been adopted widely in the practice of Emergency Medicine; however, many staff cannot function properly when they arrive on disaster sites with large numbers of casualties.

Initial Triage — provides a quick determination of triage categories. Very limited life-saving procedures could be performed. Instead, try to evaluate the needs of as many victims as possible. Do not stop and be preoccupied with one patient, BUT move through the scene so as to complete the triage process. If possible, It is advisable to triage by eye using one's own sense and obtaining the chief complaint. Therefore, real emergency patients will be spotted and identified without delay.

Secondary and Continuous Triage — after assessing available manpower, proceed with and "AMPLE" history, "ABCDEF" to "head-to-toe assessment". Evaluation and reassessment should be done. Therefore, new triage categories really will reflect changes in the victims' condition. The "START" (Simple Triage and Rapid Treatment) plan, one of the commonly used field triage tools, should be adopted and followed. The essence and spirit should be followed when managing such situation. It streamlines the triage process and makes the best use of one's sense when triaging.

Evacuation — First, do not delay transportation of victims for treatment off scene to an area like a casualty clearing station or casualty treatment center except for immediate life-saving procedures. This is the most common mistake made by deployed hospital personnel.

Repeated exercises will help the team members to remember these rules. Less shock reaction will be noted when a real scene is encountered, and the triage process can proceed smoothly.

Keywords: casualty clearing; disaster, drills; evacuation; exercises; rules; START; training; transport; triage

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Triage Tags and Disaster Drills — Analysis of Tags Used in Two Disaster Drills

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Objective: To verify the effects of education and training on the triage skills of medical personnel.

Background: Since there have been several different kinds of triage tags used in Japan, a standardized tag was developed in 1996. Since then, the standardized tag has been adopted by many disaster-related organizations, and has been used in disaster drills. But, it still is necessary to verify how well these tags are used and the importance of Disaster Medicine education for responders.

Method: Triage tags that were used in two disaster drills were checked and analyzed on their entry status and the proper usage. The first drill was executed by the Japanese Association for Disaster Medicine in 1997, and the Hyogo Prefecture executed the second one in 1998. Prior to the simulation drills, two lectures (principles of triage and details on the usage of triage tags) were given to trainees of the former drill, and only one lecture (principles of triage) was given to the latter. Mimic patients were moulaged and the allotted time for the triage for each patient was approximately 1.5 minutes at both drills. At the latter drill, attendants to the moulaged patients disturbed the trainees by shouting and crying, which made this drill much more realistic.

Result: In contrast to the entry status of the triage tags used at the former drill, that of the latter was extremely poor. The difference between the entry status of tags used in these two drills was made by a lecture of about 40 minutes and the panic situation of the trainees yielded by the patients' attendants.

Conclusion: 1) A lecture on the principle of triage was not sufficient for the trainees to be able to use the triage tags properly; and 2) Disaster drills should be done as realistically as possible in order to train the trainees properly.

Keywords: disaster drills; education; exercises; triage; triage tags

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Triage Guidelines for Crush Syndrome Patients in Large Earthquakes Using Logistic-Regression Models

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Introduction: Triage activity is one of the most important, but difficult components of the medical response in a disaster. Although experienced emergency physicians should do triage, such physicians may not be readily available in a disaster situation. We developed a predictive model of crush syndrome to provide triage guidelines for non-experienced physicians, emergency medical staff, nurses, and any other medical practitioners coping with an unexpected natural disaster.

Methods: We used data from 372 crush syndrome patients reported in a previous paper. Twenty risk factors (except for the peak CK that is not available at initial triage) were employed to develop the predictive model. We used induced hemodialysis and/or death as an outcome. We developed two types of prediction models using logistic-regression analyses. The first model was calculated using only parameters measured without specific devices in the disaster field (initial triage model).

The second model was estimated using all parameters including laboratory tests with specific instruments (second triage model). To assess the reliability of the models, we estimated the 95% confidence interval (95% CI) of event occurrence in the model by 10,000 Monte-Carlo simulations using the mean and standard error of coefficients derived from the logistic-regression models.
Results: The initial triage model consisted of three factors: 1) pulse rate; 2) macroscopic abnormal urine findings; and 3) delay of response activity (>3 hours). The second model was composed of four parameters: 1) tachycardia (>120/minute), 2) macroscopic abnormal urine findings; 3) white blood cell count; and 4) hyperkalemia. The areas under the ROC curve of the models are 0.807 and 0.906, respectively. Patients who are extricated from rubble within three hours show no abnormality in urine and have a pulse rate of 60/minute have a 10.5% chance of deleterious outcome; the 95% CI is 0.0% to 23.1%.
Conclusions: We report two triage models based on scientific and epidemiological evidence that have high enough reliability to predict patients' outcomes in the disaster field. Although our models can provide keys to performing triage for the non-experienced person, there is substantial residual uncertainty in outcome. However, these triage models may be useful for separating the very severe patients from less severe ones, especially for using limited resources and transportation system in a disaster setting.
Keywords: crush syndrome; death; dialysis; disaster; epidemiology; model; outcome; physicians; resources, limited; risk factors; triage