Critical Alerts in Laboratory

Group :1

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Defining Critical Value

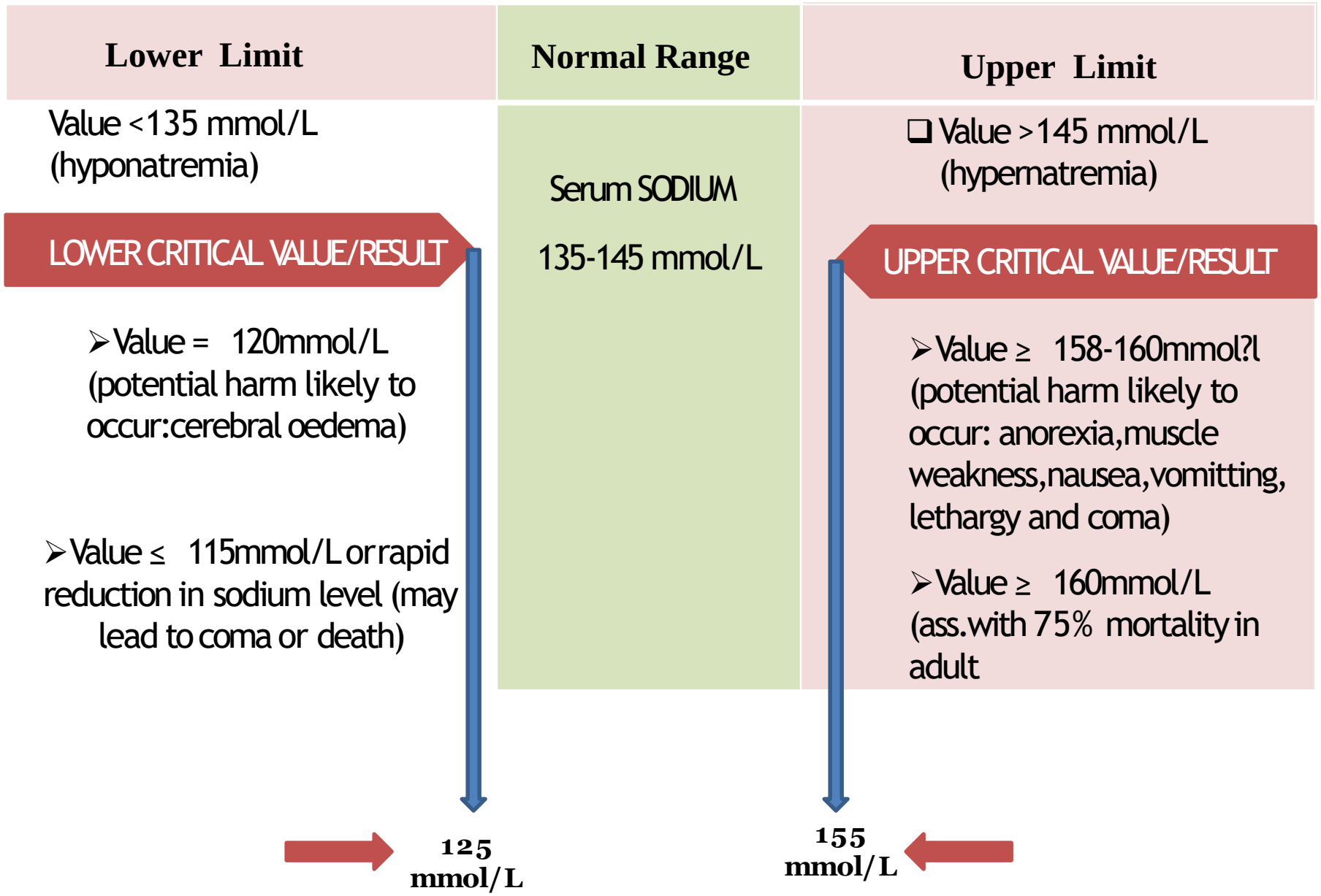
“Values that are outside normal range to a degree that may contribute on immediate health risk to individual or require immediate action on part of ordering physician”

- Alert value:

These are results that deviate from their reference ranges less significantly than critical values.

Why is it so Important??

