

Disaster Healthcare System Management and Crisis Intervention Leadership in Thailand—Lessons Learned from the 2004 Tsunami Disaster

Maj. Rami Peltz, MA;¹ Col. Issac Ashkenazi, MD, MPA, MSc;^{2,3,4} Dagan Schwartz, MD;³ LtC. Ofer Shushan;¹ Cap. Guy Nakash, MD;¹ Maj. Adi Leiba, MD;^{1,3} Brig. Gen. Yeheskel Levi, MD;⁴ Col. (res) Avishay Goldberg, PhD;³ Col. Yaron Bar-Dayan, MD^{1,3}

1. Israeli Defense Forces (IDF) Home Front Command
2. Medical Services and Supply Center, IDF Medical Corps
3. Faculty of Health Sciences, Ben Gurion University, Beer-Sheva, Israel
4. IDF Medical Corps, Surgeon General Headquarters

Correspondence:

Col. Dr. Y. Bar-Dayan MD, MHA
16 Dolev St. Neve Savion, Or-Yehuda,
Israel
E-mail: bardayan@netvision.net.il

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Abstract

Introduction: Quarantelli established criteria for evaluating the effectiveness of disaster management.

Objectives: The objectives of this study were to analyze the response of the healthcare system to the Tsunami disaster according to the Quarantelli principles, and to validate these principles in a scenario of a disaster due to natural hazards.

Methods: The Israeli Defense Forces (IDF) Home Front Command Medical Department sent a research team to study the response of the Thai medical system to the disaster. The analysis of the disaster management was based on Quarantelli's 10 criteria for evaluating the management of community disasters. Data were collected through personal and group interviews.

Results: The three most important elements for effective disaster management were: (1) the flow of information; (2) overall coordination; and (3) leadership. Although pre-event preparedness was for different and smaller scenarios, medical teams repeatedly reported a better performance in hospitals that recently conducted drills.

Conclusions: In order to increase effectiveness, disaster management response should focus on: (1) the flow of information; (2) overall coordination; and (3) leadership.

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Introduction

Quarantelli established criteria for evaluating the effectiveness of disaster management and planning.^{1,2} This set of principles suggests examining disaster management separately from disaster planning.

The Tsunami that flooded the coastal area of Thailand on 26 December 2004 was an extraordinary challenge for the Thai health system in aspects of leadership, disaster management, and response.³

The objectives of this study were to analyze the response of the Thai health system in the wake of the Tsunami in reference to the Quarantelli principles, and to validate these principles in a scenario of a disaster caused by a natural hazard. This study also sought to distinguish the most important principles from the 10 Quarantelli defined.

Methods

The Israeli Defense Forces (IDF) Home Front Command Medical Department and the Medical Corps sent a delegation to study the response of the Thai medical system to the Tsunami disaster. The delegation included three physicians and a population behavior sociologist, all experienced in hospital disaster preparedness and emergency medicine.

Preparations began one week following the disaster and included: (1) debriefing Israeli Medical Corps officials that had been to Thailand following the

Tsunami; and (2) obtaining initial information about the affected areas. To develop research questions and the format for obtaining information, the delegation met with Israeli Ministry of Health officials who deal with mass-casualty preparedness and disaster management. The delegation coordinated the visit with Thai officials and scheduled multiple site visits and interviews.

The delegation worked between 29 January–04 February 2005. The delegation toured about 1,000 kilometers of Tsunami-affected coastline and met with Thai officials from the Ministry of Public Health, Air Force, as well as provincial governors and health officials, and provincial and district hospital staff and directors. The delegation also visited pre-hospital facilities, reviewed patient logs, and interviewed officials, healthcare workers, foreign volunteers, and injured victims.

The 10 criteria suggested by Quarantelli for good disaster management are: (1) correct identification of the differences between agent- and response-generated needs and demands; (2) adequate performance of generic functions; (3) effective mobilization of personnel and resources; (4) proper division of labor and delegation of tasks; (5) adequate processing of information; (6) allowance of proper exercise of decision-making; (7) development of overall organizational coordination; (8) emergent aspects blended with established aspects; (9) provision of the mass media with appropriate information; and (10) performance of a well-functioning emergency operations center.¹

To evaluate community disaster planning, Quarantelli's modified criteria of 1998 were used. These include: (1) focusing on the planning process rather than producing a written document; (2) recognizing that disasters are quantitatively and qualitatively different from minor emergencies and everyday crises; (3) being generic rather than agent-specific; (4) avoiding development of a "command and control" model; (5) focusing on general principles, not specific details; (6) focusing on what is likely to occur; (7) being vertically and horizontally integrated; (8) striving to evoke appropriate actions by anticipating likely problems and possible solutions; (9) using the best social science knowledge possible, rather than myths and misconceptions; and (10) recognizing that disaster planning and disaster management are separate processes.

