

Effective local medical response to New Zealand earthquake helped reduce deaths and burden of injury

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Just over a year after an earthquake struck Christchurch, New Zealand, on February 22, 2011, injuring over 6500 people and killing 182 in the first 24 hours, an analysis of the initial medical response highlights how careful preparation for such a disaster helped to reduce death rates and the burden of injury. Despite the substantial difficulties of delivering medical care without electricity and with communication systems down, the emergency health-system response was very effective, concludes a Review published Online First in *The Lancet*.

"The health response to the Christchurch earthquake was unique because the city had only one hospital with an [emergency department](#) (which was compromised by [earthquake damage](#)). The hospital activated well developed and practised internal and external incident plans and the response of other non-acute hospitals and primary care facilities was critical to ensuring an effective and timely response", explains Michael Ardagh from the University of Otago, Christchurch, New Zealand, lead author of the study.

The city was able to draw on experience of previous incidents and practice exercises, including activation of the mass casualty incident plan in response to an earthquake that injured 97 in the Christchurch area in September, 2010.

The events of February 22, 2011 were remarkable in several respects.

The Christchurch Hospital was extensively damaged and areas had complete loss of electrical power because of disturbed sump sludge in the back-up generators' diesel tanks.

Additionally, loss of communications systems meant the emergency department had little information on the scope of the disaster, expected numbers of casualties, and when patients might arrive: "Large numbers of patients presented in various ways, such as on foot, carried by members of the public, in cars, in police vehicles, on doors strapped to the top of cars, and in the back of small trucks. Impassable roads and communication difficulties resulted in little pre-hospital triage or treatment for most of those who presented early."

To overcome these difficulties, radiotelephones and mobile phones were made available to key staff, and medical students were sent to get updates from television broadcasts and report back. The open-air ambulance bay was used to provide triage and to treat patients who were unwilling to enter the hospital buildings for fear of collapse.

Other challenges included registering and keeping track of patients. "Use of multiple patient identifiers led to inefficiencies in matching imaging and laboratory results with individuals", explain Ardagh and colleagues, adding that: "The use of unique patient identifiers and dedicated staff for identifying and tracking patient movements will help in future major incidents."*

A surge in volunteers without overall organisation emphasised the importance of anticipating and managing the many volunteer medical staff to ensure immediate use of their skills.

The Review also highlights the need for atypical providers of acute injury care to be included in disaster response plans: "Robust emergency plans were in place at most facilities but they did not anticipate the need

to receive triage, and manage so many undifferentiated injured patients."

To this end, the authors conclude: "An integrated approach is needed, in which primary care providers, non-acute hospitals, and acute hospitals are prepared to provide care for masses of injured people."

More information: [www.thelancet.com/journals/lan...
12\)/60313-4/abstract](http://www.thelancet.com/journals/lan...12)/60313-4/abstract)

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