



## The Influential Factor Analysis of Classification Partition Management Mode on the Emergency Triage

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### Abstract

**Background:** The aim of the study was to discuss on the influential factors of the mode of classification of partition management in the emergency triage.

**Method:** Retrospectively analyzing the effects of emergency triage of 156 cases who adopted the classification partition management mode during Oct 2014 to Oct 2015 in Xuzhou Central Hospital (Xuzhou, Jiangsu Province, China). They were divided into triage success group of 108 cases and triage failure group of 48 cases. Comparing the single factor analysis and multi-factor analysis, and selecting possible influential factors.

**Result:** According to the single factor analysis, for the patients who came to the doctor in the daytime and working days, the higher education degree and compliance they had, the faster the back-show time of emergency inspect and check came back, the more comprehensive the body examination and disease history taking were done, the simpler the disease condition was, the higher triage success rate they received. Compared to the emergency observation time between two groups, the difference was not statistically significant. According to the multi-factor analysis, the emergency check and examination back-show time, the comprehensive degree of body examination and disease history taking and the complexity degree of disease could be the independent risk factors for triage success.

**Conclusion:** Simplify the examination procedure, improve the efficiency of back-show and acquire detail disease information are important methods for the improvement of triage success.

**Keywords:** Classification partition management mode, Emergency triage, Independent-risk factor

### Introduction

The mode of classification partition management put emphasis on the classification process by the degree of disease's severity, and the partition management, by different methods of disease's treatment. On the premise of identifying disease and treating correctly, make use of the medical resources to the maximize degree, and make the per capital health care to the maximize degree (1). Nowadays, this mode has been put in use into many grassroots hospitals, municipal and provincial hospitals' emergency department (2).

According to the clinical data conclusion, the classification partition management mode improved the treatment success rate and decreased the death rate (3). However, the diversion outcomes differentiate a lot for the different medical levels and emergency triage ability among different hospitals, and the triage success rate range from 40% to 85% unequally (4).

Through the efficiency of the 1-year management of classification partition in the emergency triage in our hospital and the conclusion of possible risk factors which might influence the triage success

rate, this research offer reference to guide the improving of problems existing in the clinic work.

## Materials and Methods

### *Objective data*

Analyzing the emergency triage effect of 156 cases retrospectively, who adopted the classification partition management mode during Oct 2014 to Oct 2015 in Xuzhou Central Hospital (Xuzhou, Jiangsu Province, China).

The outcomes were divided into several grades as follows: A: observed continually in the emergency room until recovered and discharged; B: continually observed and then transferred into relative department; C: arranged to correct department for further treatment; D: arranged into improper department for treatment until discharged; E: arranged into improper department until transferred into correct department for further treatment. Grade A and C were regarded as triage success, and B, D, E were regarded as triage failure. Among which, there were 108 cases of triage success in total, 34 cases of A and 74 cases of C respectively, 48 cases of triage failure in total, 13 cases of B, 8 cases of D and 27 cases of E respectively. There were 59 males and 49 females in success triage group with the mean age of 56.0 years, which ranged from 12 to 88 years, the mean time of disease onset was  $0.6\pm 3.2$  h, ranging from 1h to 3 h. there were 23 males and 25 females in the triage failure group with the mean age of 57.2 years and ranged from 10 to 89 years, the mean time of disease onset was  $11.2\pm 3.5$  h, ranging from 30 min to 3.5 days. Regarding the gender, age and onset time between two groups, the differences were not statistically significant.

### *Research method*

Selecting patients with thorough clinic data and without treatment discontinued or demanding to transfer to other hospital. Collecting the time patients went to hospital, and 8:00 am to 6:00 pm was set as daytime period, 6:00 pm to 8:00 am was set as nighttime period, Monday to Friday were set as working day, and Saturday and Sun-

day were set as day off. The process of registration, queue up, payment, visiting the doctor, conducting examination, diagnosis and relative treatment were called emergency observation time. The education degrees were divided into below primary school, between primary school to high school, college and above college. According to order when visiting doctor, attitude in the process of offering disease information, and the cooperation degree the patients showed that during the process of body examination and treatment, compliance table was accomplished by treating physician and admission nurse. The compliance table was made by our hospital and passed the reliability and validity examination and enjoyed higher operability and accuracy. The back show time of emergency check and examination included various blood and fluid samples, ECG, Imaging and ultrasound respectively. The thorough degree of body examination and history inquiry was based on the disease recording data after the final treatment, and compared with information collected in the emergency triage on the aspects of completeness and accuracy, and was judged together by the first treating physician and final treatment physician, and was divided into basic comprehensive, lacking in some parts and more wrong those three degrees. According to the disease types, development conditions and the suggestion of the severe degree of emergency disease condition, the complexity degree of disease was divided into very serious, generally serious and slight those three degrees. Single factor and multi-factor analysis were adopted to do comparison and selected possible influential factors.

### *Statistical methods*

SPSS 20.0 (Chicago, IL, USA) was adopted for statistical analysis. For quantitative data, mean $\pm$ Standard deviation was adopted to express it, and independent sample t-test for comparison between groups. Qualitative data was expressed by case or (%), and  $X^2$  test was adopted to do groups comparison. Logistic test was adopted for multivariate regression analysis.  $P<0.05$  represented that the difference was statistically significant.

