



Original Article

# A study to assess the critical result reporting at B & C Medical College and teaching hospital

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## Keywords:

Critical;  
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## ABSTRACT

**Background:** The critical value can occur while performing panels of tests at laboratory by different chemistry or blood analysers with varieties of principles. The main objective of the study was to study the process of critical result reporting and to know the way of communication and documentation done for critical value in the laboratory, ICUs and the wards.

**Materials and Methods:** This study was prospective and non-experimental was conducted at B&C Medical College and Teaching Hospital from 14.04.2018 to 14.05.2018. Total 60 critical values samples were included. The data was collected by means of observing the critical values of inpatient and the process of reporting from the laboratory to the respective wards and ICUs.

**Results:** Out of 60 samples included in our study, there was 100% communication to concerned treating units. For the confirmation of critical value repeat test was done in 68% of cases. In 75% of cases clinicians did follow up. Recording of a critical report in lab was done in 96% of cases and almost all of the critical values 98% were immediately reported to the respective wards by technical staffs. There was no communication in 1.6% of cases to treating units by technical staff. Majority 78% of critical values were communicated by respective wards and ICUs nurses to concerned doctors.

**Conclusion:** Critical value can occur while performing panels of tests at laboratory and reporting such values to treating clinicians or respective wards or ICUs could help health care providers for effective treatment of the patients and their adequate care.

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## INTRODUCTION

A critical lab result is defined as a value that represents a path physiologic state at such variance with normal that prompt medical intervention is required to avert imminent danger for the patient concerned and for which effective action is possible, which was highlighted by Lundberg. Reporting of critical values has become mandatory in many countries. Since Lundberg's observations of 30 years, the concept of critical value have been adopted widely by laboratories throughout the world.<sup>1</sup>

This critical value can occur while performing panels of tests at laboratory by different chemistry or blood analyzers with varieties of principles. Depending on these analyzers

the entire panel of results may be visible to laboratory staff some of the results may be life threatening to patients.<sup>2,3</sup>

The recent national focus on patient safety has increased attention to the issue of laboratory critical value reporting and has become interest across the health care organization of many countries. Nowadays Critical value parameters are even considered an important outcome measurement for reflecting clinical effectiveness, patient safety, and operational efficiency.<sup>4</sup>

The most important functions of a laboratory is to provide accurate and rapid communication of critical test results to patient care providers. Laboratory professionals often find many obstacles while reporting such values, so establishing clinically relevant criteria for critical values, resolving difficulties in locating an ordering provider understands have become big challenge.<sup>5</sup>

Total of 10% to 55% of laboratory error occurs during post analytic phase. Failure to communicate the right laboratory result to the right person at the right time in the right context is one of the errors. An unusually high number of critical results have been shown to be an early predictor of adverse patient events.<sup>6</sup>

The reporting of the critical values could improve total health care system by encouraging health care providers for effective treatment of the patients their adequate care and finally safety of patients.

The main objective of the study was:

- To study the process of critical result reporting.
- To know the way of communication and documentation done for critical value in the laboratory, ICUs and the wards.

## MATERIALS AND METHODS

This study was designed to assess the critical result reporting of the inpatient in B&C Medical College and Teaching Hospital. Critical test value was defined as test value that are so abnormal that they can indicate a potentially life threatening situation in a patient or a diseases state that requires immediate medical attention. Study was prospective and non-experimental was conducted at B&C Medical College and Teaching Hospital. Permission was obtained from the ethical committee. Total sample consist of 60 critical values those fulfill the selection criteria.

### SELECTION OF THE SAMPLE:

**Inclusion criteria:** Critical value of the laboratory of inpatient.

**Exclusion criteria:** Critical values of the laboratory of outpatient.

The instruments and too for data collection was observation check list and interview technique. Statistical analysis was done by Microsoft office excel 2007.

