

**CHRISTUS SPOHN HEALTH SYSTEM  
POLICY and PROCEDURE MANUAL**

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**TITLE: Laboratory Critical Results, Notification, and Documentation-Procedure**

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Originator: Laboratory

Approved By: \*See last page for Laboratory Medical Director / Administrator approvals  
(Original with signature archived in Document Control)

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**PURPOSE:**

To establish standardized critical values for laboratory test procedures which require notification of Physician/LIP (Licensed Independent Practitioner) and/or other appropriate licensed caregiver\*, e.g. RN, Respiratory Therapist. Critical values have been determined with the use of pertinent Clinical Laboratory Science journals and in consultation with Administrative Laboratory Directors, Lead Technologists, and Laboratory Medical Directors and other Medical Staff as indicated.

*\*Only licensed caregivers are authorized to receive critical test results<sup>1</sup>*

**DEFINITION:**

**Critical Values:** those values that fall outside of the predetermined high and low critical limits and which therefore require immediate notification of the Physician/LIP and/or other authorized licensed caregiver and/or Infection Control for certain Microbiology values.

**SECTION 1.01 Procedure for Notification and Documentation**

**1. Notification:**

- a. A list of critical values requiring notification is attached to this document for reference.
- b. If a patient testing value is obtained that falls into the critical value range, the result will be called to the ordering Physician/LIP and/or other appropriate licensed caregiver immediately.
- c. A "read-back" of the result by the person to whom the result is given is required for successful completion of notification.
- d. For Inpatients: The ordering Physician/LIP or appropriate licensed caregiver is notified of the critical value(s).
- e. External Laboratory: Test results that have been referred to the laboratory from outside, intra-System Laboratory hospital clients, nursing homes, and/or skilled nursing facilities will be called to the appropriate Physician/LIP/other authorized caregiver of the patient.
- f. Other: For discharged, clinic or other outpatients not mentioned above, the ordering Physician/LIP, Physician/LIP's nurse, or other authorized party shall be notified of critical values in accordance with hospital policy H-143-P<sup>1</sup>, "CSHS Critical Values Policy," Procedures #6 and #7, excerpted below for convenience:
  6. For a discharged patient the critical values are called directly to the ordering physician or on call physician within one hour.
  7. All Critical diagnostic test results received by the patient's nurse will be reporting according to the following sequential notification system:
    - a. First call to MD/LIP #1 (ordering or on call)
    - b. If no response after 15 minutes, call MD/LIP #1 again
    - c. After 30 minutes, escalate notification by contacting the ED Physician and subsequently document the variance on the ordering physician.

- g. Patient values determined by the Laboratory testing personnel to exhibit significant trends affecting patient care will be called to the Medical Director, Physician/LIP and/or licensed caregiver as defined in H-143-P<sup>1</sup> and accordingly herein.

**2. Documentation:**

- a. Documentation of notification for critical results will be entered into the Laboratory computer system and the report will include:
  - i. The patient’s full name (first and last name) **with two patient identifiers** of the patient for whom critical result(s) are being called, e.g. the patient’s DOB, and/or the patient’s hospital account number
  - ii. Date of call
  - iii. Time of call
  - iv. Name (first and last name) and title of person to whom the result(s) are given
- b. Documentation of successful “read-backs” will be entered into the Laboratory computer system with the critical value result. ***In order to be successful, the read-back must include at least two patient identifiers*** – the patient’s full name (first and last name), *and* the patient’s DOB, and/or the patient’s hospital account number. ***A patient’s room number is NOT a valid patient identifier.***
- c. Should all attempts for proper notification fail, successful read-backs can include sufficient documentation of faxed results to the outpatients’/discharged patients’ Physician/LIPs via a fax transmission confirmation report.

**Reviews:**

09/11, 03/13, 12/13, 04/15, 06/16, 07/16, 03/17

**Reference:**

<sup>1</sup> CHRISTUS Spohn Health System Policies and Procedures Manual, “Administrative Policies and Procedures, Section H – Patient Care, H-143-P, ‘CSHS Critical Values Policy’” procedure steps 6 and 7. Available at: CSHS CHRISTUS Connect Intranet: <http://christusconnect.echristus.net/regions/spn/OSandGuidelines/Pages/Spohn-PoliciesAndProceduresPage.aspx>.