- To prevent imminent life threatening situation
- Help clinicians redefining treatment plans
- Failure to report poses a threat to patient safety and hospital quality
- critical values communication is now an integral part of many accreditation procedures for medical laboratories like ISO,NABL
- endorsed as one of the leading quality indicators of the post-analytical phase by International Federation of Clinical Chemistry and Laboratory Medicine (IFCC).


Lower Limit
Normal Range
Upper Limit
Value <135 mmol/L (hyponatremia)
Serum SODIUM
135-145 mmol/L
Value >145 mmol/L (hypernatremia)
LOWER CRITICAL VALUE/RESULT
UPPER CRITICAL VALUE/RESULT
Value = 120mmol/L (potential harm likely to occur:cerebral oedema)
Value ≤ 115mmol/L or rapid reduction in sodium level (may lead to coma or death)
Value ≥ 158-160mmol?l (potential harm likely to occur: anorexia,muscle weakness,nausea,vomitting, lethargy and coma)
Value ≥ 160mmol/L (ass.with 75% mortality in adult
125 mmol/L
155 mmol/L

Clinical Biochemistry and Pathology

ANALYTE		CRITICAL VALUE	
Haemoglobin	Any age	≤7.0	g/dL
Haematocrit (PCV)	Any age	≤21.0 ≥65.0	%
Potassium; ISTAT (POCT)	Any age	<3.0 >6.0	mmol/L
pH	Any age	<7.20 >7.60	pH units
Bicarbonate (Whole Blood)	Any age	<10 >40	mEq/L
Troponin I	Any age	≥0.3	ng/mL
PT INR	Any age	>5.0	

Microbiology:

Any Assay with positive bioterrorism agent.

Serology.

Any Clinically Important Positive Culture.

- The Final Classification of a Laboratory result as “Critical” is based on
- It’s Laboratory Values, as well.
- As the Patient’s analytical history and
- Any available Clinical Information.
- Should be Communicated with 1 hour or asap.
- 24X7

Developing a Training Module

- **Policy Standard :** The critical Laboratory Results should be intimidated immediately to the concerned personnel

- **Objective:** To ensure all critical care results that need immediate attention by the treating clinicians are defined, documented, communicated in a defined time frame

Pre Requisites

- The Central Lab committee should identify and define critical results for all the tests performed in the lab in consensus with clinicians
- The list to be displayed in the lab
- regularly update the list as and when new tests are added
- Relevant staff should be trained on critical values and the reporting process

- Implementation Guidelines/Requirements:

Target Personnel:

