

## Effect Analysis of the Test Critical Value in Clinical Application

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**Abstract: Objective** To investigate the application effect of the clinical laboratory's method to deal with the critical value in clinical tests. **Method** 120 cases of critical patients were chosen as the research objects from the emergency department of the affiliated hospital of LuZhou Medical College from January 2010 to December 2010. Make the critical value range of the test item, preprocess and change the data in detail, calculate the value of the critical value project (research group). Compare with the 120 cases of patients, chosen from the emergency department of the affiliated hospital of LuZhou Medical College from January 2009 to December 2009 (control group), which were not implemented critical value manage approach. Observe the patient's clinical rescue success rate and the nurse's crisis consciousness score. **Result** The rescue rate of the research group was 81.7 %, and the control group was 71.7%, which has significant difference ( $X^2=6.37$ ,  $P<0.05$ ). The crisis consciousness score of nurse before the implement of critical value manage approach was ( $78.3 \pm 5.9$ ) points, after the implementation was ( $92.1 \pm 4.8$ ) points. The comparison between the two groups was statistically significant ( $t = 9.3024$ ,  $P < 0.05$ ). **Conclusion** To establish the critical value reporting system in clinical laboratory is feasible. Meanwhile, effectively improving nurses' working process, enhancing the inspector's crisis report consciousness and nurse's crisis consciousness can promote the medical staff to manage patients timely and specifically and increase the clinical rescue success rate. [Wu Zhong, Muhu Chen, Fan Yang. **Effect Analysis of the Test Critical Value in Clinical Application**. *Life Sci J* 2014; 11(1): 289-291]. (ISSN: 1097-8135). <http://www.lifesciencesite.com> 43

**Keywords:** emergency department, critical value, application result

### Introduction

Emergency department plays an important role in hospital. For the condition of patient in emergency department changes fast, effective rescue approach can improve the clinical rescue success rate of the patients. But in the process of rescue, some of the result will prompt that the patient may be on the edge of danger, if treat timely, the clinical rescue rate can be improved, and in clinic all these crisis results on the edge of danger was called critical value<sup>[1]</sup>. Observe the 120 clinical specimens of patients in emergency department of our hospital between January and December of 2010, and make the critical value range of the test item. Then compare them with the 120 clinical specimens did not get critical value manage from our hospital between January and December of 2009. The analysis is as follow.

### 1. Materials and method

#### 1.1 Clinical data

120 cases (male 60, female 60) of patients who had the critical value test were chosen from the emergency department of our hospital between January and December of 2010. The patients aged 33 to 78 years, mean  $54.2 \pm 2.4$  years. Among them, critical patients were 60 cases, noncritical patients were 60cases. Meanwhile, 120 cases of patients who did not implement the critical value test were chosen from our

hospital between January and December of 2009 as the control group. The comparison between two groups in gender, age, disease status and others was statistically insignificant ( $P>0.05$ ), so comparable.

#### 1.2 Method

##### 1.2.1 Test critical value determine

Firstly, the laboratory discusses with the clinician at fixed period to establish the test critical value item table with further confirmation and improvement and to make statistics. Then the results will be judged and dealt with by the department's doctors and nurses. If any result did not meet patient's clinical symptoms, the specimen need to be resubmitted and reprocessed. Finally, compare the reexamination results with the previous ones, if the error is within the permissible range, timely clinical measures will be taken and the results will be analyzed statistically.

##### 1.2.2 Test critical value reporting flow

The doctor or nurse in emergency department, after they received the phone about critical value report from the laboratory, records the results of the critical value effectively, and submits the critical value results to the physician. Then discuss and analyze the result. And eventually, the laboratory reexamines and gets the critical value results report.

### 1.2.3 Test critical values management

When received the critical value result, nurse should collect the basic information of the patient which main includes gender, age, ID number, specimen collection time, managing approach and others. And according to the new advice of the doctor, nurse implements effective and specific treatment.

### 1.3 Indicator observation

The main observation indicators in this clinical study are clinical rescue success rate and nurse's crisis awareness.

