1. TITLE

Turnaround Time Analysis of Critical Value Intimation and Timely Intervention in a Tertiary Care Hospital

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2. INTRODUCTION

In modern healthcare settings, timely reporting and action on critical laboratory values are essential to prevent adverse patient outcomes. Delays in communicating critical results or initiating appropriate interventions can lead to serious complications, including morbidity and mortality. Quality improvement in this area is increasingly emphasized by accreditation bodies like NABL and standards such as CLSI. This study aims to assess the turnaround time (TAT) for both communication and clinical intervention in response to critical values within various departments of a tertiary care hospital. Understanding and addressing bottlenecks in this process can help establish more responsive systems and ultimately improve patient safety and care outcomes.

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3. RESEARCH QUESTION

What is the turnaround time for intimation and clinical intervention after reporting of critical laboratory values, and how does it vary across departments?

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4. OBJECTIVES

- To assess the turnaround time for communication of critical values to clinicians.
- To evaluate the turnaround time for clinical intervention post critical value intimation.
- To identify departmental delays and compare TAT performance.
- To recommend strategies for improving the timeliness of critical value response.

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5. HYPOTHESIS

There is a significant difference in turnaround times for critical value intervention among different hospital departments.

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6. MATERIAL AND METHODS

STUDY DESIGN:
Descriptive observational study (retrospective and prospective data analysis).

SETTING:
A tertiary care hospital with both general and critical care units.

STUDY POPULATION:
Patients for whom laboratory critical values were reported during the study period.

- **Inclusion Criteria:**
    - Cases with documented critical values as per NABL/CLSI guidelines.
    - Inpatient records with available intervention documentation.
- **Exclusion Criteria:**
    - OPD cases with no follow-up intervention data.
    - Incomplete or unverified data.
    - POCT (Point of Care Testing) results.

STUDY TOOLS:
Data extraction sheets from labs, ICUs and wards

DURATION OF STUDY:
April 1, 2025 – May 20, 2025.

SAMPLE SIZE:
Approximately 100–150 critical value cases are expected during the study period.

SAMPLING TECHNIQUE:
Purposive sampling—All eligible critical value cases within the study period will be included.

DATA COLLECTION PROCEDURE:

- Recording time of laboratory result release, clinician notification, and clinical intervention.
- Manual validation with nursing and clinical notes was required.

OPERATIONAL DEFINITIONS:

- **Critical Value Intimation TAT:** Time (in minutes) from result availability to communication to the clinician.
- **Intervention TAT:** Time (in minutes) from intimation to documented clinical action.

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7. DATA ANALYSIS PLAN

- **Software:** Microsoft Excel
- **Descriptive Statistics:** Bar charts and Line charts for analysis.

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8. ETHICAL CONSIDERATIONS

- Data confidentiality and anonymity will be strictly maintained.
- Access to records will be limited to the research team.

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9. IMPLICATIONS OF RESEARCH

This research will help identify critical delays in the chain of response to lab emergencies, enabling the hospital to strengthen its quality systems. The findings can lead to improved SOPs, reduced morbidity rates, and better compliance with national accreditation standards. It will also serve as a model for other institutions aiming to improve response time for life-threatening conditions.

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10. REFERENCES

1. Clinical and Laboratory Standards Institute (CLSI). Management of Critical and Significant Risk Results.

2. National Accreditation Board for Testing and Calibration Laboratories (NABL) guidelines.

3. Institute for Healthcare Improvement. Critical Results Communication Best Practices.