Qualified lab personnel,

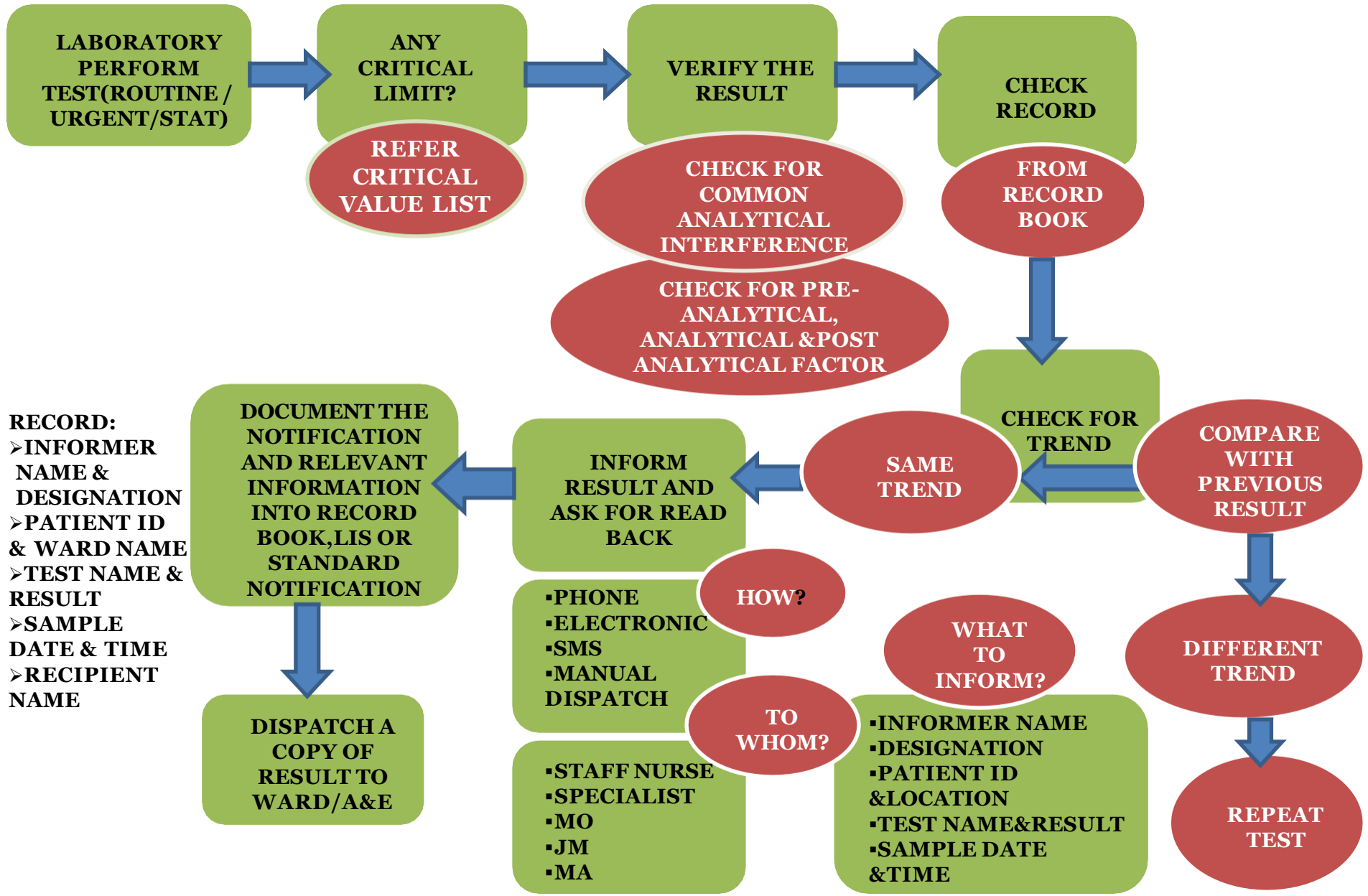
Nursing staff, Doctors

Training frequency: To be part of induction program and updated during on going training

- Defining and identifying critical care results
- Define and Identify pre analytical/analytical/post analytical errors prior to communication
- Informing concerned lab consultant
- Confirming Critical result
- Communicating to concerned personnel (verbal/report dispatch/electronic modes)
- Documentation(specific register and in case files) and Communication of critical results(for both inhouse and outsourced)
- Performing Mock Drills

