

### An Outcome Evaluation for Prehospital Cardiopulmonary Arrest Patients Using the Utstein Template: A Japanese Experience

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**Introduction:** Publication of Utstein Style Template made it possible to perform a national hospital based evaluation, and compare Emergency Medical Service systems. This research was done as a national investigation to identify present outcome data for prehospital cardiopulmonary arrest (CPA) patients in Japan.

**Methods:** The records of 3,029 CPA patients who were transported to 10 Emergency Critical Care Medical Centers from November 1997 to April 1999, were abstracted according to the Utstein style, and the data for outcomes were analyzed using logistic regression.

**Results:** 109 out of 3,029 cases (3.6%) were found dead. The remaining 2,920 cases (96.4%) underwent CPR by emergency medical technicians (EMT) and were included in this study. Bystander CPR was performed in 28.4% of witnessed cardiogenic CPA. The discharge rate was 4.0% of witnessed cardiogenic CPA, and 18.4% of witnessed ventricular fibrillation or ventricular tachycardia (VF/VT). A comparison of resuscitation rates indicated that a success of 7.9% in prehospital phase and 28.4% in in-hospital phase: this is more than 3 times of former results. Outcome analysis indicated that a discharge rate of witnessed cardiogenic CPA was 49.1% of prehospital resuscitation cases which was 6.6 times higher than for hospital resuscitation cases (7.4%). The latter from an emergency telephone call to defibrillation, the lower one month survival rate, it reached almost 0% in 30 minutes (min). Follow-up evaluation after discharge indicated that the survival rate rapidly decreased from 24 hours to 3 months, then, it reached a plateau in the cardiogenic group; for the noncardiogenic group, the survival rate decreased rapidly from 24 hours to 1 month, then became nearly constant.

**Conclusion:** To improve the resuscitation rate in prehospital phase, we must develop a prehospital medical control system, and then expand management items provided at the scene by Japanese paramedics, such as endotracheal intubation, administration of emergency drugs, and early defibrillation using standing orders. Educating and cultivating a first responder will be needed, and every effort should be concentrated on improving the bystander CPR rate. It may be possible to change the Utstein style statistics in a follow-up period of one year to 3 months after an onset of CPA.

**Key words:** cardiopulmonary arrest; cardiopulmonary resuscitation; discharge; emergency medical technicians; in-hospital; outcome; paramedics; prehospital; resuscitation; Utstein style

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### Interactive Tactical Simulation Program

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It is very important and informative to test individual tactical preparedness using an interactive simulation program. On the individual level, tactical preparedness can be assessed by proceeding logically through the primary survey and in making sharp priority decisions between casualties and in optimal utilisation of available personal and material resources. It also would be essential to utilise recorded logbooks for evaluation of systemic weak points in tactics. Thus, one could become aware of common deficiencies in tactical entities, and conclude if there are certain components in teaching that should obtain more emphasis and attention.

The collected experiences over last eight years in teaching, training, and testing with my own interactive simulation program, Matimed, will be presented. This PC program produces an accident scene and gives the trainee the task of leading an emergency group to provide prehospital care of casualties. The trainee is obligated to make all decisions and delegate all tasks to the other members of the group. The leader's performance is recorded in a logbook in detailed form, and hence, it is possible to reconstruct the performance step-by-step. Thus, the tutor can draw conclusions about the weak points in the decision-making.

Although there are several casualties at the scene, many trainees stop at the first victim for a long time and start to provide optimal emergency procedures for the first casualty encountered. The importance of primary survey of all casualties cannot be overemphasised.

It also seems to be very difficult to make logical decisions on a priority order of casualties and emergency procedures, although prioritisation of tasks is the key component of triage. There also are deficiencies in utilisation of available resources.

We conclude that there are obvious needs to provide more individual tactical training and improve tactical teaching.

**Key words:** decision-making; multicasualty incidents; individual; prehospital; preparedness; simulation; tactics; teaching; testing; training

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### Simulation and Computer-Aided Training

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In an emergency patient situation as well as in a major accident with multiple injured casualties, the action of medical groups is based on knowledge and experiences. It is relatively easy to obtain theoretical knowledge, but it is much more difficult to collect enough personal experience in