of 201 persons were killed, 29 were declared missing, and 83 people were wounded seriously. The number of dead and missing was equal to 4% of the island's population. An emergency transport system using helicopters was implemented and many victims were transferred to Hokkaido Island.

3. On 12 October 2004, a joint seminar between Indonesia and Japan sponsored by JICA involving the emergency medical teams relative to the emergency medical care that should be provided during a sudden impact disaster was held in Jakarta. Coordination between Indonesia, Malaysia, and the Philippines were discussed with reference to the use of a communication satellite. Two months after this discussion, the Sumatra earthquake occurred. The early medical mission was welcomed in Indonesia and coordinated with Indonesian medical staff.

Conclusion: Japan not only provided JMTDR, but also provided financial aid. An Indian Ocean tsunami-warning network must be established as soon as possible; hopefully it will operate like the Pacific Ocean tsunami-warning networks.

Keywords: Banda Aceh; coordination; earthquake; Indonesia; Japan; Japanese Disaster Relief (JDR); Malaysia; Philippines; tsunami; warning systems
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Lesson from Simeulue Island

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Introduction: Simeulue is located in southwest Aceh Province and was the island closest to the epicenter of the 26 December 2004 earthquake. This study seeks to describe how the islanders coped with the tsunami disaster, and suggests an appropriate way of supporting disaster areas. Amazingly, in spite of Simeulue's location, only a few of the island's 79,000 people were killed. This was because residents, remembering tales from their elders about huge waves following large earthquakes, fled from the shores before the tsunami hit. In the early stages after the tsunami, only a few organizations provided relief operations on Simeulue. Palang Meran Indonesia (PMI) started a mobile health clinic on 15 January and was the first and the only organization to conduct curative health activities in the island. On 30 January, the Japanese Red Cross Society (JRCS) joined the PMI's efforts.

Methods: PMI and JRCS operated mobile health clinics. Islanders were interviewed, the general condition of affected villages was examined, and patients' records were abstracted.

Results: When the magnitude 9.0 earthquake struck the island, islanders escaped from the beach as they followed their oral tradition. This reaction resulted in an incredibly small number of victims. While only limited relief items were provided to the island, local residents built temporary shelters using pieces of wood. Chronic diseases were the most common illnesses treated in the mobile health clinics.

Conclusion: External relief operations sometimes underestimate the capacity of local communities to care for themselves. The case of Simeulue Island presents a challenge to international relief operations of tsunami disasters.

Keywords: Aceh Province; capacity; chronic diseases; earthquake; mobile health clinics; relief; Simeulue Island; tsunami
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Community Health Services Clinic in Bangmuang Evacuation Center in Phang Nga Province in Thailand during the First Month following the Tsunami: A Possible Model of Primary Care in a Rescue Center during a Disaster

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Introduction: On 26 December 2004 at 09:00 hours, an earthquake with a magnitude of 9.0 on the Richter scale struck the area off the western coast of northern Sumatra, triggering massive tidal waves (tsunami). The tsunami waves inundated costal areas in countries all around the Indian Ocean rim including Thailand, causing destruction of infrastructure and a huge number of fatalities and injuries. In Thailand, on 25 January 2005, 5,388 fatal cases were confirmed, 3,120 people were reported missing, and 8,457 people were wounded.

Objective: To study the function and patient characteristics of a health clinic erected in an evacuation center following the natural event.

Methods: The IDF home front command medical department sent a research delegation to study the response of the medical system in Thailand to the disaster. The delegation included three physicians and a population behavior sociologist, experienced in hospital preparedness for disaster and emergency medicine. The delegation worked from 29 January–04 February 2005. On 02 February 2005, the delegation met with Thai healthcare officials and visited a community health clinic that was erected in an evacuation center in Bangmuang in the province of Phang Nga. The delegation met and questioned the staff of the health clinic and reviewed patient logs from 05 January–02 February 2005. The methods of research included: (1) open and closed questionnaires; (2) reading debriefing reports; and (3) observation of the infrastructure of the medical facility.

Results: The erection of evacuation centers commenced on the day following the tsunami. Such a center was erected in Bangmuang. The center housed 390 families and a total of 1,859 inhabitants. A healthcare clinic was set up in a tent in the center of the camp in order to provide primary health care for the inhabitants. The clinic was staffed by volunteer nurses from Thai hospitals that rotated on a weekly basis. Operating hours were 08:00–20:00 hours, and a visiting physician staffed the clinic from 08:00–14:00 hours. The average patient volume was 80–100 visits per day: around 5% of the camp population that visited the clinic every day. Most visits occurred during the physician

visiting hours. The common medical problems listed in the patient log were: (1) respiratory diseases: 40%; (2) skin disorders: 15%; (3) orthopedic disorders and myalgia: 15%; (4) asthma: 10%; (5) anxiety and insomnia: 5%; and (6) wound evaluation and dressing changes: 5%. Many patients visited the clinic without any concrete medical complaints in order to talk to the staff and receive emotional support.

