

with the hospital building, rendering the working conditions unsafe for the medical team during disasters.

**Conclusion:** This paper envisages the functionality and challenges of healthcare providers during floods despite their limited available resources. The prevailing case scenario demonstrates the challenges in rural India, and the best practices for safe rural hospitals in coping with disasters in a resource-poor setting will be discussed.

*Prehosp Disaster Med* 2011;26(Suppl. 1):s77–78  
doi:10.1017/S1049023X11002640

### (A281) Protecting and Preparing Critical Hospital Infrastructure — Redundancy, Security, and Disaster Response

A.G. Robertson,<sup>1</sup> M.G. Leclercq,<sup>2</sup> C. Wilkinson<sup>1</sup>

1. Disaster Management, Regulation and Planning, East Perth, Australia
2. Disaster Preparedness and Management Unit, East Perth, Australia

Western Australia (WA) currently is undergoing a major rebuild of its key metropolitan and regional hospitals, with the planned construction of a major tertiary hospital, pediatric hospital, and several large general hospitals in the metropolitan area, and a range of small and medium size hospitals in WA over the next five years. Protecting these hospitals from major internal failure and external assault, while preparing them to cope with mass casualties, has been a major focus of the WA Department of Health over the last five years. This program has involved capital investment in current infrastructure, including critical asset protection, and detailed planning to ensure that the new health infrastructure will have both the redundant systems, to allow for continued operations in a range of infrastructure failure and disaster scenarios, and the facilities to deal with a mass-casualty incident. This presentation will review the implementation of this critical infrastructure program, the evolving issues facing hospitals working to ensure their continued operations in a range of scenarios, the security and infrastructure threats facing major hospitals, and the planning required to ensure that these threats are addressed at an early stage of hospital development. Issues as diverse as the placement of underground garages to minimize bomb threats, the location of helicopter landing pads, and the consideration of how to lock down hospitals to prevent the uncontrolled access of contaminated patients, are some of the challenges that need measured consideration and a planned response. The preparations and planning for such contingencies, and the infrastructure to facilitate continued operations and an appropriate disaster response, are key elements in protecting critical health infrastructure.

*Prehosp Disaster Med* 2011;26(Suppl. 1):s78  
doi:10.1017/S1049023X11002652

### (A282) Comparison of Safety Index in Iranian Hospitals

A. Djalali,<sup>1</sup> A. Massumi,<sup>2</sup> G. Öhlen,<sup>3</sup> M. Castren,<sup>1</sup> L. Kurland<sup>1</sup>

1. Clinical Science and Education, Stockholm, Sweden
2. Graduate School of Engineering, Tehran, Iran
3. Clinical Science, Intervention and Technology, Stockholm, Sweden

**Introduction:** Hospitals are highly complex facilities that play a key role in the medical response to disasters. However, they are susceptible to the impact of disasters with respect to their structural, non-structural and functional elements. Many hospitals

have collapsed or been damaged and rendered nonfunctional as a consequence of disasters. The resilience of a hospital along with the capability of effective medical response to disasters is a key part of a community based disaster plan.

**Objective:** The objective of this study was to evaluate and compare hospitals in Iran with respect to safety.

**Methods:** This study was performed as a survey in four hospitals in Iran. The Hospital Safety Index package from WHO was used as an evaluation tool. The evaluation team consisted of: a PhD in structural engineering, an architect with a Master's degree, a specialist in electrical and mechanical maintenance, a medical doctor, a specialist in disaster management, and an expert in health care planning. The hospitals were evaluated in three elements; structural, non-structural, and organizational. The hospital safety calculator was used.

**Results:** The most important hazard for these hospitals was earthquakes. The structural safety at three hospitals was inadequate or at risk; and consequently needs intervention in a near future. Also, the administrative and organizational element of these hospitals was inadequate or at risk. All hospitals need intervention in the near future due to non-structural safety being inadequate. The overall safety index at one hospital was A (functional); in two hospitals B (at risk); and in one hospital C (inadequate).

**Conclusions:** The Iranian hospitals which had been assessed were on the whole unsafe. Also, these hospitals do not have a disaster management plan. Implementing a comprehensive disaster plan, including mitigation and a preparedness plan, would most likely enhance the safety of these hospitals.

*Prehosp Disaster Med* 2011;26(Suppl. 1):s78  
doi:10.1017/S1049023X11002664

### (A283) Hospital Security Planning for Patient Surge Incidents: A Comparison of Three National Systems in China, India, and Japan

E. Downey,<sup>1</sup> A. Hebert,<sup>2</sup> Chpa,<sup>2</sup> D. Kim<sup>3</sup>

1. Department of Environmental Sciences, New Orleans, United States of America
2. Lafayette, United States of America
3. Salt Lake City, United States of America

**Introduction:** As the number of disasters caused by natural and non-natural hazards increase, so does the emphasis placed on healthcare security planning for the influx of patients that often accompany such events. This presentation expands on a previously published examination of national healthcare security systems and emphasizes the role of security in the hospital environment during disasters in China, India, and Japan. National emergency preparedness planning systems and disaster type are examined. Elements of planning for a mass-casualty incident (MCI) that most directly impact security planning include mass-notification alert systems, patient routing processes to hospitals (from an MCI scene) and within hospitals (emergency department flow), staffing, disaster triage, patient identification, tracking and discharge, volunteer tracking, and the adaptability and flexibility of space and processes.

**Methods:** Researchers conducted extensive literature reviews of country-specific health care and physical security elements of patient surge. The comparative analysis was augmented by communication with national healthcare security experts.