

Experience and Preparedness of Major Incidents in Developing Countries

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To the Editor:

Previous experience in major incidents results in improved performance in future events.¹ Common qualitative areas of response affecting future incidents include policy, rules, and standards; evaluation and assessment; professional education; and institutional memory. Based on our experience, we have developed a list of recommendations to improve national disaster management systems.

Catastrophic earthquakes during the past decade in developing countries in Asia (Bam, Iran, 2003;^{2,3} Kashmir, Pakistan, 2005;^{4,5} and Sichuan, China, 2008^{6,7}) have resulted in large numbers of severe traumatic injuries including bone fracture, amputation, brain injury, and spinal cord injury (SCI). Experience managing these disabling injuries has demonstrated the benefit of high quality medical rehabilitation immediately after the event. Reported benefits are quicker recovery, fewer medical complications, significant improvement in physical functional outcomes, and improved overall quality of life.⁸

Barriers to providing effective early rehabilitation for SCI victims, however, include the following:

- Lack of systematic patient and population data collection
- Lack of rehabilitation professionals
- Delayed diagnosis and wrong diagnosis of SCI in patients with severe back pain from major muscular trauma and patients with peripheral nerve injuries and plexopathies
- Management of SCI by nonprofessional volunteers and nongovernmental organizations (NGOs) that lack expertise in disability management
- Lack of SCI rehabilitation training and education for nonrehabilitation professionals and for patients and families

After the earthquake in Bam, one of us (G.R.) visited SCI patients as part of a mobile team. Patient data were insufficient for effective management, and the physician concluded that preparation for future

earthquakes should include local, multilevel SCI education. Consequently, he developed a short course to educate general practitioners and patient and families.² Rehabilitation needs highlighted by the earthquake have also resulted in the training of more specialist rehabilitation physicians in Iran.

In Pakistan, the value of early rehabilitation demonstrated after the 2005 earthquake has contributed to a significant increase in qualified rehabilitation physicians to 43 in 2011 compared to 25 before the incident. Most of these physicians serve in the military sector, where rehabilitation infrastructure is relatively well developed compared to civil society and where institutionalized disaster response experience is greater.

In China, systematic data collection on the SCI survivors in the 2008 Sichuan earthquake enabled functional rehabilitation gains to be scientifically demonstrated.^{6,7,9} Lessons learned from comprehensive rehabilitation services programming—which models close cooperation among NGOs, local health departments, and domestic rehabilitation professional volunteers—were even more effectively applied in the 2010 Yushu earthquake, and continue to be refined. Included in the programming were SCI rehabilitation training and education curriculum and materials developed for nonrehabilitation professionals and for patients and their caregivers.¹⁰

Although early medical rehabilitation in recent earthquakes in developing countries has proven effective, it is not generally considered essential to disaster preparedness and response.^{11,12} Measures taken to improve the number and quality of services after the incident, such as SCI data collection and provider education and training, strengthen the case for providing early rehabilitation and align with the recommendations for improved preparedness and response of future major incidents. Further development and incorporation of these efforts at all organizational levels are required to decrease morbidity and associated disability after earthquakes.

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