 6hr Delta <-19 or >19% 6hr pct Delta Interpretive value = Significant	
Valproic Acid	>150.0 mcg/mL	>150.0 mcg/mL
Vancomycin, Random	>59.9 mcg/mL	>59.9 mcg/mL
Vancomycin, Trough	>24.9 mcg/mL	>24.9 mcg/mL
Uric Acid	None	>9.0 mg/dL
COAGULATION		
Anti Xa	Greater than 2.0 U/mL	
Fibrinogen	Less than 100 mg/dL	
Partial Thromboplastin Time (PTT)	Greater than 150 seconds	
Prothrombin Time (PT)/INR	Greater than 5.0	
HEMATOLOGY		
White Blood Cells (WBC) Alerts:		
Patients less than 3 days	Less than 2.0 or greater than 50.0, call every 72 hours	
Patients greater than 3 days through 18 years	Less than 1.0 or greater than 50.0, call every 72 hours	
Patients greater than 18 years old	Less than 1.0 or greater than 50.0, call every 72 hours	
Absolute neutrophil count	Less than 0.5, call every 72 hours	
Hemoglobin Alerts:		
Patients less than 12 years old	Less than 7.0 g/dL, call every 72 hours	
Patients greater than 12 years & less than 18 years	Less than 6.0 g/dL, call every 72 hours	
Patients greater than 18 years old	Less than 6.5 g/dL or greater than 20 g/dL, call every 72 hours	
Platelet Alerts:		
All Ages (Outpatient/ ED)	Less than 50 or greater than 1000	
Patients greater than 18 years old (Inpatient only)	Less than 20, call every 72 hours Greater than 1,000, call every 72 hours	
Labor & Delivery patients	Less than 50, call every 48 hours	
Patients less than 18 years old	Less than 25, call every 72 hours Greater than 1,000, call every 72 hours	
Critical Blast	If blasts are identified on a smear review, a critical is called when blasts are greater than 0% Patients <18 years: call every 72 hours Patients >18 years: call every 30 days	
MICROBIOLOGY		
Positive India Ink or Cryptococcal antigen	All	
Legionella antigen (urinary)	All	
Positive AFB culture or smear	All	

Positive culture or gram stain from normally sterile body sites (Blood, joint fluid, pleural, synovial, bone marrow, tissue, CSF, etc.)	All
Stool Culture (Enteric) Positive for *Salmonella, Shigella, Campylobacter, Escherichia coli* O157:H7, *Yersinia,* or Shiga toxin-producting *Escherichia coli,* or *Vibrio*	All
MDRO-Multiple drug-resistant organisms (VRE, CRE, ESBL etc.)	First isolate per admission on all cultures or PCR -***Inpatients only***
Diseases/infections/conditions as listed by the Missouri Department of Health as a communicable disease or Bioterrorism agent	All
Positive Giardia/Cryptosporidium Antigen	All
Positive Respiratory Pathogen Panel	only need to call *Bordetella pertussis*, *Chlamydophila pneumoniae* and *Mycoplasma pneumoniae* -***Inpatients only***
SENDOUTS	
Reference Laboratory Results Flagged as Alert Value	All

POLICIES, STATUTES OR STANDARDS

I. All inpatient and outpatient critical laboratory values will be sent to the Closed Loop Communication to the designated licensed caregiver who shall electronically acknowledge the notification within 5 minutes of receipt. Critical results not acknowledged in the defined timeframe will repopulate the laboratory's Outstanding List, and attempts will be made to reach the licensed caregiver by phone or by secure chat following the appropriate guidelines. The performing laboratory is responsible for critical call communication to the licensed caregiver and will be documented using the Comm Log in the LIS. If for some reason the appropriate caregiver is not reached within 60 minutes, the Pathologist on call will be notified.

II. All alerts, microbiology culture-based test, and **unacknowledged** critical values.

a) Inpatient critical values will be called directly to the nurse taking care of the patient. If the primary nurse cannot be reached the floor charge nurse/nurse manager will be notified.

b) Outpatient and discharged patient critical values will be called to the physician office. When the physician office is closed the physician will be notified through the appropriate exchange.

c) Critical values for specimens received from sister laboratories will be called directly first to the ordering provider. If the call was unsuccessful the critical result would be relayed to the originating laboratory. Notification to the ordering provider will then belong to the originating lab.

d) All alert (critical) values for inpatient newborns will be called to Vocera "Neonatal Critical Labs". The call will be made directly to the neonatal hospitalist. All alert (critical) values for outpatient newborns will be called to the provider listed on the patient's chart.

e) All alert (critical) values for the Select Medical Team (LTACH) located on the 5th floor main tower of Missouri Baptist Medical Center will be called directly to the Select Medical (LTACH) House Supervisor direct phone at 314-302-9796.

f) All alert (critical) values for TRISL (The Rehabilitation Institute of St. Louis) located off campus will be called to the TRISL Nursing Station at 636-591-1192. Should someone not be available at the TRISL nurse's station, the TRISL nursing supervisor can be reached at 636-487-2179.

All notifications must be documented. All called critical results must be read back to notifier to verify accuracy. Documentation will include first initial and last name, and the credentials of the person taking the call, verification of results, time of notification and initials of person making the phone call. All information will be documented on Comm Log in LIS. If unable to contact the appropriate person, contact the department supervisor or Laboratory Medical Director.

LINKS

Blood Gas Adult and Pediatric Critical Results. Gem 5000 Operating Procedure