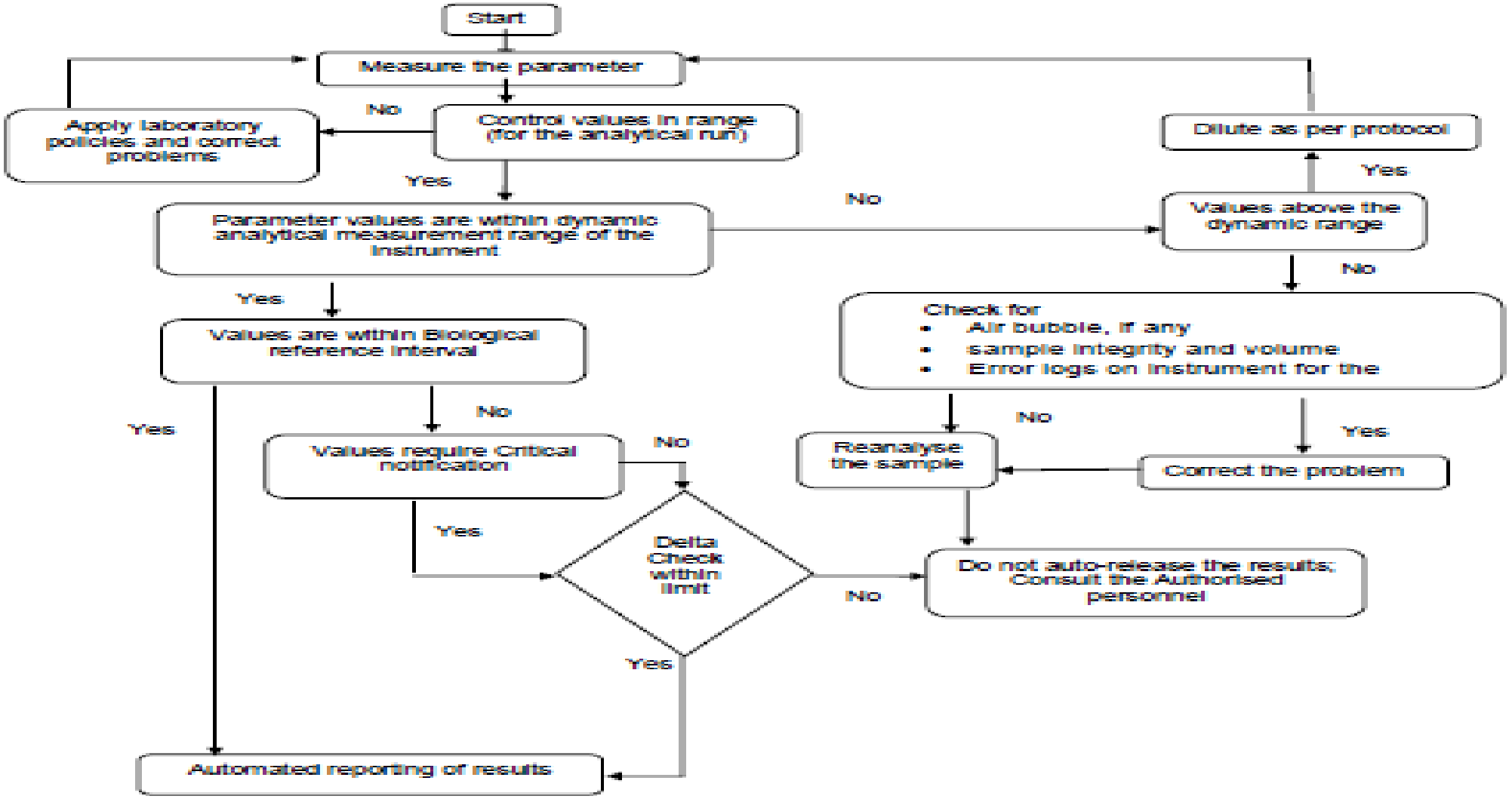
- Sepsis (ABG, CBC, RFT, LFT, Cultures)
- Uncontrolled Diabetes Mellitus (Blood sugars, Urine Ketones, ABG, RFT, Electrolytes)
- Respiratory Failure (ABG)
- Myocardial Infarction (Cardiac Enzymes)
- Viral Fever(Platelet Count)
- Acute Renal Failure (RFT, Electrolytes)

