

# Key topics for emergency health education in the Pacific

**Abstract:** This discussion of key emergency health topics is meant to provide a primer for the public health practitioner beginning the study of emergency preparedness and response. The discussion focuses on the key concepts of: general principles of disaster management; emergency operations planning; incident management systems; disaster communications' mass casualty management; hazardous material response.

Mark Keim\*

## Introduction

In February 2000, CDC performed a comprehensive public health and medical vulnerability assessment in the Republic of Palau. One of the six recommendations made by CDC to the Palau Ministry of Health, (and for all Pacific island nations), was to "promote the education and training of disaster responders"

The training itself should be simple and easily understandable. A train-the-trainers system of training would also allow Pacific islands to develop a sustainable capacity for self-sufficiency and facilitate the legacy of this gain for future generations. The term of the training sessions should also be relatively brief, so as not to cause undue disruption of the attendees' ongoing work and public service. Sources for such training may include the World Health Organization, and US Centers for Disease Control and Prevention. See Table 1 is a listing a core curriculum content for such training, according to the potential target audience.

This discussion of key emergency health topics is meant to provide a primer for the public health practitioner beginning the study of emergency preparedness and response. This discussion will focus on the key concepts of: general principles of disaster management; emergency operations planning; incident management systems; disaster communications' mass casualty management; hazardous material response.

---

\*National Center for Environmental Health, Centers for Disease Control & Prevention, 4770 Buford Highway, MS-F38, Atlanta, GA, USA 30341-3724. E-mail: mkeim@cdc.gov

## Key topics

### Emergency operations planning

Disaster or "Emergency Operations Plans", EOP's, (as they will referred to for the purposes of this discussion), provide a public document for the development of contingencies and assignment of responsibilities in the case of catastrophic events. The functions of a jurisdiction's emergency operations plan are listed in Table 2.

The centerpiece of disaster management is the EOP. First, the EOP defines the scope of preparedness activity necessary to make the EOP more than a paper plan, (or a "paper tiger"). Training and exercises depend on an EOP. Second, the EOP facilitates response and short term recovery by making decisions in advance of time-intensive disaster events. Finally, an EOP provides a jurisdiction with a focus of resources for risk-based preparedness measures. Emergency responders at the executive, managerial and operational levels should all be trained regarding the functions of their EOP.

**Disaster or "Emergency Operations Plans", EOP's, ... provide a public document for the development of contingencies and assignment of responsibilities in the case of catastrophic events.**

### Incident Management Systems, IMS

Confusion and chaos are commonly experienced during the onset of a medical disaster. This becomes very problematic because those early hours are many times the most critical in an emergency response. However, these negative effects can be minimized if management responds quickly with structure and a focused direction of activities. Plans, SOP's and Checklists cannot conceive of every foreseeable problem. Even though task - based planning may assign responsibility and provide the necessary detail for much of emergency response, tasks must also be applied with coordination, direction and control.

A useful analogy involves a comparison of playing baseball and playing cricket. Both involve the "tasks" of throwing a ball, striking it with a bat and running the bases. However, if baseball players and cricket players

**Table 1. Suggested core curriculum content for emergency public health training, according to the potential target audience**

Course Content	Potential Trainees (and Future Trainers)
Emergency Operations Planning	Planning coordinator Planning committee members
Incident Management Systems General Principles of Disaster Management Disaster Communications	Planning coordinator Planning committee members Emergency medical care providers Fire department staff Public safety / Law enforcement staff Search & rescue personnel Ministry of Health operational staff
Mass Casualty Management	Planning coordinator Emergency medical care providers Physicians & nurses Search & rescue personnel Ministry of Health operational staff
Hazardous Materials Emergency Response	Planning coordinator Fire department staff Emergency medical care providers

are called upon to play a game together, the first hour or two may be wasted learning common rules of play. The time sensitivity of disasters cannot afford to allow for this wasted time. Instead there must be a set of common and broadly accepted ground rules for the direction and control of the event. Luckily, each jurisdiction does not have to “reinvent the wheel” when it comes to developing disaster management systems. There are already systems in existence that have been widely used and validated according to a broad variety of challenges.