## Results

### Single-factor analysis

For the patients who came to doctor in the daytime and working days, the higher education degree and compliance they had, the faster the emergency check and examination back show time, the more comprehensive the body examination and disease history taking were done, the simpler the disease condition was, the higher triage success rate they received. Compared the

emergency observation time between two groups, the difference was not statistically significant (Table 1-2).

### Multivariate regression analysis

The emergency check and examination back show time, the comprehensive degree of body examination and disease history taking and the complexity degree of disease could be the independent risk factors for triage success (Table 3).

Table 1: Single-factor analysis

Group	Cases	Daytime	Working day	Education degree			Compliance		Check show-back time (min)	Examination show-back time (min)
				Below primary school	Between primary school to high school	College and above	Good	Bad		
Success group	108	43 (39.8)	86 (79.6)	29	34	45	73	35	36.5±10.2	59.7±16.7
Failure group	48	11 (22.9)	31 (64.6)	23	13	12	20	28	52.4±15.9	76.5±18.5
t (X <sup>2</sup> )		4.193	4.012		7.163		9.278		5.927	6.324
P		0.041	0.045		0.028		0.002		0.039	0.033

Table 2: Single factor analysis

Group	Cases	Thorough degree of disease history			Complexity degree of disease condition			Observation time (h)
		Basically comprehensive	Lacking in some parts	More wrong	Very serious	Generally serious	Slight	
Success group	108	50	41	17	44	41	23	1.9±0.3
Failure group	48	10	10	28	12	12	24	1.8±0.4
t (X <sup>2</sup> )			29.483					0.628
P			<0.001					0.754

## Discussion

The success rate of emergency triage is an important index to judge the capacity of hospital's integrated emergency response. The application of classification partition management mode can

improve the clinical emergency treatment condition and treating success rate, and has got apparent effect on the aspects of chest pain center, cerebrovascular green channel, traffic trauma, concentrated poisoning (5,6).

**Table 3:** Multivariate regression analysis

Factor	$\beta$	Wald	<i>P</i>	OR	95% CI
Emergency check back show time	0.123	5.947	0.029	1.625	0.967 ~ 2.301
Examination back show time	0.324	5.326	0.033	1.123	0.637 ~ 1.968
Comprehensive degree of history taking	0.254	4.512	0.038	1.082	0.645 ~ 1.758
Complexity degree of disease condition	0.167	6.987	0.014	2.632	2.104 ~ 3.325

The emergency triage is related with the close cooperation among emergency department, ICU, emergency check and examination window, cardiovascular, orthopedics, obstetrics and gynecology, pediatrics and the situation of emergency consultation (7). Thus, the application of classification partition management mode in the emergency triage is not only the treating condition of single disease, but also the connection among circles during the whole process of technique and the ability of dealing with problems (8).

The current research adds the possible influential factor for the triage success rate in the process of classification partition management, which is rarely referred before. We concluded as follow: for the patients who came to doctor in the daytime and working days, the higher education degree and compliance they had, the faster the emergency check and examination back shows came out, the more comprehensive the body examination and disease history taking were done, the simpler the disease condition was, the higher triage success rate they received. The emergency check and examination back-show time, the comprehensive degree of body examination and disease history taking and the complexity degree of disease could be the independent risk factors for triage success.

During the period of daytime and working day, there was more medical staff in position, and every medical affair were settled in order, and specific staff can be arranged to deal with the emergency condition in time, which was both confirmed in the aspects of theory and practice (9). The higher education degree and compliance the patient has, the more truthful and credible they might learn about their disease condition and feedback to the medical staffs, the higher compliance to the doctor's suggestion and medi-

cal orders, the more fluent the medical activity has done, the more benefits to the triage success (10). The faster the feedback of emergency inspection and check come back, the more helpful to medical personnel to judge the disease accurately, although more comprehensive body check and inquiry of disease history are of great significance to correct diagnosis and triage, but for emergency condition objective examination data are particularly important to final diagnosis (11). Such as acute myocardial infarction, elevated myocardial injury markers and positive ECG change is the "gold standard" to diagnose acute myocardial infarction (AMI), while the signs like chest pain, sweating, syncope are often confused with aortic dissection, acute cerebrovascular diseases (12).

The complexity of the disease in the decision of emergency triage success or not is very important (13). Diseases identified difficultly, such as sudden systemic weakness of emergency patients can possibly be the central or peripheral paralysis, hypokalemia paralysis, Guillain Barre syndrome (14), diseases of easy missed-diagnosis, such as seeing a doctor because of acute chest pain, the possibility of pulmonary embolism is very lager (15); the coexistence of a variety of diseases, such as serious cardiac, renal insufficiency with severe traumatic hemorrhage, cannot make single decision in what disease or organ treated first (16). At this point, multidisciplinary joint consultation is necessary, it is not appropriate to decide to turn patients into a department simply (17).

## Conclusion

It is an important way to improve the success rate of split-flow, by simplifying the inspection procedures, increasing the efficiency of the outcome feedback, getting the details of the disease.

## Ethical considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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