There was no structured methodology used to design, conduct, and report what happened in a way that could be reproduced in subsequent studies. Since the landmark studies in the late 1980s, the qualitative data collection techniques that have been used for a century in the social sciences, were adapted for use in the study of disasters. Use of these techniques has facilitated the study of Disaster Medicine, and has fostered the conduct of scientifically valid and reproducible studies. The repeated demonstration of similar findings in the same and different disasters, thus, has increased the external validity of numerous studies (ability to generalize to other disasters), so that use of these techniques finally is accepted as being "scientific" by the medical community.

This presentation outlined many of the findings from studies conducted within the last decade that have gained sufficient validity to now be considered as "facts". In addition, the discussion will suggest possible implications of these facts for both planning and response to potentially catastrophic events. Such planning activities should include the elimination or modification of manmade hazards, augmentation of the ability of a society at risk to absorb future events without the generation of a disaster (absorbing capacity), as well as enhance the efficacy, efficiency, and benefits of future responses with a minimum of cost. Thus, these facts now must be applied to our practice of Disaster Medicine and should provide us with direction in our future responses. Using the Guidelines for Research and Evaluation presented at this conference and as outlined in the Executive Summary already published in PDM, the next decade should be filled with the identification of many more facts that will help us to refine our future work in Disaster Medicine. What exists now is only the beginning.

Lastly, a set of charges to the Disaster Medicine community was generated by the 5th APCDM. For the most part, these charges entail the review of all that is known about disaster medicine as identified by experts. These reviews are to be placed into a series of white papers. This work is essential to allow for assignment of priorities for future action. A major question surrounding such activities is identification of resources to support the required work. Efforts are underway to find such resources.

The time is right and we must move together to demonstrate our ability to deal with the crises of today and those forthcoming in the future.

Reference:

Task Force on Quality Control of Disaster Management (KO Sundnes, Chair): Health disaster management: Guidelines for evaluation and research in the Utstein Style. Executive Summary. *Prehosp Disast Med* 1999;14(2):43–52.

Keywords: absorbing capacity; evaluation; disaster medicine; facts; future; hazards; research; risk; validity

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A Systems Approach to Triage and Management of a Large-scale Bioterrorist Event

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The most challenging management issues in a bioterrorist event are the demands it will place on the public health and emergency medical services. A large-scale (PICE stage I-III) event will require unique triage and management, and resource allocation decisions. The traditional emergency medical services systems (EMSS) will take a secondary role to emergency public health services. This discussion will define the management requirements and systems architecture required for the population cohort of susceptible, exposed, infected, removed and vaccinated (SEIRV Model) individuals. The concepts of lateral decision-making, triage exclusion criteria, and the use of measures of effectiveness are described for communicable and non-communicable agents. In addition, examples of lessons learned will be illustrated as well as the unique challenges faced by hospital emergency departments.

Keywords: decision-making; emergency medical services systems; management; measures of effectiveness; public health; resource allocation; systems; triage

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Evaluation of Disaster Response in the Tottori-Ken Seibu Earthquake, 2000: A Preliminary Approach Using the Utstein Template

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Introduction: The Task Force for Quality Control of Disaster Management (TFQDM) of WADEM has developed the research Guideline and Utstein Template for use in disaster research. A major earthquake, M 7.3 on Richter scale, struck the Tottori-Seibu district on 06 October 2000. The Japanese Association of Disaster Medicine dispatched a site-visit research team to the affected area.

Methods: This presentation describes a trial use of the application of the Disaster Severity Score for assessment of the status and the response to the earthquake.

Results: The components of the Severity Score included:

1. Medical indicators: Death = 0, Injury = 1, Communicable disease = 0, Other acute and chronic disease = 0, refugees = 2, Missing and trapped = 1, Hospital beds = 0, Total = 6.
2. Public health: Portable water = 1, Food = 0, Nutrition = 0, Immunization = 0, Solid waste = 1, PTSD = 0, Total = 2.
3. Impact on health care system: Health care providers = 0, Transport = 0, Health equipment = 0, Health supply = 2, Hospital beds = 2, Health administration = 0, Total = 8.
4. Preparedness: Plan = 4, Simulation exercise = 5, Training = 4, Total = 13.
5. Deficiency in response capacity: Health staff = 0,

Transport = 0, Health equipment = 0, Hospital beds = 0, Organization = 2, Total = 4.
Total = 57; Average = 13.