Conclusion: The primary healthcare needs within the evacuation center for disaster victims were relatively large. The evacuation center and the clinic became operational on the day following the tsunami. Most recorded visits were for medical problems not directly related to the actual natural disaster, with respiratory diseases including asthma accounting for 50% of all visits. The rapid deployment of a health clinic staffed by medical personnel from unaffected areas of the country and volunteers from abroad enabled coping with the medical needs of the evacuation center population.

Keywords: clinics; diseases; emotional support; primary health care; staffing; tsunami; visits

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Thailand's Medical System Response to the Tsunami Disaster: Infrastructure, Population and Medical Teams

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Introduction: On 26 December 2004, an earthquake with a magnitude of 9.0 on the Richter scale struck the area off the western coast of northern Sumatra, triggering massive tidal waves (tsunami). The tsunami waves inundated costal areas in countries all around the Indian Ocean rim including Thailand, causing destruction of infrastructure and a huge number of fatalities and injuries. On 25 January 2005 in Thailand, 5,388 fatal cases were confirmed, 3,120 people were reported missing, and 8,457 patients were wounded. Key elements of the medical system response in Thailand were analyzed in order to delineate the unique characteristics of such a disaster and the preferred mode of preparedness.

Methods: The IDF home front command medical department sent a research delegation to study the response of the medical system in Thailand to the disaster. The delegation included three senior military physicians and a population behavior sociologist who are experienced in hospital preparedness to disaster and emergency medicine. The delegation worked from 29 January–04 February and questioned Generals of the Thai Air Force, the Director of the Ministry of Health, three provincial health services directors, six managers of public hospitals, two heads of community clinics, and two rescue camps community health centers' commanders and their teams. The collection of data was done by open and closed questionnaires, reading the debriefing reports of each organization, and observation of the infrastructure of all of the medical facilities.

Results: There was no alert before the event occurred. In the first minutes after the event, survivors reported their life-saving behaviors: climbing trees, running to the mountains, or giving aid to their beloved. Interestingly, an exceptional survival of children in some villages were found, where children were trained, as part of a popular children's game, to run from the sea waves to the mountains.

First responders were mostly the injured survivors themselves and their relatives, who arrived to hospitals in any way they could. On Phi Phi Island, there were 700 casualties for every physician. For that reason, these few physicians reported being busy in patients' triage and hemmorhage control. For the first day after the tsunami, there was effectively no communication between Phi Phi Island and Thailand. Hospitals in the affected provinces were overwhelmed by casualties—between 200 and 1,100 casualties in one hospital. Secondary distribution was done from the affected area's hospitals to hundreds of medical facilities and hospitals all over the country. Medical response was based on upgrading and reinforcement of the regular medical facilities in Thailand and not on the rapid deployment of new ones. Hospitals' crews who reported having participated in a recent drill or any other preparedness plan reported a better personal capability to give medical aid, compared to those who were not prepared.

Discussion: A well-organized alarm and communication system could save many lives. An operational alarm system, similar to war-time alarm, arriving one and one-half hours before the wave flooded Thailand's shores, could have saved many lives. An efficient and well-structured communication system could enable a faster recruitment of medical forces to Phi Phi Island, as well as faster evacuation from the island to hospitals in Thailand.

Population preparedness should focus on ongoing teaching of first aid and training of rescue maneuvers. Preparing children using games and simulations can be less frightening, but still effective. Education of first responders should concentrate on rapid triage and hemmorhage control.

Overwhelmed hospitals should rearrange themselves for triage and life-saving treatment followed either by discharge or secondary distribution to many other medical facilities. In such a way, every hospital deals with fewer casualties and can provide a reasonable level of medical care. The model of reinforcement and versatility of the existing medical facilities seems to be applicable during natural disasters, especially in a scenario like this, in which there is lack of communication. Casualties, who evacuate themselves in such a chaotic scenario, would find it easiest to arrive at the near-by medical facilities that serve them everyday. Preparedness of hospitals' crews is crucial. Prepared personnel felt much more suited, both medically and mentally, to deal with a disaster of this scale.

Conclusion: Preparedness for a tsunami is very similar to preparedness for wartime scenario. It should include three main elements: (1) preparing infrastructure and alert systems; (2) preparing the population of all ages; and (3) preparing hospitals' crews.

Keywords: alert; children; communication; games; hospitals; infrastructure; preparedness; tsunami

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