Emergency Medical Services in the Reconstruction Phase following a Major Earthquake: A Case Study of the 1988 Armenia Earthquake

Michael T. Handrigan, MD; Bruce M. Becker, MD, MPH, FACEP; Liudvikas Jagminas, MD, FACEP; Tanya J. Becker, BSN, MPH

Brown University School of Medicine, Rhode Island Hospital, Providence, Rhode Island USA

Presented in a poster format at the University of New Mexico Center for Disaster Medicine Second Annual Disaster Medical Issues in America Conference. 14, 15 October 1994.

Published as abstract in *Prehospital and Disaster Medicine* 1995:10(1):96(S5).

Correspondence:
Bruce M. Becker, MD, MPH, FACEP
Rhode Island Hospital
Department of Emergency Medicine
593 Eddy Street
Samuels Building, 2nd Floor
Providence, RI 02903 USA
E-Mail: bmbecker@igc.apc.org

Key Words: Armenia; earthquake; emergency medical services; reconstruction and community; recovery; relief; training

Abbreviations:
ALS = advance life support
BLS = basic life support
EMS = emergency medical services
PVST = paroxysmal supraventricular tachycardia

Received: 22 May, 1996
Accepted: 30 September, 1996
Revisions received: 13 December, 1996

NOTE: This correction was made in the order of authorship of this manuscript. Our apologies for any inconvenience our error has caused.

Abstract

Study Objective: *To use the clinical activities of an ambulance service as a tool to assess the residual and unmet medical needs of a city in the aftermath of a major earthquake and to apply that assessment to the development of a training curriculum for the prehospital personnel.*

Methods: *The researchers conducted structured interviews with health care workers at all levels of the emergency health care delivery system in Gyumrii, Armenia, and carried out a retrospective frequency analysis of 29,010 ambulance runs for an 11-month period from February through December 1992. Runs first were assigned into the broad categories of: 1) Adult Medical; 2) Pediatric Medical; or 3) Trauma, and then, according to diagnosis. The runs then were classified further as: 1) Primary Care; 2) Basic Life Support (BLS); or 3) Advanced Life Support (ALS).*

Results: *Adult Medical calls represented 24,684 (85%), Pediatric Medical calls 459 (1.6%), and Trauma calls 3,867 (13%). Only 12% of all ambulance calls resulted in transport to a medical facility, although this percentage was higher in children. Thirty percent of Adult Medical patients were diagnosed by the emergency medical providers as having exclusively a psychiatric problem.*

Conclusion: *In the late aftermath of a devastating earthquake, the ambulance service in Gyumrii, Armenia has been delivering a substantial proportion of non-emergency, primary care services. They have adopted this unconventional role to compensate for the deficit in health care facilities and personnel created by the disaster. The training program that the investigators developed reflected the actual work activities of the prehospital personnel demonstrated in their assessment.*

Handrigan MT, Becker BM, Jagminas L, Becker TJ: Emergency medical services in the reconstruction phase of a major earthquake: A case study of the 1988 Armenia earthquake. ***Prehospital and Disaster Medicine*** **1998:13(1):35–40.**

Background

In December 1988, the city of Gyumrii, Armenia was devastated by a major earthquake which measured 7.1 on the Richter scale. This earthquake affected the entire northwestern sector of Armenia.[1] Gyumrii previously had been the cultural capital of Armenia hosting the National Symphony, Opera, and several important art and historical museums. The earthquake lasted for less than one minute, but destroyed the city's infrastructure and killed more than half of the population. No building over three stories tall was left standing. Hospitals, clinics, factories, government offices, and housing were reduced to rubble. Spitak and other prominent, though smaller, towns in the 100 kilometer radius of the epicenter also were destroyed. Many of the medical personnel living and working in Gyumrii and the surrounding countryside were killed or severely injured, and nearly all of the medical facilities were destroyed. It is difficult to imagine the extent of the chaos in the city during the immediate impact and post-impact phases of the earthquake.

The first disaster responders were, as is typical in any disaster, local personnel who came from unaffected areas of the country, especially the capital, Yerevan. The next wave of response came from what was then the Soviet Union, with relief workers and supplies arriving by airplane, road, and train from Russia and several of the other adjoining republics. In the weeks that followed the earthquake, most of the international relief agencies in the world responded to Armenia with supplies, medicine, durable medical equipment, and medical personnel. The international response