**Critical Laboratory Results Requiring Notification**

<b>SECTION 1.02 CHEMISTRY CRITICAL VALUES</b>			
<b>Assay (Serum, unless otherwise specified)</b>	<b>Units of Measure</b>	<b>Critical Low</b>	<b>Critical High</b>
Calcium From 0 Days	mg/dL	6.6	13.0
Ionized Calcium From 0 Days	mmol/L	0.82	1.55
Chloride From 0 Days	mmol/L	74	125
CO2 From 0 Days	mmol/L	10	40
Glucose Neonatal From 0 Days – 11 Months	mg/dL	35	200
Glucose From 1 Year	mg/dL	50	485
CSF Glucose From 0 - 4 Days	mg/dL	35	435
Magnesium Neonatal From 0 - 4 Days	mg/dL	1.1	5.0
**Magnesium From 5 Days	mg/dL	1.2	5.0 **OB 7.0
Osmolality, Serum From 0 Days	mOsm/kg	250	325
Phosphorous Neonatal From 0 Days – 1 Year	mg/dL	1.2	9.6
Phosphorous From 2 Years	mg/dL	1.2	8.9
Potassium Neonatal From 0 - 7 Days	mmol/L	2.5	7.9
Potassium From 8 Days – 12 Years	mmol/L	2.8	6.2
Potassium From 13 Years	mmol/L	3.0	6.0
Sodium From 0 Days	mmol/L	120	160
Troponin-I* From 0 Days	ng/mL	none	0.5
Troponin-T* From 0 Days	ng/ml	none	0.10
<i>*Troponin notification will only be performed upon initial critical value and with a subsequent spike during the same admission.</i>			
<i>**For OB Patients on magnesium therapy only: Critical magnesium levels of <math>\geq 7.0</math> mg/dL will be called to RN and documented per protocol. A standardized canned text result comment citing this critical values policy revision will be added in these circumstances for OB patients on magnesium therapy only.</i>			

<b>SECTION 1.03 THERAPEUTIC / NON-THERAPEUTIC DRUGS CRITICAL VALUES</b>			
<b>Assay (Serum, unless otherwise specified)</b>	<b>Units of Measure</b>	<b>Critical Low</b>	<b>Critical High (Toxic Level)</b>
Acetaminophen	mcg/mL	none	Greater than or equal to 50
Amikacin Random	mcg/mL	none	Greater than 8.0
Amikacin Trough	mcg/mL	none	Greater than 8.0
Amikacin Peak	mcg/mL	none	Greater than or equal to 35.0
Carbamazepine	mcg/mL	none	Greater than or equal to 20.0
Digoxin	mg/mL	none	Greater than 2.0
Ethyl Alcohol	mg/dL	none	Greater than or equal to 400
Gentamicin Random	mcg/mL	none	Greater than 2.0
Gentamicin Trough	mcg/mL	none	Greater than 2.0
Gentamicin Peak	mcg/mL	none	Greater than 10.0
Lithium	mmol/L	none	Greater than or equal to 1.2
Phenobarbital Random From 0	mcg/mL	none	Greater than 40.0
Phenobarbital Random From 12	mcg/mL	none	Greater than or equal to 55.0
Phenobarbital Trough From 0 Days	mcg/mL	none	Greater than 40.0
Phenobarbital Trough From 12	mcg/mL	none	Greater than or equal to 55.0
Phenytoin	mcg/mL	none	Greater than or equal to 30.0
Salicylate	mg/dL	none	Greater than or equal to 30.0
Theophylline Trough From 0 Days	mcg/mL	none	Greater than 20.0
Theophylline Trough From 12	mcg/mL	none	Greater than 25.0
Theophylline Random From 0	mcg/mL	none	Greater than 20.0
Theophylline Random From 12	mcg/mL	none	Greater than 25.0
Tobramycin Random	mcg/mL	none	Greater than 2.0
Tobramycin Trough	mcg/mL	none	Greater than 2.0
Tobramycin Peak	mcg/mL	none	Greater than 10.0
Valproic Acid	mcg/mL	none	Greater than or equal to 150.0
Vancomycin Random	mcg/mL	none	Greater than 20.0
Vancomycin Trough	mcg/mL	none	Greater than 20.0
Vancomycin Peak	mcg/mL	none	Greater than or equal to 50.0
<b>SECTION 1.04 TRANSFUSION SERVICES</b>			
<b>Test</b>	<b>Units of Measure</b>	<b>Critical Low</b>	<b>Critical High</b>
Neonatal DAT (From 0 days)	Reactions graded from negative to 4+ positive	N/A	Positive
Crossmatch - Inability to find compatible units			

