



DHS Expected Practices

Specialty: Laboratory Medicine

Subject: Critical Laboratory Values List

Date: February 19, 2021

Purpose:

To define and standardize a list of Critical Laboratory Values to be used throughout DHS in order to increase patient safety and quality of care.

Background:

A critical value is a test result value that is abnormal enough to warrant immediate attention by a clinician. Reporting of critical lab values is increasingly regulated by agencies and quality management organizations as a significant marker of patient-centered care. The Joint Commission and the College of American Pathologists emphasize critical values reporting as a key patient safety standard. The values in the attached list values were established after an extensive vetting process, including review by the DHS Clinical Lab Medical Directors Committee.

Target Audience:

All medical providers, nursing staff, and laboratory staff.

Expected Practice:

Each critical value identified on the below-referenced list will be reported via telephone to the licensed care provider who ordered the test or who is caring for the patient, and the call will be documented in ORCHID. The DHS Clinical Lab Medical Directors Committee will periodically review the List to make improvements and respond to changes in evidence.

Please Note

This *Expected Practice* was developed by a DHS Specialty-Primary Care Work Group to fulfill the DHS mission to ensure access to high-quality, patient-centered, and cost-effective health care. SPC Work Groups, composed of specialist and primary care provider representatives from across LA County DHS, are guided by 1) real-life practice conditions at our facilities, 2) available clinical evidence, and 3) the principle that we must provide equitable care for the entire population that LA County DHS is responsible for, not just those that appear in front of us. It is recognized that in individual situations a provider's clinical judgment may vary from this *Expected Practice*, but in such cases compelling documentation for the exception should be provided in the medical record.

As with all expected practices, clinicians should exercise their own clinical judgment to ensure that patients get appropriate care as needed.

Doing so may include contacting a consultant or re-eConsulting if they feel that recommendations are not aligned with the expected practices described here, doing so is warranted, or if the patient's condition changes.

Critical Laboratory Values – Los Angeles County DHS*

TEST	PATIENT AGE	UNIT	LOW	HIGH
Blood Gases				
Arterial or Venous pH	0 -1 month		<7.21	>7.49
	>1 month to adult		<7.21	>7.59
Umbilical Cord Arterial Blood pH	at birth		<7.01	
Umbilical Cord Venous Blood pH	at birth		<7.21	
Arterial or Venous pCO ₂	0 -1 month	mmHg	<31	>69
	>1 month to adult	mmHg	<21	>69
Arterial pO ₂		mmHg	<55	
Venous pO ₂		mmHg	<21	
Arterial or Venous Carboxyhemoglobin		%		>9.9
Arterial or Venous Methemoglobin		%		>9.9
Umbilical Cord Arterial Base excess	at birth	mmol/L	< -15.9	
Chemistry				
Bicarbonate	0 -1 month	mmol/L	<16	>39
	>1 month to adult	mmol/L	<11	>39
Bilirubin, Total	1st 24 hrs	mg/dL		>7.9
	> 1 day to 1 month	mg/dL		>11.9
Calcium, ionized		mg/dL	<3.5	>6.0
Calcium, total		mg/dL	<6.6	>12.9
Glucose	0 -1 month	mg/dL	<41	>199
	>1 month to 16 years	mg/dL	<41	>249
	>16 years	mg/dL	<41	>449
Lactate		mmol/L		>3.9
Magnesium	All ages	mg/dL	<1.1	>4.8
	Labor & Delivery	mg/dL	<1.1	>7.2
Phosphorus	0 -1 month	mg/dL	<2.1	
	>1 month to adult	mg/dL	<1.1	
Potassium	0 -1 month	mmol/L	<2.6	>5.9
	>1 month to adult	mmol/L	<3.0	>5.9
Sodium		mmol/L	<121	>159
Troponin T		ng/mL		≥0.10
Troponin I		ng/mL		≥0.30
Coagulation				
Activated Partial Thrombin Time (aPTT)		seconds		>115
Fibrinogen		mg/dL	<101	