### 1.4 Evaluation method

This study's judgment about nurse's crisis awareness mainly divided into self-assessment and nursing department's assessment. The analysis should be comprehensive and grade the scores of the crisis awareness before and after the implementation of critical value. And the judge score is 0-100. The higher of the score, the stronger of the nurse's crisis awareness, on the contrary, the weaker of the crisis awareness<sup>[2]</sup>.

### 1.5 Statistical analysis

SPSS18.0 statistical analysis software was taken for the processing; measurement data were expressed by mean  $\pm$  standard deviation ( $\bar{x} \pm s$ ); count data taken X<sup>2</sup> test; P < 0.05 indicates statistically significant difference.

## 2. Results

### 2.1 Rescue success rate of the two groups

The rescue success rate of the study group was 81.7%, which was significantly higher than the control group's 71.7%, and the difference was statistically significant (P < 0.05).

### 2.2 Nurse's crisis awareness before and after the implementation

Nurse's crisis awareness score before and after the implementation were (78.3  $\pm$  5.9) points and (92.1  $\pm$  4.8) points, respectively. Two groups' comparison was statistically significant (P < 0.05).

## 3. Discussion

The managing approach of the critical value by emergency department is an effective method made base on the basic situation of the hospital. Enhance the record and report of the critical value to can ensure the clinical rescue effect<sup>[3]</sup>.

The result of this study shows that the implementation of the critical value managing approach in emergency department has a better effect that it can effectively improve patient's clinical rescue success rate and strengthen nurse's crisis awareness. The systematic and scientific operation improves the overall

application affect<sup>[4]</sup>. The data of this group show the rescue success rate of the study group was 81.7 % and the control group was 71.7 %, and the comparison of two groups' data had significant difference ( $X^2=6.37, P < 0.05$ ). That mainly own to the nurses in emergency department that registered all contents of the critical value and reported to the physician after they received the critical value report from clinical laboratory. The physicians discuss and analyze the results, and take appropriate treatment measures. Finally, the laboratory reexamines to get the critical value results report<sup>[5]</sup>. In the whole process of the implementation, feed back the appeared question and further confirm the critical value result. More accurate treatment measure was made to improve the clinical rescue success rate<sup>[6]</sup>. The data also showed the scores of nurse crisis awareness before and after the critical value implementation were (78.3  $\pm$  5.9) points and (92.1  $\pm$  4.8) points respectively, and the data comparison of two groups' differences were statistically significant ( $t=9.3024, P < 0.05$ ). The above analysis shows that in clinical laboratory, the implementation of critical value can effectively improve nurses' crisis awareness and effectively reduce the incidence of unsafe events<sup>[7]</sup>. It mainly owns to the hospital that strengthens the business training of the hospital personnel, further clears the job responsibility of nurses and perfects the contents of work before the clinical laboratory implement the critical value. In addition, train the operation techniques of the nurse targeted to improve the clinical nursing level. Meanwhile, in the implementation process of critical value, enhance the system of message record and feedback can effectively enhance the responsibility of the nurses in clinical laboratory and mobilize their work enthusiasm. It promotes the inspection staff report the test critical value timely, enhance the crisis awareness. By managing the critical value can effectively prompt the medical personnel in emergency department implement the specific treatment timely to the critically ill patients and improve clinical outcomes. In addition, by implementing of critical value handling can strengthen the information communication between emergency department and clinical laboratory, form a linkage mechanism, promote the medical personnel treat the patients timely, and improve the work efficiency.

In summary, to establish the critical value managing system in emergency department is feasible. It focuses on strengthening the handling and report of the critical value. Thus can perfect the workflow of nurse effectively, and improve the work efficiency of the clinical laboratory staff. Meanwhile, it enhances the handling of the critical value, registers and feeds back the critical information, prompts the medical personnel treat patients timely and specifically, and improve the rate of clinical rescue success. The whole operation is

specific and easy, thus it is worth to be applied and promoted in clinic.

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