

Earthquake Research Project Concept Summary

Date: May 2, 2011

| | |
|---|---|
| Title: | Survey and Evaluation of Recent Hospital Evacuations Following Damaging Earthquakes in California, Mexico, and New Zealand |
| Lead Staff: | Fred Turner (916)263-5506 Ext 227, Turner@stateseismic.com |
| Contractor Contact: | Professor Mary Comerio, UC Berkeley MComerio@berkeley.edu Assistant Professor Judith Mitrani-Reiser, Johns Hopkins University, JMitrani@jhu.edu Isabel Escalle, Institute of the Americas, through UC San Diego, Isabel@iamericas.org |
| Previous Efforts and Relationship to this Project: | <p>Hospitals that experienced evacuations after the 2010 Chile and Haiti Earthquakes were surveyed by the Johns Hopkins University. A hospital that was partially evacuated in L'Aquila Italy was surveyed by the Applied Technology Council and others in 2009. Horizontal evacuations to less-damaged portions of hospitals have typically been conducted with less risk to patients than vertical evacuations down stairs. The U.S. Agency for Healthcare Research and Quality completed a "Hospital Evacuation Decision Guide" in May 2010. However, there is relatively little guidance in that document that addresses the unique aspects of earthquakes which onset with little or no warning and can cause severe and widespread impacts. In California, hospitals are required to develop and exercise emergency response plans. However, recent examples depicting actual scenarios of hospital evacuations in buildings and circumstances that are relevant to California hospitals are not readily available. Building stocks in Mexicali and Christchurch are similar in many respects to older, vulnerable hospital buildings still in use in California.</p> <p>An application has been made by Johns Hopkins University for a Rapid Grant from the National Science Foundation (NSF) to conduct a portion of this work. CSSC staff will know the outcome of that application with NSF and will ensure that duplication of effort or products are precluded well before a contract with PEER is completed. NSF indicates that the probability of funding Johns Hopkins University is low because of the overwhelming number of applications following the Japan Tohoku Earthquake.</p> <p>This project will help fill critical gaps in California's hospital emergency response planning and training.</p> |
| Estimated Budget/Duration: | This project will be six months long with a budget of approximately \$50,000. |

Other Potential Project Partners and Funds Requested or Committed to Date

The New Zealand Ministry of Health (NZMH) has tentatively committed to providing funds and in-kind staff support to supplement this survey in the Canterbury Region of New Zealand including Christchurch. Negotiations are underway with NZMH regarding the amount and scope of their participation. One hospital wing was partially evacuated in the February 22, 2011 M6.1 Lyttleton Aftershock.

The Institute of the Americas, affiliated with UC San Diego, has proposed a cross-border, bi-lingual collaborative workshop between hospital officials in Imperial County California where one hospital was partially evacuated and Mexicali, Baja California where two hospitals were evacuated in the April 4th 2010, M7.2, El Mayor-Cucapah Earthquake. Negotiations are underway to coordinate such efforts and identify potential project partners and funds.

The California Emergency Medical Services Authority has been contacted by CSSC staff and has indicated that such surveys will be beneficial for emergency training of hospital personnel and emergency planning purposes. Descriptions of actual damage to hospitals, decision protocols used, and hindsight evaluations are critical to improving California's post-disaster hospital evacuation practices.

A soft match composed of donated hospital staff time to help complete surveys is proposed to be negotiated by representatives of PEER with each of the four hospitals that are targeted in this project.

Several major hospitals were severely damaged and evacuated following the Tohoku, Japan earthquake. The budget, timeframe and scope of this project are well beyond the amounts required to conduct similar surveys in Japan. However, it is PEER's belief that consistent surveys of hospitals across earthquakes are critical for documenting performance and calibrating emergency management protocols in addition to performance-based earthquake engineering for the facilities themselves. PEER plans to propose similar surveys in Japan to potential funders possibly including CSSC at a later date.

Brief Description of the Research Project: Survey and Evaluation of Recent Hospital Evacuations Following Damaging Earthquakes in California, Mexico, and New Zealand

The Pacific Earthquake Engineering Research Center proposes to conduct surveys of four hospitals – one in Imperial County, California, two in Mexicali Baja California, and one in Christchurch New Zealand – using the attached standard survey form developed and used so survey hospital evacuations after the Chile Earthquake of 2010. Interviews of hospital administrative staff, medical staff, facilities support staff, building engineers and architects, and building safety regulators will form the basis for the information documented in the surveys.

Images from reconnaissance teams who visited these hospitals will be compiled and captioned.

PEER and its consultants from Johns Hopkins University, who are world-renowned experts in post-disaster medical response and epidemiology, and the Institute of the Americas who are experienced in cross-cultural research and development exchanges between Baja California and California will compile and provide an interpretation of the survey results, identifying trends and unique circumstances that contributed to evacuation decisions.

Please refer to the attached description titled “Collaborative Project on the Seismic Preparedness of Hospitals and Public Health Resilience” for more information. However, please note that this description includes considerations proposed for funding by the New Zealand Ministry of Health regarding resilience that will extend beyond the proposed CSSC-funded portion of this work.

Proposed Product I Deliverables –

1. Completed surveys of four hospitals.
2. Images of damage to each of the hospitals with captions and maps of the campuses showing the locations of damaged wings and the images.
3. Comparisons with hospital evacuation surveys already conducted in Chile.
4. Interpretations of the survey results including trends and unique circumstances.
5. Recommendations for hospital personnel and emergency managers based on the experiences documented in these earthquakes.