The Incident Management System, IMS, is a broadly accepted model for emergency management. This model is the basis for all public safety management systems in the US, including a range from small towns to large metropolitan cities. The elements and sections of IMS are functions and not necessarily positions, so they interface well with the concepts of function-based planning. The IMS allows for a unified command that has a clear chain of authority. The approach develops a “line and staff” method of work. The “line” function (operations) is supported and coordinated with “staff” functions, (logistics, planning, and administration). (See Figure 1)

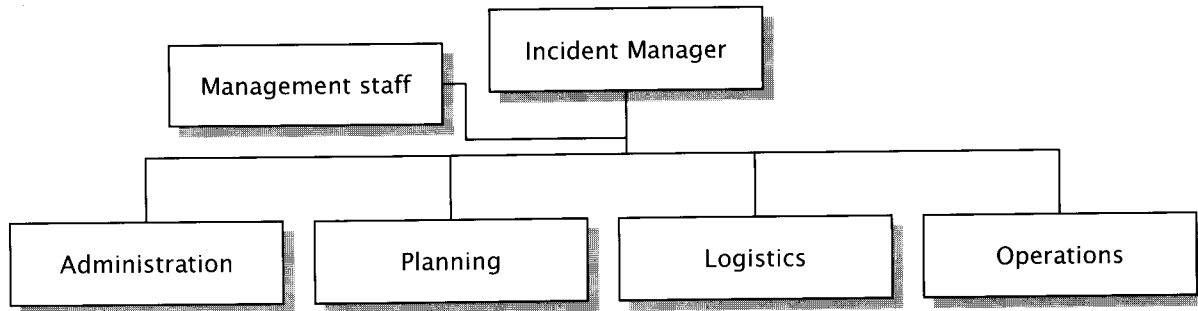
**Table 2. Functions of an EOP:**

- Assigns responsibility to organizations and individuals for carrying out specific actions at projected times and places in an emergency.
- Sets forth lines of authority and organizational relationships, and shows how all actions will be coordinated
- Describes how people and property will be protected in emergencies and disasters
- Identifies personnel, equipment, facilities, supplies and other resources available for use during response
- Identifies steps to address mitigation concerns during response activities

**Table 3. The four main functional sections of the IMS**

Planning	Providing documentation, (med records), technical assistance and planning.
Administration	Provides support regarding finance, time, staffing, liability and contracts (Rarely is an incident large enough to justify separating Planning and Administration)
Logistics	Provides support in the form of communications, medical supplies, facilities and mobilization.
Operations	The delivery of disaster care and emergency public health interventions.

Figure 1. Basic structure of the Incident Management System



The IMS is now applied to disasters on several levels of management. In the prehospital setting, IMS is utilized in the form of a method most commonly referred to as the "Incident Command System" or ICS. An IMS has also been applied to the hospital setting. This form of IMS has been referred to as the Hospital Emergency Incident Command System, or HEICS. HEICS is used to link the hospital with the prehospital ICS. There is also a form of IMS that is used by emergency managers and decision-makers on an even larger scale. This system is known as Unified Command. The Unified Command system is then used to link the healthcare system and the overall system of government on a jurisdictional or national level.

### The Hospital Emergency Incident Command System, HEICS

The Hospital Emergency Incident Command System (HEICS) is one example of an emergency management system that employs a logical management structure, defined responsibilities, clear reporting channels, and a common nomenclature to help unify hospitals with other emergency responders. There are clear advantages to hospitals of all sizes that use this particular emergency management system. HEICS offers the following features:

- predictable chain of management
- flexible organizational chart allows flexible response to specific emergencies
- prioritized response checklists
- accountability of position function
- improved documentation for improved accountability and cost recovery
- common language to promote communication and facilitate outside assistance
- cost effective emergency planning within health care organizations

Like IMS, HEICS is an emergency management system also depicted by positions on an organizational chart. (See Figure 2 below). Each position has a specific mission to address an emergency situation. Each position has an individual job action checklist designed to direct the assigned individual in disaster recovery tasks. The HEICS

plan also includes forms to enhance this overall system and promote accountability. Figure 2 is a comprehensive organizational chart for HEICS. Smaller hospitals may require a less complicated system and would therefore assign only what positions were available.

The HEICS plan is flexible and scalable. Only those positions, or functions, which are needed should be activated. The HEICS plan allows for the addition of needed positions, as well as the deactivating of positions at any time. This equates to promoting efficiency and cost effectiveness. The chart may be fully activated for a large, extended disaster such as an earthquake. However, full activation may take hours or even days. The majority of disasters or emergencies will require the activation of far fewer positions. Figure 2 represents a version of the full HEICS organizational chart. In addition, a smaller version called the Medical Aid Station Incident Command System (MASICS) was created for a free-standing clinic or outpatient medical complex. More than one position may be assigned to an individual. Situations of a critical nature may require an individual to perform multiple tasks until additional support can be obtained. This is made possible with the use of the individual position checklists that are also included within HEICS support materials.

