

vinism, there is little hope that the causes of disasters will be addressed, and it is likely that, no matter what technical progress is made, relief activities will remain stopgap efforts that treat the only symptoms.

**Keywords:** coordination; Geneva Conventions; human rights; humanitarianism; international disaster response law; international humanitarian law; International Red Cross; post-traumatic stress disorder (PTSD); relief; standards; terrorism  
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### **Disaster Management Evaluation: The Current Status of the Standardised Protocol in the Utstein Style**

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**Introduction:** For decades, disasters and events that result in multiple casualties have provoked humanitarian responses to assist the affected population regardless of whether they were caused by deliberate, man-made or natural events. However, the statements of the UN Secretary General in 1971,<sup>1</sup> the US Council on Foreign Affairs in 1987,<sup>1</sup> and conclusions reached following the hurricanes George and Mitch of the Pan-American Health Organisations (PAHO)<sup>2</sup> differ little with regard to the overall criticism of how international disaster management functions. Lack of such improvement can be attributed to the absence of formalized and appropriate research methods.

**Purpose:** The Guidelines and Templates presented in this document propose a structural framework to be used to appropriately design, conduct, and report findings of evaluation and research in Medical and Public Health aspects associated with disasters. Studies performed using this structure will provide the ability to compare and integrate the findings of the evaluations and research of different disasters with the end-point to attenuate or eliminate disasters. This could result from the elimination or reduction of hazards, decreasing the risks for the actuation of the hazard, augmenting the absorbing capacity of the society and environment at risk to prevent the hazard from becoming a destructive event, and enhancing the efficiency, effectiveness, and cost:benefit of preparedness and responses to disasters.

**The Guidelines:** This report is the result of extensive research and discussions by a Steering Committee over a course of seven years, and by invited participants in two International Workshop (Gothenburg, Sweden, 1997 and Lyon, France, 2001). The process was endorsed by the General Assembly of the World Association for Disaster and Emergency Medicine (WADEM) in Osaka in 1999.<sup>3</sup> Since summer 2000, the World Health Organisation (Department for Emergency and Humanitarian Action) has participated both in the ongoing development and in its implementation as basis for research and teaching.

The major impediments that influence the conduct of research and evaluations of disasters have been addressed systematically as the four pillars of importance to support

the "Table of Research":

1. Conceptual Framework comprises standardized definitions and concepts necessary to minimize confusion;
2. Scientific Methods comprise methods validated by the social sciences and applied to disaster research and evaluation;
3. A Template identifies chronological phases and functions that should be incorporated into the structure of research and evaluation projects. (Regardless of type of disaster: the phase of impact may vary from seconds (earthquakes) to years (droughts), but still is the same phase.)
4. Inventory comprises a list of the Basic Societal Functions as well as the potentially appropriate indicators of change from pre-event baselines to be followed through the disaster phases.

This permits comparative research with both internal and external validity. In this context, the concept of "Best Outcome Without Assistance (BOWA) will be developed.<sup>3</sup> The ultimate goal is to identify and modify these key factors causing disasters before they happen. The conceptual framework allows such analysis. Complex emergencies and terrorist acts are included in this objective.

Appropriate Indicators will be identified to measure and differentiate between efficiency, effectiveness, and benefit. One commodity (or action) may serve both as a independent and dependent variable. Indicators may be quantitative or qualitative. Those indicators required for computation of the Disaster Severity Score and Health Disaster Severity Score have been developed. Further indicators must be developed during further use of the guidelines.

**Conclusion:** Use of the Disaster Research Template should provide all elements needed to analyse disasters, their potential for reduction, and their management in an institutionalised manner.

#### **References:**

1. HRH Prince Sadruddin Aga Khan: *Improving Disaster Management of the United Nations*. United Nations Management & Decision-making Project, UNA-US, New York
2. PAHO/WHO: Evaluation of preparedness and response to Hurricanes George and Mitch: Conclusions and recommendations. *Prehosp Disast Med* 1999;14;53-65.
3. TFQCDM, Chair: Sundnes KO: Health disaster management: Guidelines for evaluation and research in the Utstein style: Executive summary. *Prehosp Disast Med* 1999;14;43-52.

