Assessment of Critical Community Functions after Disasters

In recent years, many disasters have occurred which resulted in damage to critical community healthcare functions. The 2011 Christchurch and 2010 Bio-Bio earthquakes, Hurricanes Sandy and Katrina, and tornadoes in Joplin, MO and Moore, OK all resulted in severe damage to local hospitals, putting great strain on the healthcare systems of these regions. The continued functionality of critical infrastructure, such as healthcare facilities, is necessary following a major event. Healthcare delivery facilities are essential in disasters: they provide emergency medical care related to the event and regular health services required to maintain the health of the community they serve. To provide adequate services to patients, healthcare facilities rely on a wide range of internal and external functions, each of which are part of a complex network of interacting systems. The loss of a single function can severely disrupt the ability to provide care during the critical first hours.

To improve the resilience of facilities like these, decision-makers first need a way to quantify their performance due to extreme loading from natural hazards, both predictively and retrospectively. Dr. Judith Mitrani-Reiser’s presentation will show a risk analysis framework for quantifying and predicting the loss, recovery, and resilience of healthcare facilities. The theoretical framework accounts for loss of service due to building and utility damage, as well as impacts to key personnel and resources/supplies needed to provide clinical and nonclinical services. Dr. Mitrani-Reiser’s presentation will also show a standardized methodology to collect and analyze field data of critical building systems to better correlate physical damage with loss of functionality of healthcare facilities.

ABOUT THE SPEAKER
Dr. Judith Mitrani-Reiser is an Assistant Professor of Civil Engineering and Emergency Medicine, and the Director of the Sensor Technology and Infrastructure Risk Mitigation (STIRM) Laboratory at Johns Hopkins University. Her research is focused on the performance assessment of critical infrastructure, the safety and economic impact of hazards on the built environment, the effective communication of these risks to the public, informed decision-making for use in emergency management and policy-making, and the interaction of humans with the built environment. Her multidisciplinary research program includes collaborations within the university spanning the Whiting School of Engineering, the Bloomberg School of Public Health, and the Johns Hopkins School of Medicine. She also collaborates internationally with the Pontificia Universidad Católica de Chile, and the University of Canterbury in New Zealand. Further information regarding her group’s activities can be found on the website: http://www.jhu.edu/stirm.

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