TEST	PATIENT AGE	UNIT	LOW	HIGH
INR				>3.99
Anti-Xa (Low Molecular Weight heparin)		IU/mL		>1.99
Anti-Xa (unfractionated heparin)		IU/mL		>0.99
Hematology				
WBC		K / cu mm	<1.1	>49.9
Band Count (bandemia)		%		>24
ANC (absolute neutrophil count)		K / cu mm	<0.6	
Hemoglobin	<2 months	g/dL	<6.6	>21.9
	2 months to adult	g/dL	<6.6	>19.9
Hematocrit	<2 months	%	<19.6	>65.9
	2 months to adult	%	<19.6	>59.9
Platelet Count	0 -1 month	K / cu mm	<61	>999
	>1 month to adult	K / cu mm	<21	>999
Microorganisms (i.e., malaria, babesia, trypanosomes, leishmania, microfilaria, fungi, bacteria, etc) detected on peripheral blood smear, in CSF, or in body fluids		Qualitative		Positive
CSF WBC count (Birth to 28 days)		Per cu mm		>20
CSF WBC count (>28 days)		Per cu mm		>9
Microbiology				
Blood Culture		Qualitative		Positive
CSF Gram Stain		Qualitative		Positive
Parasites seen in any microbiology preparation of a thin or thick smear for detection of blood parasites (i.e., malaria, babesia, trypanosomes, leishmania, microfilaria)		Qualitative		Positive
Blood Bank (Transfusion Medicine)				
Bacterial contamination of transfused blood product		Qualitative		Positive
ABO incompatible transfusion reaction		Qualitative		Positive
Anatomic Pathology				
No Products of conception in endometrial evacuation		Qualitative		Positive
Herpes in GYN Pap smear of pregnant patient		Qualitative		Positive
Biopsy suggests perforation or penetration of an organ		Qualitative		Positive
Bacteria, yeast, fungi in explanted heart valve or bone marrow biopsy; or mucormycosis in tissue		Qualitative		Positive

TEST	PATIENT AGE	UNIT	LOW	HIGH
Crescents in renal biopsy		Qualitative		Positive

Therapeutic Drug Potentially Toxic (Critical) Values

A. Drugs with separate potentially toxic values for peak and trough levels

TEST	UNIT	Trough	Peak	Random
Cyclosporine	ng/mL	>360	>1500	>1500
Gentamicin (conventional dosing)*	mcg/mL	>2.5	>12.0	>12.0
Tobramycin (conventional dosing)*	mcg/mL	>2.5	>12.0	>12.0
Vancomycin	mcg/mL	>25.0	>80.0	>80.0

* Interpretation of the aminoglycoside values depends on renal function

B. Drugs with a single potentially toxic value (no separate values for peak and trough)

TEST	UNIT	POTENTIALLY TOXIC VALUE	
Carbamazepine (Tegretol)	mcg/mL	>12.0	
Digoxin	ng/mL	>2.0	
Iron (for assessing overdose)	mcg/dL	>300	
Lithium	mmol/L	>2.00	
Magnesium, Labor & Delivery (3B)	mg/dL	>7.2	
Phenobarbital	mcg/mL	>50.0	
Phenytoin (Dilantin or Fosphenytoin)	mcg/mL	>25.0	
Tacrolimus	ng/mL	>20.0	
Theophylline	0 – 5 months	mcg/mL	>10.0
	5 months to adult	mcg/mL	>20.0
Valproic Acid and Divalproex Sodium	mcg/mL	>150	

C. Drugs for which potentially toxic (critical) value is dependent on collection time

Values above the following will be called to the ward

TEST	UNIT	POTENTIALLY TOXIC VALUE
Acetaminophen	mcg/mL	>49.9
Methotrexate	μmol/L	>10.00
Salicylate (for assessing overdose)	mg/dL	>29.9

D. Environmental exposure

TEST	UNIT	POTENTIALLY TOXIC VALUE
Lead (EDTA plasma)	mcg/dL	>45