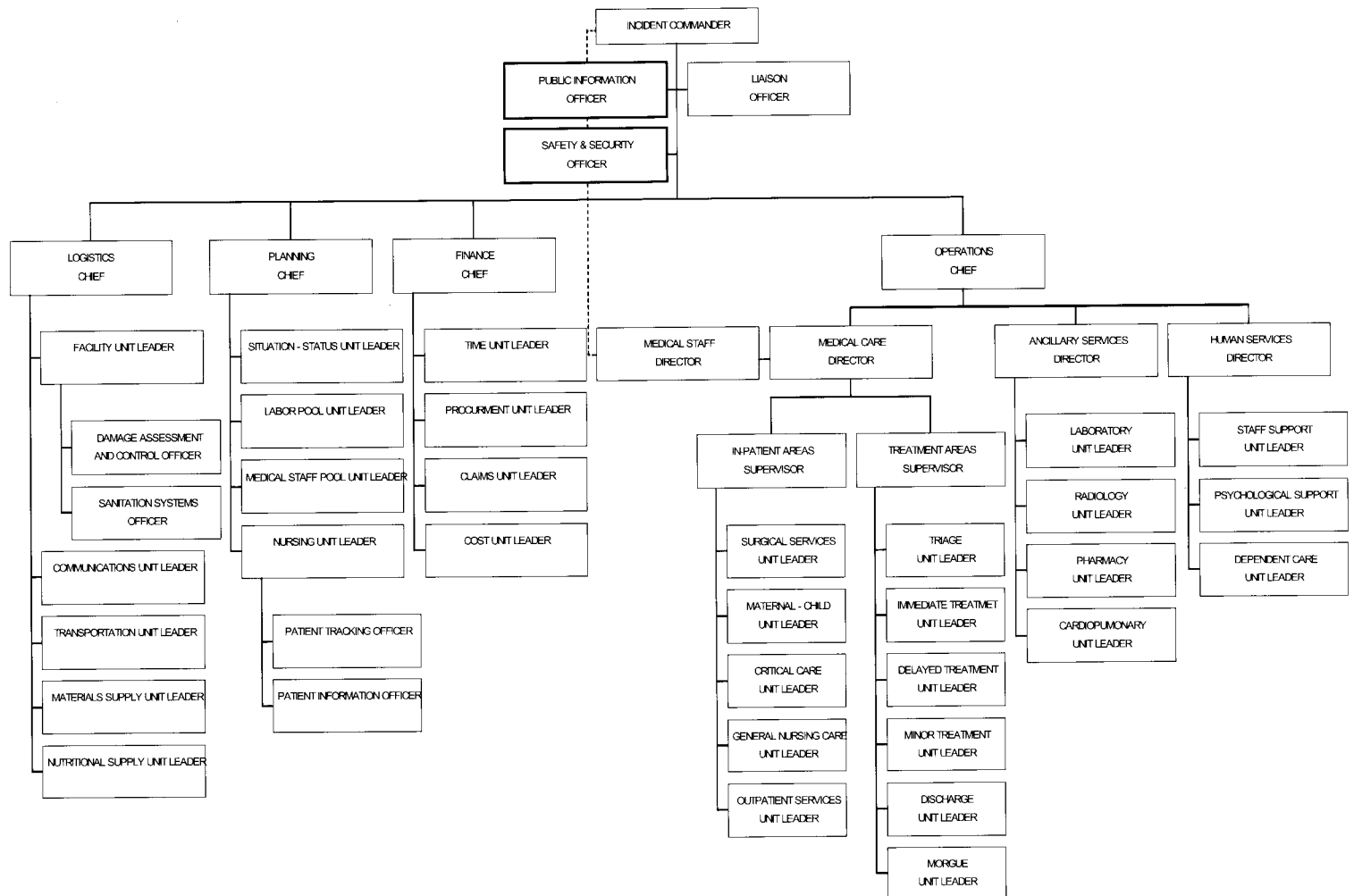
HEICS and all of its support material is offered free of charge. Implementation templates and instructional materials are available free of charge over the internet, <http://www.emsa.ca.gov/download.htm>

and make the cost of converting to the HEICS system minimal. HEICS is financially prudent as it assists the medical facility in staying open following a disaster and promotes the restoration of day-to-day hospital function. It is an efficient method for managing emergencies of disastrous proportions, as well as those of a lesser degree.