**Keywords:** basic elements; BOWA; damage probability; disaster medicine; evaluation; qualitative methods; quantitative methods; research; severity scores; template; vulnerability

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### **Future of Disaster Medicine**

#### **Disaster Medicine in the 21st Century**

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The events in New York City and Washington, DC on 11 September, 2001 not only marked the largest, single, coordinated terrorist attack in history, but the resulting disinte-

gration of the World Trade Center towers represented the largest structural collapses in history. Only weeks later, the eastern United States found itself gripped by a series of anthrax letter attacks, which ultimately caused inhalational anthrax in 11 (killing 5), produced cutaneous anthrax in 11 others, and led to tens of thousands of others potentially exposed to anthrax-tainted mail being placed on a 60-day course of prophylactic antibiotics. Are these events random and idiosyncratic, or do they provide a sobering window into what the next 99 years of the 21st Century portend?

This presentation examined the types of disasters likely to occur during the 21st Century, and examined the forces likely to be responsible. From global warming to geopolitical tribalism, the most important factor is an ever-expanding human population trapped within a finite planet, pitting growing demands against limited resources. Medical disasters are and will continue to be a frequent result of this disequilibrium.

Regardless of the root causes of future disasters, disaster managers will be faced with planning and preparing for events that impact their communities in ways that both are routine and unprecedented. If there is any single lesson to be learned from recent catastrophic medical disasters in the world, it is that adequate medical disaster response depends on local resources in the initial period after an event. For this reason, it is imperative that those involved in Disaster Medicine become actively involved in the development of local emergency medical resources, both out-of-hospital and in-hospital, in areas of the world in which emergency medicine is underdeveloped.

**Keywords:** anthrax; disasters; global warming; terrorist attacks; World Trade Center  
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### Disaster Medicine in the 21st Century: Issues and Challenges

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During the last several decades, there has been increasing understanding and study of disasters around the world, and the science and art of disaster mitigation, preparedness, response, and recovery have matured considerably, and have become much more sophisticated. Despite these advances, the discipline of disaster medicine still faces significant challenges including the unpredictability of events and casualties, communication, resource preparedness and allocation, command structure and human networking, patient management, and more. Personnel involved in disaster management always will need to confront these fundamental issues in every natural and man-made disaster. The technological and human advances of the 21st century will provide Disaster Medicine professionals with unprecedented solutions and novel challenges that never before have been faced by their predecessors. These issues include:

1. Globalization secondary to improved telecommunications infrastructure, leading to:
  - a. The development of global villages in response to

disasters;

- b. Increasing resources and capacity for disaster mitigation and management;
  - c. Personal telecommunications options; and
  - d. Increasing need for communication protocols and networking;
2. Increasing incidence and devastation of manmade disasters, due to:
    - a. Increasing dissemination and knowledge of bioterrorism and toxic disasters;
    - b. Increasing population densities; and
  3. Increasing sophistication of the general public and their expectations of timely and effective responses.

This presentation explored these distinctive challenges in this century, and how we might anticipate and face these issues.

**Keywords:** challenges; disaster medicine; globalization  
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### Disaster Medicine in the 21st Century: Taiwan in the Asia-Pacific

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Taiwan is located in a high-risk area of the Asia-Pacific, and hence, it is subject to great damage, e.g., Ji Ji Earthquake of 21 September 1999 that resulted in a large number of casualties with a high rate of mortality and morbidity. This tragedy indicated that the preparation for immediate response to the event was inadequate. Thus, extra efforts in implementing a Disaster Medicine program have become important.

There are many examples of works done in the Disaster Medicine in many countries including Japan, USA, etc. However, the preparation in Disaster Medicine still is inadequate in Taiwan, and further study is mandatory. Based on the experiences from the Ji Ji Earthquake, studies of the epidemiology, traumatology, psychiatric disorders, epidemic diseases, and changes in primary illnesses, are needed. Knowledge of Disaster Medicine can be used in future planning and preparation to deal with disasters. Recommendations for such studies also must include other fields such as medical human resources, training schedules, funding programs, research institutes, executive department, etc.

In summary, there are six possible issues that need immediate attention: 1) Establish a command system; 2) Increase current research funding for post-disaster operation and research; 3) Set-up central agency for the execution, such as the CDC, etc.; 4) Reinforce the emergency medical system for disaster response; 5) Adopt a response of a mental healthcare system; and 6) Appoint major medical information facilities to undergo immediate disaster response and prevention.

**Keywords:** Disaster Medicine; earthquake; knowledge; planning; research; Taiwan  
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