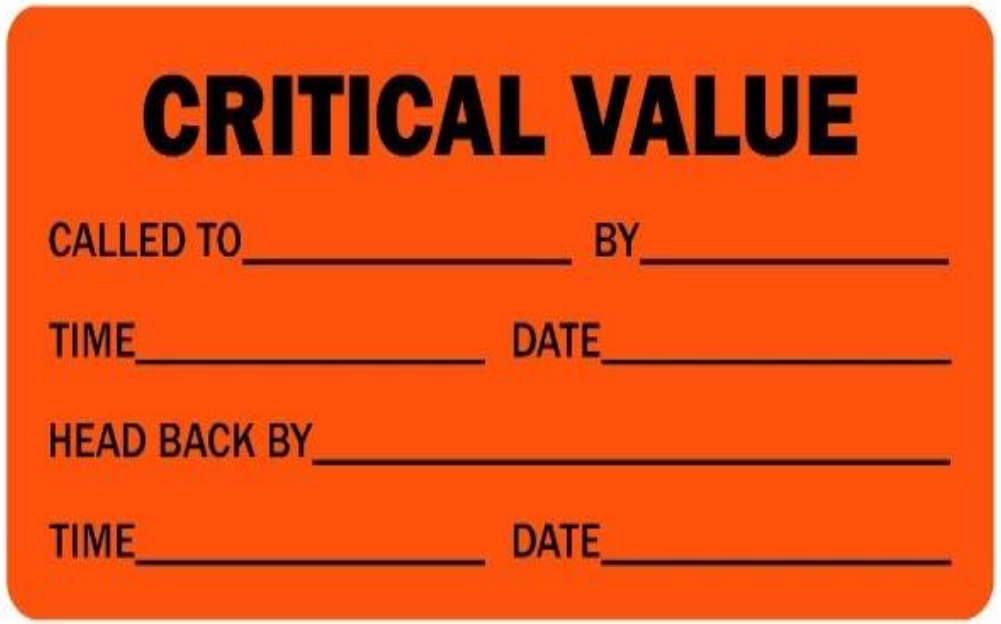
LABORATORY PROCEDURE FOR NOTIFICATION OF CRITICAL RESULTS

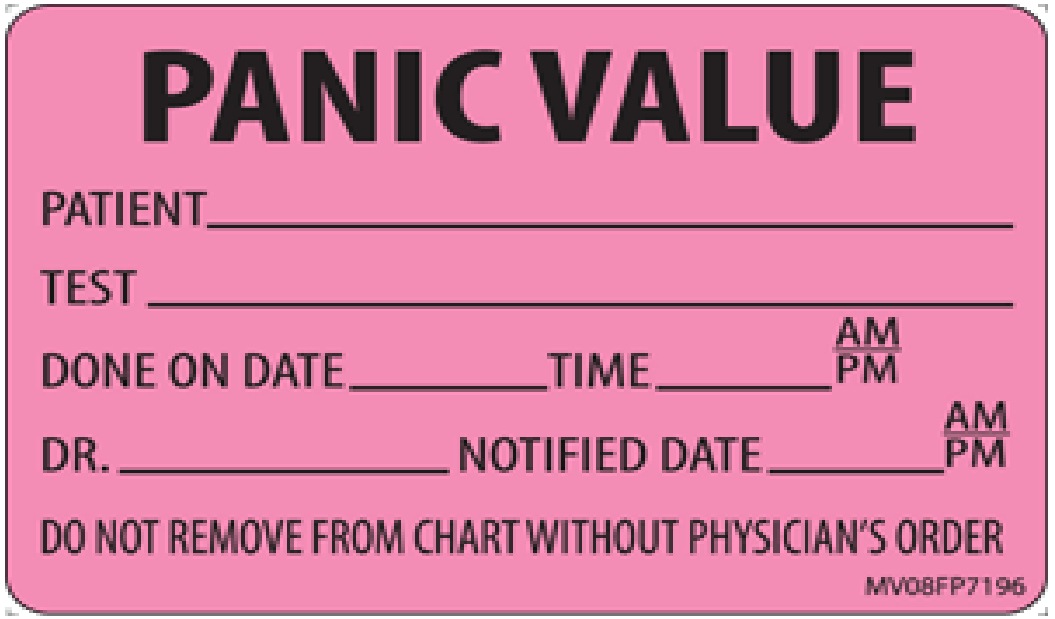


Annexure V

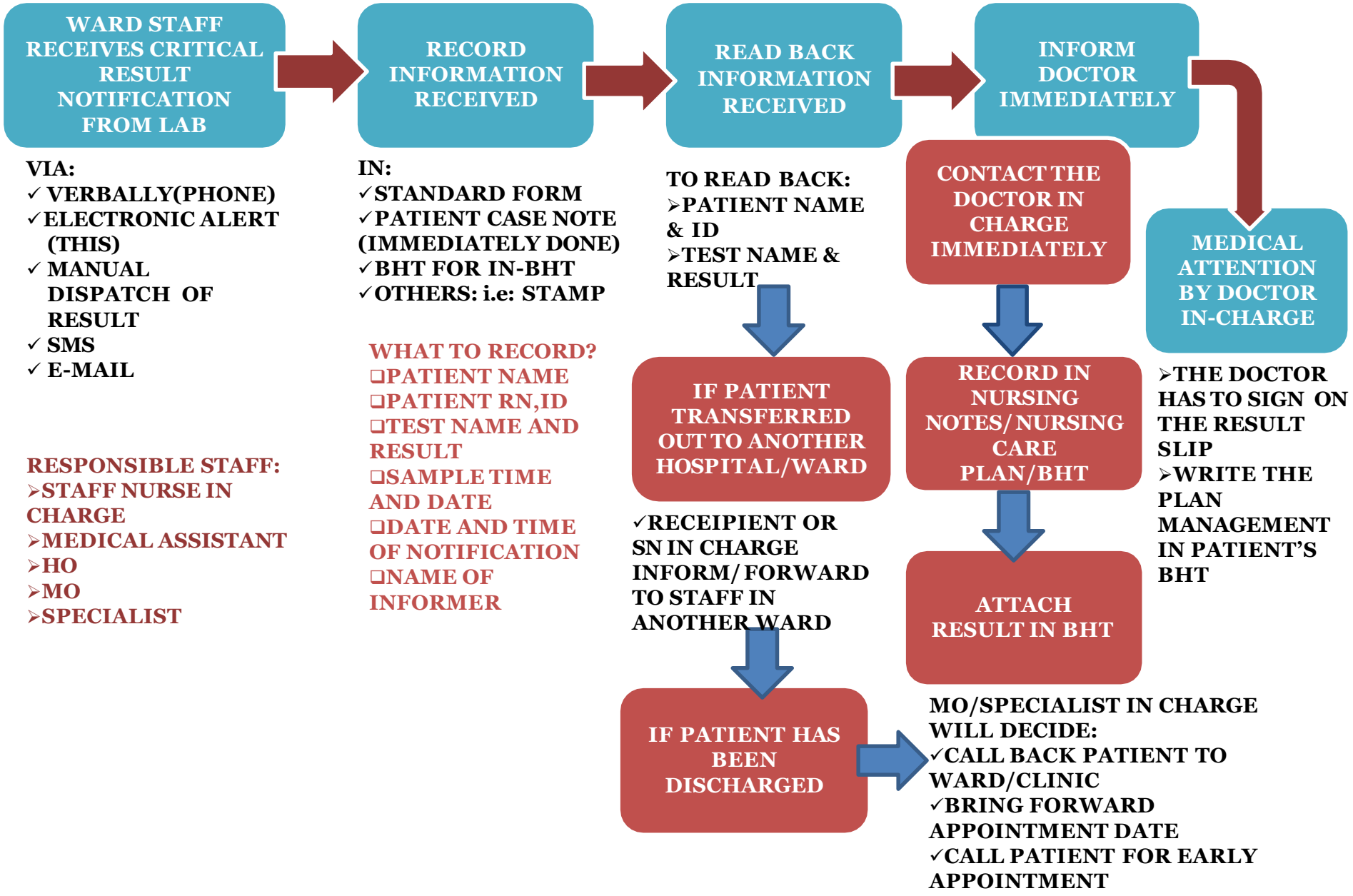
Guidelines algorithm for Automated Selection and Reporting of Results




CRITICAL VALUE
CALLED TO_____ BY_____
TIME_____ DATE_____
HEAD BACK BY_____
TIME_____ DATE_____


PANIC VALUE
PATIENT_____
TEST _____
DONE ON DATE_____TIME_____AM PM
DR._____ NOTIFIED DATE_____AM PM
DO NOT REMOVE FROM CHART WITHOUT PHYSICIAN'S ORDER
MV08FP7196

WARD/CLINIC/A&E PROCEDURE FOR NOTIFICATION OF LABORATORY CRITICAL RESULT



QUICK GUIDE

LABORATORY

1) IDENTIFY ANY CRITICAL RESULT

2) CONFIRM CRITICAL RESULT
- ✓CHECK RESULT
- ✓CHECK SAMPLE
- ✓CHECK QC
- ✓VERIFY CRITICAL RESULT

3) CALL WARD IMMEDIATELY

4) INFORM RESULT
- ✓ASK FOR READ BACK

5) RECORD THE NOTIFICATION

WARD

6) RECEIVE,RECORD AND READ BACK THE CLR

7) INFORM MO IMMEDIATELY

8) GET HARD COPY OF RESULT FROM LAB

9) ATTACH RESULTS IN BHT

Monitoring

- HCO to define schedule for assessing quality implementation of guidelines
- Quality standards of the lab
- Regular updating of the tests list
- Can have mock drills and performance indicators to the staff
- Trained staff can be asked to train other untrained personnel

Evidences

- HCO to have an Apex Manual with

1. the list of tests → their standard reference intervals and critical result values
2. instructions to the concerned personnel on communication and reporting

Thank you