The data was collected from 14.04.2018 to 14.05.2018. The data was collected by means of observing the critical values

of inpatient and the process of reporting from the laboratory to the respective wards and ICUs. Observation was done on the respective wards and ICUs to know the reporting time and process of communication to Doctor. The frequency table was formulated all baseline information like recording of critical result in laboratory, reporting immediately to the ward including time and ICUs, communication to doctor/nurse, communication through phone/direct, repeat test, communication by nurse to doctor, immediate action taken by doctor/nurse, follow up all documentation in the critical care chart was maintained. The subjects were marked according to the observation and interview: yes, no and not applicable (NA). Scores were expressed in the percentage.

## RESULTS

Our study shows there was 100% communication to concerned treating unit by means of phone or direct. In 68% of cases for the confirmation of critical value repeat test was done (table 1) and finally informed to concerned department. Clinicians did follow up for 75% of cases.

96.6% of the critical values were recorded properly and almost all of the critical values (98.3%) were immediately reported to the respective wards. Only (1.6%) Of cases were not communicated to doctor or nurse by technical staffs. All the critical value cases (100%) were communicated. To confirm the critical values 68.3% of the cases were repeated and final report was dispatch. Majority of cases (75%) were followed by clinicians. (Table 1)

## DISCUSSION

The study was conducted on 60 samples having critical value of inpatient of B&C Medical College and Teaching Hospital. All sample collected were from inpatient. Among the sample all the critical value of inpatient was reported immediately to the concerned wards and ICUs. Our study showed recording of critical report in the laboratory was found to be around 97%. Reporting and recording such value is a quality indicator of the lab. Study done by Dighe et al showed that specific critical value will have potential to improve patient safety.<sup>7</sup> our study showed reporting of critical value to ward and ICU was done properly, which helped our clinicians for quality patient care. Similar findings by Schapkaitz et al who believes rapidly notifying critical value to appropriate care givers helps for quality patient care.<sup>8</sup> Most of the critical value was communicated to nurse of the respective wards and ICUs that is 100% communication to respective treating units which helps them to take prompt care of the patients and finally patient safety. Whereas concluding study done by Caleb et al showed incidental critical values appears to have low clinical utility.<sup>9</sup> Study done by Piva et al on interpretative reports and critical values believes that incorrect interpretation of tests and breakdown in the communication of critical values are preventable errors minimizing such errors leads to good

**Table 1: Percentage of critical value reporting and follow up**

Action taken with critical value	Yes	No	NA
Recording the report	96.66%	3.33%	0%
Immediate reporting to the ward/unit	98.33%	1.66%	0%
Communication to the doctor /nurse	98.33%	0%	1.66%
Communication through phone/direct	100%	0%	0%
Repeat test	68.33%	0%	31.66%
Communication by nurse to doctor	78.33%	18.33%	3.33%
Follow up is done	75%	6.6%	18.33%

patient care.<sup>10</sup> Whereas Kuperman et al study showed delay response in treatment by clinicians although critical values were reported promptly by laboratory but our study showed prompt action from either side.<sup>11</sup> Laboratories should have their own policies and procedures to deal with incidental critical results. Proper way of reporting and documentation of such results could help clinical laboratories to solve many future challenging laboratories issues. In our study and set up documentation in the patient chart requisition order form was not proper by nursing staff. Majority of the cases was followed up by treating clinicians. Our study has several limitations. All of the analysis was of data from a B&C Medical College and Teaching Hospital Only. Data from other institutions may vary, especially those with a different patient population. Our data was from inpatient only and majority of cases was from a busy ICU. Clinical laboratories that have a low percentage of specimens from infants may find different patterns of incidental critical values.

## CONCLUSION

A commonly cited problem in clinical laboratories is the breakdown in the communication process, including documentation of actions, between clinical units and the laboratories. It has its implication in quality assurance programme of a hospital. Late reporting of the critical value to the wards and ICUs can form a risk to the patient safety. These are preventable errors minimizing such errors can lead to good patient care and finally patient safety.

**Conflict of interest:** None

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