Conclusions: A standardized scoring system must be available for evaluative research. This trial revealed following problems. 1) the scoring depends on the view of the referee; 2) the referee must be trained to use the scoring system; and 3) more trials will validate the confidence in the use of the scales for the severity of disasters.

Keywords: earthquake; Guidelines; severity score; Tottori-Ken Seibu earthquake, 2000; Utstein Templates; WADEM
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Evaluation of the Geiyo Earthquake

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Introduction: The magnitude of the Geiyo earthquake was 6.7 on the Richter scale, and the maximum amplitude of the earthquake was 6 degrees.

Objectives: To evaluate the Geiyo earthquake,

Methods: The disaster evaluation-research template was applied.

Results: One-hundred ninety-five persons were injured including one death, and 352,292 houses were damaged. The roads were blocked at 704 points, and 49 routes were closed. Just after the earthquake, many components of the public transportation system such as the railways and omnibus, stopped temporarily, but they were returned into service several hours later. Lifelines also were blocked temporarily. At the one time, the water supply was blocked in 47,767 houses, the leakage of fuel from gas line was identified at 449 points, and the supply of electricity was interrupted in 35,108 houses. Sixty-one hospitals were stricken, but any decrease in the clinical activities was not apparent.

Conclusion: The evaluation for Geiyo earthquake using the disaster evaluation-research template, indicated that the Geiyo earthquake did not produce much damage. The training for the management of the disaster was useful.

Keywords: damage; earthquake; Geiyo earthquake; hospitals; lifelines; training; transportation
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Mortality from the Chi-Chi Earthquake In Taiwan

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Objective: The Chi-Chi earthquake on 21 September 1999 was the most serious disaster in the last century of Taiwan. The purpose of this study was to analyze the pattern and risk factors for mortality.

Methods: It was retrospective designed. Records collected from the DOH were reviewed. Most of the victims received forensic examination. The causes of death were coded by ICD-9. Comparison with the experience of Hanshi earthquake and Loma Prieta earthquake was made.

Results: Most of the death happened at the first 24 hours (92%). More than 90% were dead at scene. Another 6.62% still passed away in the hospitals even under aggressive treatment. Intracranial injury results in most cases of victims, followed by complications of trauma, crushing injury and torso blunt injury. Skull fracture had highest mortality among all types of injury. In every age group, intracranial injury was the leading cause of death.

Conclusion: Head injury was the most cause of death in this earthquake and education for prevention should be emphasized. Compared with the Hanshin and Loma Prieta earthquake, death caused by burn or crushing syndrome was significant lower. It was probably due to different architecture materials and the timing of disaster attacked.

Keywords: earthquake, mortality, disaster
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Problems in Disaster Rescue Work in Taiwan

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Introduction: During disasters, it is common for response teams from long distance to help. They sustained emotional stress in unfamiliar situation. The purpose of this study was to survey the feelings and observations of the rescue workers.

Methods: A questionnaire was distributed to participants before a training program for community disaster responders. It included a series of questions that sought the subjective feeling of their experiences and observations about their work.

Results: A total of 430 questionnaires were distributed, and 384 questionnaires were valid for analysis (89.3%). While asking for deployment to some disaster impact area, their family was the first concern (33.8%). Social support from friends contributed most for relieving their stress (37.2%). Only 32.3% of them thought that traditional taboos hampered rescue work. Most (65.6%) perceived that there was a significant increase in rumors and crimes. While asking what was the major problem in rescue work, a vague command structure was perceived as the most important problem (58.3%).

Conclusion: An efficient command structure and control of rumors are important in disaster response tasks. Social support could be beneficial to relieve tension. Taking care of their families can facilitate their willingness to join distant rescue efforts.

Keywords: command structure; disaster; emotional stress; rescue workers;
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