SECTION 1.05 HEMATOLOGY CRITICAL VALUES			
Test	Units of Measure	Critical Low	Critical High
WBC*	x10 <sup>3</sup> /μL	Less than 2.0	Greater than 35
Neonatal WBC (0-7 days)	x10 <sup>3</sup> /μL	Less than 2.0	Greater than 50
Hemoglobin	g/dl	Less than 7.0	N/A
Neonatal Hemoglobin	g/dl	Less than 9.5	Greater than 25
Hematocrit	%	Less than 20.0	N/A
Neonatal Hematocrit	%	Less than 29.0	Greater than 75
Platelets*	x10 <sup>3</sup> /μL	Less than 50	Greater than 1,000
PT (non-Coumadin)	Seconds	N/A	Greater than 25
PT (Coumadin) **	INR	N/A	Greater than or equal to 4.5
PTT (non-heparin)	Seconds	N/A	Greater than 68
PTT (heparin) **	Seconds	N/A	Greater than 120
Fibrinogen	mg/dL	Less than 100	N/A
CSF WBC	WBC/cumm	N/A	Greater than 10

\* For Oncology patients, WBC and platelet count critical values are called upon admission only; rechecks are performed on all subsequent results.

\*\*PT and PTT critical values for patients not on anticoagulants will not be flagged in the Laboratory LIS but will be called upon admission only. This applies to all CHRISTUS Spohn Hospital – Corpus Christi facilities.

SECTION 1.06 MICROBIOLOGY CRITICAL VALUES
Positive Blood Culture (non-contaminated)
Positive CSF Culture or Gram Stain
Positive CSF Cryptococcal Antigen
Positive Sterile-Site Body Fluid Culture or Gram Stain
Positive Sterile-Site Tissue Culture or Gram Stain
Positive AFB Smear or Culture*
Positive <i>Mycobacteria tuberculosis</i> identification*
Positive Ocular Culture with: <ul style="list-style-type: none"> <li>• <i>Bacillus</i> species</li> <li>• <i>Neisseria gonorrhoeae</i></li> <li>• <i>Pseudomonas aeruginosa</i></li> <li>• Staphylococcus aureus</li> <li>• Acanthamoeba species</li> </ul>
Positive Stool Culture Pathogens ( <i>Salmonella</i> , <i>Shigella</i> , <i>Campylobacter</i> , <i>Shiga Toxin producer</i> , <i>E.coli</i> 0157.H7)*
Positive Herpes Simplex Virus from Newborns (up to one year of age)

\*Also requires notification to Infection Control Department

The following Microbiology results (“notifiable conditions”) are required by state and/or federal law to be reported to the appropriate authorized party. The Microbiology Department calls the following conditions upon the first occurrence of each patient admission, directly to the nursing unit for in-house patients only. The Infection Control Department is also notified of the same conditions via the HIS Infection Control Report. Infection Control personnel notify state authorities with communicable disease reports as required by state law.

<b>SECTION 1.06.a. MICROBIOLOGY NOTIFIABLE CONDITIONS (ALERTS, NOT CRITICAL VALUES)</b>
◆ Methicillin Resistant Staphylococcus aureus (MRSA)
◆ Vancomycin Resistant Enterococcus (VRE)
◆ Extended Spectrum Beta Lactamase producing Enterobacteriaceae (ESBL)
◆ Carbapenem Resistant Enterobacteriaceae (CRE)
◆ Multidrug Resistant Acinetobacter
◆ Multidrug Resistant Pseudomonas aeruginosa
◆ Pan-Resistant Organisms
◆ Toxigenic Clostridium difficile
◆ Select Agents and other highly pathogenic organisms ( <i>Bacillus anthracis</i> , <i>Brucella spp.</i> , <i>Burkholderia mallei</i> , <i>Burkholderia pseudomallei</i> , <i>Coccidioides immitis</i> , <i>Francisella tularensis</i> , <i>Yersinia pestis</i> , and <i>C. diphtheriae</i> , <i>Salmonella typhi</i> , <i>Vibrio cholera</i> )*

<b>Section 1.07 Anatomic Pathology Critical Procedure</b>
Frozen Section: A frozen section is considered a critical test/procedure and the Pathologist reports results immediately to the requesting Physician/LIP.

**Approved:**

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