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Lab-Automated Critical Values and Critical Tests

PRINCIPLE

Critical Results - To improve patient outcome by ensuring that physicians are promptly notified of immediate life-threatening conditions and preventing overuse that may actually impair patient outcome. Clinical Laboratory Improvement Amendments of 1988 state: The laboratory must develop and follow written procedures for reporting imminent life-threatening laboratory results or critical values. In addition, the laboratory must immediately alert the individual or entity requesting the test or the individual responsible for utilizing the test results when any test result indicates an imminent life-threatening condition.

Critical Test is a screening or diagnostic test or procedure where rapid communication of the results is essential, even if the test results are normal. The critical test in the Automated area is Intraoperative PTH.

PROCEDURE

Critical Value List

CHEMISTRY		
	Lower Value (<)	**Upper Value (>)**
Acetaminophen (µg/ml)		30
Alcohol (mg/dl)		400
Bicarbonate (mmol/L)	10	

	40	
Bilirubin, Total (0-7days)		
	>15.0	
Calcium (mg/dl)	6	
	13	
Carbamazepine (µg/ml)		15
Digoxin (ng/dl)		2.8
Dilantin (µg/ml)		30
Free Dilantin (µg/ml)		3
Gentamicin, Peak (µg/ml)		14
Gentamicin, Random (µg/ml)		16
Gentamicin, Trough µg/ml)		2.5
Glucose (mg/dl)	50	
	500	
Glucose – Newborn (0-7 days) (mg/dl)	30	
	300	
K (mmol/L)	2.8	
	6	
Lactic Acid (mmol/L)		≥4
Lithium (mmol/L)		2
Na (mmol/L)	120	
	160	
Osmolality-Serum	240	
	320	
Mg (mg/dL)	0.6	
	8.1	
Phenobarbital (µg/ml)		50
Salicylate (mg/dl)		30
Tobramycin, Peak (µg/ml)		14
Tobramycin, Random (µg/ml)		16
Tobramycin, Trough (µg/ml)		2.5
High Sensitivity Troponin I (ng/L)		≥ 50
Valproic Acid (µg/ml)		150

Vancomycin, Peak (µg/ml)		50
Vancomycin, Rand (µg/ml)		50
Vancomycin, Trough (µg/ml)		25

HEMATOLOGY		
	Lower Value (<) **Upper Value (>)**	
WBC ($10^3/mm^3$)	2.0 50.0	
Platelet ($10^3/mm^3$) < 12 months	50 1000	
Platelet ($10^3/mm^3$) 12 months - adult	20 1000	
Hemoglobin (g/dl)	7.0 20	
Hematocrit (%) <1 month	21 70	
Hematocrit (%) > 1 month	20 60	
CSF Cell Count – Nucleated Cells		25
Blasts – On first admission		1

COAGULATION	**Lower Value (<)** **Upper Value (>)**	
INR		5.0
PTT (sec)		85
FIBRINOGEN (mg/dl)	100	
Heparin Assay LMW		2.0
Heparin Assay UF		1.0

SENDOUTS

- HSV from pediatric patients is defined as a critical value.
- Results defined as critical values by the reference laboratory (i.e., Quest) will be immediately called to licensed personnel. Quest's priority values table (critical values list) can be found at

www.questdiagnostics.com/.

Reporting Critical Values

Critical Values will be identified by strict interpretation of the critical limits (i.e. a glucose result of 501 mg/dl is a critical value, but a result of 500 mg/dl is not). A critical value should be reported only if the condition of the sample is satisfactory (i.e. free of gross lipemia and hemolysis). If the condition is unsatisfactory; licensed personnel will be notified with the request to recollect the sample. If the request to recollect is denied for clinical reasons, amend a comment, "No recollect per _____".

1. Do not report unverified critical values. Verification can include:
    a. Check previous results
    b. Clinical information (i.e. call nurse and verify that the PTT of 80 was expected due to heparin therapy). Document the clinical information.
    c. Check for sample integrity, was the sample clotted, hemolyzed, mislabeled.
2. A technologist or technician will call the critical value immediately. Critical value results reporting must be given to a licensed person. This is a requirement per National Patient Safety Goal and PAR policy.
3. This is not just lab's responsibility but also the PAR facility's responsibility. Your first request would be for the Patient's nurse, then charge nurse or nursing personnel available to give the critical result to. After calling the critical result, remember to document that it was read-back and verified (R&V).

Important Note: All Emergency Department critical values are called to the ED physician taking care of the patient.

4. Only the FIRST instance of a critical value for the following tests will be called. All subsequent critical values for the same stay will not be called. The comment "Consistent with Previous" will be entered as a result comment for critical values obtained after the initial critical result.
    - Acetaminophen
    - Lactic Acid
    - High Sensitivity Troponin I
    - Bicarbonate
    - Blasts
5. Some attempts to report critical values will fail. It is acceptable to defer notification after reasonable measures have been exhausted. Delayed notification (within 24 hours) is better than no notification. The cause of a failed notification will be investigated and corrective action will be documented.
6. Laboratory must document all critical value notifications, including unsuccessful attempts. The records must be retained for the same time period as all other patient reports. Each record must include:
    - Patient Identification

- Analyte
- Result
- Date and time of notification
- Identity of reporter
- Identity of recipient (First and Last Name or Dr. _____)
- Reporting mechanism
- For an unsuccessful attempt, a short explanation (no answer)

7. **NOTE:Laboratory must request that the Critical Result be "read-back" by the person accepting the results.**
8. If you have a critical result for Pre-Admission Testing after hours, then call the results to the charge nurse in Pre-op Short Stay. The nurse will contact the anesthesiologist or surgeon on call.

Critical TEST Notification

- A Critical Test is a screening or diagnostic test or procedure where rapid communication of the results is essential, even if the test results are normal. The only Critical test in the Automated area is the Intraoperative PTH.
- Call Test Results immediately to the Operating Room to the physician or patient's nurse. Document in the computer who the result was called to and that the result was read back to verify.

REFERENCES

1. American Journal of Clinical Pathology, *Critical Values, ASCP Practice Parameter*, Sept 1997.
2. Burtis, Carl A., Ashwood, E. R., Bruns, David E.: **Tietz Textbook of Clinical Chemistry and Molecular Diagnostics**, Fourth Edition. Philadelphia, Elsevier, Inc., 2006.
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5. "All Common Checklist", Reporting Results, COM.30000, COM.30100, *College of American Pathologists*, July 28, 2015.
6. "Communicating Critical Results of Tests and Diagnostic Procedures", Athens Regional Medical Center, Inc, *Nursing Policy and Procedure*, March 2015.

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Approval Signatures

Step Description	Approver	Date
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