

Health information technology 'control tower' could improve earthquake response

March 21 2011

A new study published by researchers at Weill Cornell Medical College and the University of California, Davis, foresees improvements in patient outcomes after a major earthquake through more effective use of information technology. A control tower-style telemedicine hub to manage electronic traffic between first responders and remote medical experts could boost the likelihood that critically injured victims will get timely care and survive, according to the team's computer simulation model.

"Since its introduction in the 1970s, telemedicine -- the electronic linkage of [health care providers](#) and recipients -- has held promise for improved [disaster response](#) outcomes. As information technology becomes pervasive, we want to ensure that systems are in place to fully realize its potential for helping patients -- particularly for emergency response," says study senior author Dr. Nathaniel Hupert, associate professor of public health and medicine at Weill Cornell Medical College and co-director of the Cornell Institute for Disease and Disaster Preparedness.

The team's results, published in the *Journal of Medical Systems*, show that introducing telemedicine linkages between remote specialists and immediate responders in the aftermath of a widespread disaster like an earthquake could decrease both patient waiting times and [hospitalization rates](#) at nearby hospitals, while increasing the likelihood that patients with life-threatening injuries receive appropriate care -- as compared with standard emergency department-based triage and treatment.

These findings demonstrate the power of interdisciplinary approaches to complex issues at the border between medicine, public health and logistics, says study lead author Dr. Wei Xiong, assistant professor of public health at Weill Cornell Medical College. "We applied engineering methods more commonly used to analyze queuing systems like telephone call centers and road traffic planning to look at how to effectively manage this new type of emergency medical care."

"We know that when disasters strike, local hospitals, clinics and medical personnel can be completely overwhelmed," says co-author Dr. Aaron Bair, associate professor of emergency medicine and interim director of the UC Davis Center for Health and Technology. "We focused on testing how telemedicine can expedite response, enabling help to get to where it is needed in a relatively short timeframe. Our results show telemedicine improves emergency care at the disaster site -- providing care for more patients sooner, reducing waiting times for treatment and permitting more efficient use of scarce medical resources."

According to the study's principal investigator, Dr. Christian Sandrock, an assistant professor of pulmonary and critical care medicine at UC Davis School of Medicine and a county [public health](#) officer in Northern California, high-speed telecommunications links would offer critical benefits for emergency teams when they are responding to a disaster. "We think telemedicine can reduce mortality rates following a disaster by bolstering medical triage capabilities of emergency care providers." He adds, "By helping disaster victims avoid the time it takes to be transported to a designated area for treatment, telemedicine can enable medical teams to actually spend more time caring for patients, so you save lives."

Telemedicine technology is already being tested in the emergency medicine setting. One system of "medical kiosks" in Australia makes use of webcam-equipped laptops, satellite terminals and telemedicine

equipment -- including ECG monitors and blood pressure equipment -- to allow physicians to remotely assess patients and give medical advice. The current study focuses on how to manage the multiple data streams resulting from use of such technology in the setting of a mass-casualty disaster like an earthquake.

Provided by New York- Presbyterian Hospital

Citation: Health information technology 'control tower' could improve earthquake response (2011, March 21) retrieved 26 April 2024 from <https://medicalxpress.com/news/2011-03-health-technology-tower-earthquake-response.html>

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