The research process included questionnaires (closed questions), a review of debriefing reports, and interviews (group and individual).

Results

Since the results obtained mainly are qualitative, the criteria could not be ranked according to their relative importance. Retrospectively, the medical teams and leaders in Thailand thought that the three most important elements for effective disaster management were: (1) the flow of information; (2) overall coordination; and (3) leadership (Figure 1).

Flow of Information

The flow of information between organizations, within organizations, and from the organizations to the population is crucial. The flow of information between organizations often was lacking, and resulted in ineffective behaviors. In the beginning of the crisis, communication problems were

due to technical factors. Later, the lack of communication between the Provincial Health Ministry of Phuket, the airport, and the other relevant organizations (such as community health centers and hospitals) led to the arbitrary allocation of resources. Information strongly correlated with the overall levels of coordination. In Krabi, coordination led to an effective flow of information that positively affected decision-making at the Provincial level. For example, after 25 bodies arrived at the hospital, the Governor ordered that the temple be used as a temporary morgue so that the hospital would not become overcrowded.

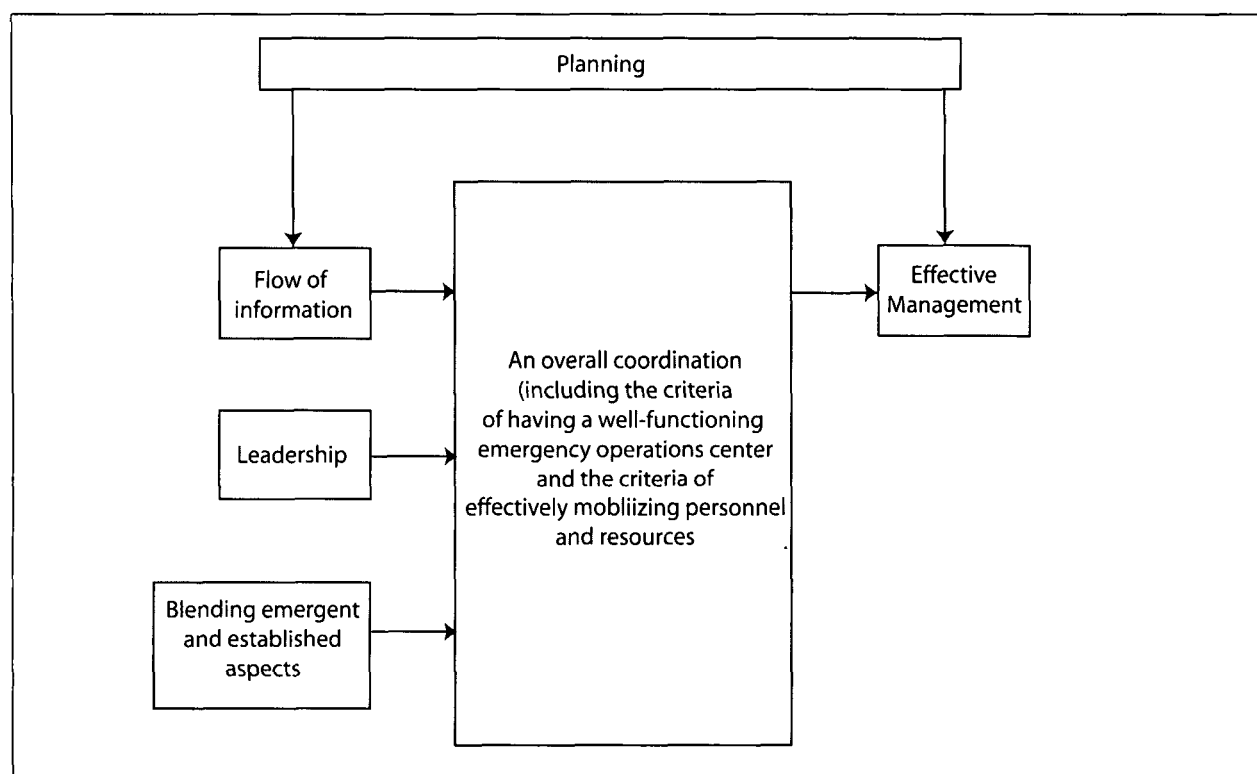
The flow of information inside of the hospital was essential to the mental resilience and to the effective functioning of the medical teams. Organization is essential for coping with chaotic situations like the Tsunami (especially through the flow of information, organized work methods, and the division of tasks). One of the doctors at Patong Hospital noted that working with the lack of information was more difficult than coping with the dead bodies. He learned what was happening from the patients.