### Disaster communications

Effective emergency response is contingent upon communication at many levels. Communication during a disaster can become especially difficult. In many disasters, communications represent the weakest link in an emergency response. For this reason, a basic level of

Figure 2. A comprehensive organizational chart for HEICS



training is necessary to familiarize responders with these more robust means of communication during a disaster.

Cellular and hardwired telephones and telefaxes may become jammed with overuse or disrupted by the effects of the disaster itself. Travel may be limited and even word-of-mouth may not pass according to normal channels. Television, radio stations and internet connections may be damaged and inoperable. Copy machines, computers and telefaxes become useless without electrical power. Responders and the public are then left to utilize non-traditional methods of communicating, including battery-operated radios and even messenger pools. The function of these systems may be limited by a lack of familiarity with radio operation, protocols, differing bandwidth frequencies, airwave saturation or a less-than-expected broadcast range.

### General principles of disaster management

When referring to disaster response the Caribbean island people have said, "An animal never steps in the

same hole in the road twice, only people do". In that sense, people always seem to make the same recurrent mistakes during disaster response. Just as there are lessons to be learned regarding disaster communications, there are also other basic principles of emergency response actions that are best appreciated before the disaster occurs. There are also many disaster myths and misconceptions that may serve to misguide even the best of disaster plans. For this reason, it is important that emergency managers, disaster planners and key decision-makers also have an appreciation for some of the basic tenets of disaster mitigation and response. This allows for a more focused and cost-effective effort during a time when resources may be very scarce. There are certain core subjects involving operational issues of disaster management that warrant the special attention of basic training. Some of these general principles are listed as follows:

- Warning, Activation and Public Information
- Evacuation
- Mass Care & Food Distribution
- Resource Management
- Water & Sanitation

- Disease & Injury Patterns
- Rapid Assessment & Surveillance
- Security

## Mass casualty management

Mass casualties may present an overwhelming demand upon the existing healthcare system. In addition, disasters are also known to cause an enormous increase in the need for basic primary and preventive care. There are many difficult issues that may arise. Are temporary hospitals effective? How should triage be performed and by whom? Are community outreach missions necessary? Is mass immunization an efficient use of resources during a disaster? How are mortuary issues managed?

Without the benefit of training or extensive disaster experience, the most effective methods for delivery of medical care under austere conditions may not always be clear to those faced with the task. Methods for search and rescue, triage, mass casualty management, patient documentation and tracking during disasters vary considerably from routine methods of care. Care-providers are simply not normally prepared to deal with the conditions and challenges that may occur during disaster situations. For this reason, health and medical responders should receive additional training to also involve the basic tenets of disaster medicine and emergency health measures.

## Hazardous materials response

Emergency operations involving hazardous materials are especially problematic. The potential for mismanagement of these incidents may result in not only excess

morbidity and mortality among patients, but may also injure or kill the responders themselves. Hazardous chemicals currently exist in many forms within most jurisdictions and may involve commonly used substances, such as fuels, agricultural products, manufacturing chemicals and commercial products. Some nations also face additional toxic risk associated with clandestine drug labs that may be used to process narcotics like methamphetamine, cocaine or heroin.

Hazardous material contamination of the medical care equipment or even the facility may result in the subsequent complete loss of that critical asset. And since most responders do not normally deal within the realm of toxic chemical exposures, the baseline knowledge is usually inadequate. Training programs have been developed that serve to educate first responders and emergency personnel regarding the effective management of toxic chemical exposures. These courses include skill development involving hazard identification, decontamination technique, exposure prevention, scene management, occupational health and medical management.

## Summary

Pacific island nations are at high risk for national health emergencies. These nations should promote the education and training of disaster responders. This training should include key concepts as follows: general principles of disaster management; emergency operations planning; incident management systems; disaster communications' mass casualty management; and hazardous material response. ■

Each is given a bag of tools  
 A Shapeless mass,  
 A book of rules;  
 And each must make —  
 Ere life is flown —  
 A stumbling block  
 Or a stepping stone

**R L Sharpe from the poem 'A Bag of Tools'**