50-60% of hospitalized patients are dischargeable in acute disaster. In this case, reverse triage occurred in practice in an evacuating facility to minimize interfacility transfers.
Methods: A retrospective review of the electronic records of patients evacuated from Bellevue Hospital Center during Hurricane Sandy and its aftermath, from October 30 - November 2, 2012 was undertaken. Demographic and clinical data, equipment needs, ambulatory status, transport requirements, forensic status, and ultimate disposition were evaluated.
Results: A total of 732 patients were admitted to the hospital or undergoing treatment in the emergency department at landfall. Of these, 723 records (98.8%) were available for review. Only 226 (31.3%) patients could be discharged home; 38 (5.3%) were discharged to shelters, while the remaining 459 (63.4%) patients required transfer to neighboring hospitals, subacute nursing facilities, or correctional facilities for further care. There were 236 (32.6%) either non-ambulatory or demonstrated gait instability; 66 (9.1%) patients were being treated in intensive care settings, including 16 (2.2%) patients who were ventilator dependent, and 19 critical neonatal patients. There were 324 (44.8%) patients admitted to inpatient psychiatry. Patients were directly transported to at least 37 individual facilities in multiple hospital networks.
Conclusion: Pragmatically, we found a lower incidence of dischargeable patients than previously assumed. The burden placed on hospital staff, evacuation teams, and neighboring hospitals during evacuation of a large, urban, quaternary care public hospital is severe. Simultaneous citywide evacuation of multiple hospitals may be untenable without prior plans to coordinate resources for such large-scale healthcare system stresses. This study highlights the need to carefully reconsider evacuation, operational and modeling assumptions and solutions in at-risk healthcare infrastructures in cities across the country.
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DMAT Operation in 2016 Kumamoto Earthquake

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Study/Objective: Evaluation of the Japan DMAT activities in a recent domestic major earthquake, referring to learnings from the past.
Background: The Japan DMAT system was established in 2005. At the time of the 2011 Great East Japan Earthquake, 1,852 members responded and provided hospital operation support and patient air evacuation. However, we found that the command system, safety and function screening of clinics and small hospitals via Emergency Medical Information System (EMIS), operation hand over to the subacute disaster phase, and logistic support needs to be improved. We have evaluated if those findings improved in the 2016 Kumamoto Earthquake operation.
Methods: We evaluated all 466 who responded, DMAT post activity reports and investigated any improved activities from the past responses.
Results: There were 2,071 DMAT members who responded. Among 10-day operation, the EMIS system was utilized to screen the level of damages to the clinics, small hospitals and also the evacuation shelters. The DMAT logistic team was activated and resulted in rapid replenishment of medical supplies to the damaged hospitals, and helped shifting of the command system from onset of earthquake to the subacute phase.
Conclusion: Compared to the past, the Kumamoto Earthquake had less trauma patients even though there were a lot of collapsed housing. People stayed inside of their own car due to fear from collapse. This declined activity of daily living in all ages, and created major needs in public health and welfare improvements. It is expected that the Nankai trough Earthquake may result in the biggest damages to Japan. Therefore, with our experiences, we must establish everyday cooperation and drills with local public health services, to operate quick responses to maintain and improve public health. Also, we must establish the psychological first aid system for the patients and the rescuers, which includes DMAT, and needs to cooperate with building inspections personnel to secure the safety of medical support in the damaged buildings.
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Mitigating Matthew: 5 Lessons to Help Improve Hurricane Hospital Preparedness

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Study/Objective: Following Hurricane Katrina, US hospitals have largely improved their approach to hurricane preparedness. Yet the timing and uncertainty of hurricanes present unique challenges for hospitals and emergency preparedness officials. Here we present the experience of one coastal hospital directly in the path of Hurricane Matthew (October 2016).
Background: Hurricane Matthew made US landfall on October 8, 2016 near McClellanville, South Carolina, just north of Charleston. The storm caused nearly $10-15 billion in damages along the southeast coastline, representing the 22nd most damaging storm in US history.
Methods: This presentation "from the field", documents one coastal hospital's experience preparing for, responding to and recovering from Hurricane Matthew.
Results: Key lessons addressed to better prepare hospitals for hurricanes, include decision making regarding evacuation or shelter in place, evaluation of clinical services to maintain during the storm, the preparation and organization of staff, and the importance of developing an early recovery process to resume hospital operations.
Conclusion: In retrospect, the massive mobilization of resources may have been safely modulated downward without risk. But the potential for damage was real and the early call to evacuate was the right call. Our hospital experienced a committed, compassionate and coordinated response; and with minor modifications, coastal hospitals that follow simple rules should be ready.
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