The flow of information from the organizations to the civilians also is essential—where there is no information, there are rumors. People in Phang Nga evacuated to the mountains where some stayed for three days because they were afraid to go back to the shore. In Phi Phi Island and other places that were hit by the Tsunami, there were rumors that waves were about to flood the shore. Some of the affected people in Phi Phi Island did not go to the Evacuation Center, fearing they would not be able to go back to their houses. This fear was based on rumors and the lack of credible information. The flow of information from the organizations to the people was effective in Phuket, where information was conveyed effectively through a web of community health volunteers.

Overall Coordination

Overall coordination was another significant component in managing the operation. In Krabi, the Governor opened an Operational Center ("War Room"), to coordinate all relevant organizations, including the representatives of the army, police, Krabi Hospital, governmental ministries, volunteer organizations, etc. The Provincial Director of Krabi Hospital sent medical crews to the affected areas. These crews provided primary care to the victims, which alleviated the need for evacuation to the hospital. This lessened the burden on the hospital. The crews also reported back to the Hospital Director and kept him informed of the situation in the affected areas. The participation of local government officials also was of the utmost importance. In instances in which hospital officials tried to manage the situation on their own, they had to enlist support by using past connections and by initiating contact with other hospitals. One of the physicians at Patong Hospital stated that one of the major lessons learned was the importance of coordination between the hospital and police that helped to eliminate delays that occurred when staff members were held at police road blocks.

Preparations for disasters at the national and local levels had focused on local incidents, such as train accidents or



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Figure 1—Critical elements of the Thai health system disaster response

monsoonal rains, with a maximum number of 50–80 casualties. The head of the Thai Air Force Intelligence Service, who lead the operation, noted that disaster preparedness was based on local events that the police could have managed on their own. Therefore, there never had been an attempt to coordinate activities between the different agencies. On the day following the Tsunami, the Thai Air Force opened a War Room in the Phuket airport to coordinate the influx of outside assistance and the air evacuation of victims to Bangkok. Even after establishing their Operations Center, the Air Force kept a representative in the Provincial Governor's War Room.

The coordination of the influx of personnel was important. Volunteers included local volunteers, volunteers from unaffected areas in Thailand, and foreign volunteers. The help provided by local volunteers (both Thai and foreign) was crucial during the initial hours when local medical personnel were overwhelmed and outside assistance had not arrived yet. They provided basic treatments and mobilized the victims to the appropriate primary and secondary health facilities. In Talang Hospital in Phuket, translators were essential for the communication between foreign victims and local personnel. Translation was conducted by foreign volunteers and local university students. Evacuation to hospitals or community clinics (Tumbons) was preformed mostly by private cars and not by ambulances. Most of the treatment in Phi Phi Island was provided by local and foreign volunteers. International aid also had to be coordinated. This aid included both medical aid personnel and shipments of equipment.

Generic functions were performed adequately during the aftermath of the Tsunami, considering that the Thai healthcare system was not prepared for a disaster of such

magnitude. Preparation for local incidents helped communities deal with the disaster, even though it never involved coordination and cooperation between agencies. Despite this, local practices helped to gain control of the situation. The "Golden Dream"—emergency plan of the hospitals in Phuket and Phang Nga, and the "Krabi Emergency Plan" were implemented. This helped to mobilize all of the hospital staff immediately and assisted in the set-up of the emergency layout within the hospital's triage area, urgent casualties site, mild casualties site, operating rooms, information center, etc.

Leadership

Leadership at all levels strongly affected operation management. Staff from different hospitals evaluated their own performances differently.

The leadership provided by the Ministry of Health was mentioned by all hospital managers and by the managers of the Provincial Health Chambers. The Public Health Minister traveled from Bangkok to the affected areas on the first day after the Tsunami, encouraging the staff and providing critical aid in manpower and equipment.

