

approximately 1,000 kilometers per hour to strike the Indian coastline. The disaster response at a crippled, 100-bed hospital situated on the beachfront (2,028 kilometers from the epicenter) is described. This paper underlines the effectiveness of the Pan-American Health Organization/World Health Organization (PAHO/WHO) guidelines for natural disasters in the Indian Ocean setting.

**Methods:** The demand on the healthcare system in the affected area (population 40,000) was measured in terms of time, casualties, personnel, and resources.

**Results:** The total death toll in the area was 62 (with 56, four, and two bodies being brought in on Days 1, 2, and 3, respectively). Of the 62 total deaths, 17 (27%) were male and 45 were (73%) female. Among them, 19 were children and four persons were >60 years of age. The bodies immediately were handed over to the relatives on identification or sent to the mortuary. The attendance in the makeshift Accident and Emergency Department from the day of the tsunami was 219, with a surge of 339 patients on Day 2. Thereafter, there was a progressive decline: 149, 138, 116, 94, 73 on Day 7, which indicated a return to the baseline census. Injuries essentially were minor. Treatment for pulmonary edema, secondary to salt-water drowning, yielded results in two children. The outreach programs consisted of medical camps, health education, chlorination of drinking water supply, and spraying bleaching powder on wet areas. There were no outbreaks of water-borne illnesses. Post-traumatic stress disorder (PTSD) symptoms, such as panic attacks, nightmares, insomnia, fear of water, being startled by loud sounds, and palpitations were found in 15–17% of the patients.

**Conclusion:** Strict adherence to the PAHO/WHO guidelines proved to be cost-effective, in terms of resource allocations and disaster response. Unnecessary mass vaccinations, mass disposal of bodies without identification, and an influx of untrained volunteers were avoided. Though on Day 3, the hospital was cleaned of debris and seaweed and the equipment was restored, it could not be made functional by the hospital staff due to fear, rumors of a fresh tsunami, PTSD, and having their own homes destroyed.

**Keywords:** bodies, disposed of; deaths; guidelines; hospitals; Pan-American Health Organization (PAHO); post-traumatic stress disorder (PTSD); resource allocation; tsunami; water-borne illnesses; World Health Organization (WHO)

*Prehosp Disast Med* 2005;20(3):s114–s115

## Management of the Dead following the Southeast Asian Tsunami Disaster: A Regional Perspective

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**Introduction:** Management of the dead is one of the most challenging aspects of disaster response. Existing knowledge of methods and approaches largely has been developed from aviation and transportation crashes. To develop a better evidence base and inform emergency response during future disasters, it is vital that lessons from natural disasters are systematically documented and considered.

**Objective:** To document the management of the dead from a public health disaster management perspective, following the Southeast Asia tsunami.

**Methods:** A descriptive, multiple case study design was used. Case studies were elaborated for Indonesia, Thailand, and Sri Lanka. Data sources included media reports, key documents, and semi-structured interviews with key informants both in the affected countries and internationally.

The management of the dead was considered with regard to the following propositions:

1. Risks of infectious disease from dead bodies are negligible for the public. However, those who handle the dead may be exposed to blood-borne viruses, tuberculosis, and gastrointestinal infections. To avoid possible contamination of groundwater, cadavers should be buried at least 250 meters away from drinking water sources, and at least 0.7 meters away from the saturated zone.
2. Countries are recommended to develop a preparedness plan for managing fatalities following disasters. This plan should consider four main steps in the management of the dead: (a) recovery of the bodies; (b) transfer and storage of cadavers; (c) identification; and (d) final disposal of remains.
3. There currently is little information about the resources needed to respond to mass-casualty disasters. However, for any operational intervention, manpower, equipment, and finances are likely to be important. These can be considered for each step in the management of the dead.

Fieldwork for this study will take place during February–March 2005. The following results will be presented: (1) a description of how the dead were managed in Indonesia, Thailand, and Sri Lanka; (2) good practices will be highlighted and suggestions on how to improve practice in the future will be made; and (3) recommendations for response in future mass-casualty, natural incidents also will be made.

**Keywords:** management of the dead; natural disasters; preparedness; resources; response; risk; tsunami

*Prehosp Disast Med* 2005;20(3):s115

## Membership of an International Forensic Investigation Team—A Personal Perspective

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