The leadership provided by the Governor of Krabi Province was best expressed by the full cooperation of all relevant agencies in the hospital's War Room.

A doctor in Phi Phi Island who handled most of the local victims by himself was guided by his leadership experience providing routine medical care prior to the disaster. This helped him motivate his team to function efficiently during the difficult first hours.

The manager of Talang Hospital paid attention to the needs of staff members during the disaster. He arranged shifts to ensure that his staff was rested. He sent teams to the field

and supported them by rewarding them with free vacations. He also was the contact person with the Provincial Health Office.

In comparison, in the hospitals in which leadership was less outstanding, doctors often lacked information (which they learned later from their patients) and felt that the chaotic situation was not being controlled.

The Royal Family played an additional leadership role. The letters they wrote to the staff members who had participated in the Tsunami response provided encouragement and support.

In regard to disaster planning, hospitals that recently had performed "incident drills" performed better than hospitals that had not drilled. For example, in Takuapa Hospital, staff members knew where they should be stationed and their exact role in case of an emergency. The Takuapa Hospital Director stated that the staff seemed to work on "auto-pilot" and minimal assistance from supervisors was required.

Discussion

There are three important elements in managing a mass-casualty incident, including: (1) the flow of information; (2) overall coordination; and (3) leadership. These principles were relevant in analyzing the response of the Thai health system to the mass-casualty event caused by the Tsunami.

When preparing for an unexpected emergency such as an earthquake or tsunami, the role of every organization and the methods used for cooperation must be considered.^{4,5} As Quarantelli suggested, planning should be seen as a process involving practices, interactions, and relationships.²

Volunteers play a crucial role in mass-casualty incidents. Thus, volunteer organizations should be integrated into routine activities, and at least a portion of the population should be trained for the provision of first aid and other necessary skills. Leadership should be taken into consideration; managers can be trained to be better leaders.⁶

Preparedness planning is different from crisis management. Operations planning occurs at the strategic level and outlines to the overall approach to be used during a major problem, but specific situational contingencies must be considered. The planning process must be as realistic and as detailed as possible in order to resemble real world management. Even then, managers must understand that disaster management always will be different from the planning process. At the tactical level, the Thai experience demonstrates that even though disaster planning was limited, the overall management of the disaster was effective. The factors that contributed to the overall effectiveness of the manage-

ment were: (1) leadership at the different levels of the Thai health system, starting with the Minister of Public Health through the Provincial Health Directors (as shown in Krabi), down to the primary healthcare staff (as shown by the Director of the healthcare facility on Phi Phi Island); (2) the widespread enlistment of the local population and foreign tourists as volunteers during the initial hours, followed by Thai volunteers from unaffected areas, and later by international aid delegations; and (3) the implementation of the generic elements from the plan that was prepared for a local event.

Coordination between the relevant agencies also was crucial. In Krabi, a War Room staffed by representatives from the relevant agencies was created. This War Room helped to manage the needs more effectively. An example of the consequences of the lack in inter-organizational coordination was evident in the Patong Hospital where medical crews trying to reach the hospital were delayed at police checkpoints.

Cigler describes several prerequisites for successful emergency management at the local level, such as early and continued support by local officials, skillful program management, emphasis on coordination and collaborative planning, and employing personnel capable of implementing plans.⁶

In a recent publication regarding hospital preparedness in Israel, two additional components were proposed: (1) raising the awareness of hospital management to the psychological needs of staff under hazardous conditions; and (2) equipping the team leaders with leadership tools aimed at enhancing resilience and improving the response to their personal needs (as well as promoting cohesiveness and coping skills).⁵

Takuapa Hospital in Phang Nga was one of the principal referral centers for people injured in the Tsunami. The Hospital Manager noted that the staff implemented the hospital's major incident policy—a protocol that had been practiced two weeks earlier, when a disaster was simulated involving 80 people injured in a traffic crash.³ All doctors and nurses were called to duty. By the evening of the first day after the Tsunami, physicians from other hospitals had arrived with dressings and medications.

A major lesson of the 2001 Indian earthquake was that inefficient communication and coordination hampers the quality of relief provided to disaster victims.⁴ Relief efforts also were delayed by bureaucratic constraints and by the lack of planned policies regarding the delivery of disaster relief.

Conclusion

Disaster management response should focus on flow of information, overall coordination, and leadership.

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