



The role of
civilian
surgical
teams
in response to
international
disasters

by
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Historically, civilian surgeons have provided significant surge capacity, which has been critical to meeting medical needs during international disasters, both natural and man-made. Prior to the last decade, war and natural disasters were the most frequent international disasters requiring civilian surgical teams. In World War I, the fledgling American College of Surgeons and its founder, Franklin H. Martin, MD, FACS, played a major role in organizing the nation's surgeons to aid in the war effort. American civilian surgical units were deployed in World War I more than two years before the arrival of U.S. combat troops, illustrating an appreciation of the necessity for medical preparedness in wartime. One of the first civilian surgical units was stationed at the Ambulance Americaine in Paris, France, under the leadership of George Crile, MD, FACS, and Harvey Cushing, MD.¹

During World War II, the U.S. War Department again asked academic institutions to organize surgical units that could be mobilized for active duty. The novel use in World War II of ancillary surgical groups that could be rapidly mobilized and sent to installations in need of additional surgical manpower has become a model for contemporary civilian and military disaster medical response.¹

Surgeons also have a rich history of medical response to man-made disasters other than war. On December 6, 1917, a French munitions ship and a Norwegian relief steamship collided in the harbor of Halifax, Nova Scotia. The explosion—the largest man-made explosion until the Hiroshima bomb—killed more than 2,000 individuals and injured more than 9,000. Teams of surgeons from the Northeast, including the renowned surgeon William E. Ladd, MD, provided much of the immediate medical relief. Dr. Ladd

was so moved by the tragedy and the death of more than 500 children that he subsequently devoted all his energy to the care of children and the establishment of pediatric surgery as his specialty.²

Challenges of disaster medical response

The demands of international disaster relief have changed over the past decade, both in the scope of medical care, the spectrum of threats, and the field of operations. Increasingly, civilian surgical teams are being asked to respond to complex international disasters, with a spectrum of threats ranging from war to natural and man-made disasters, including terrorism.³⁻⁵

Many of today's international disasters occur in austere environments. An austere environment is a setting where access, transport, resources, or other aspects of the physical, social, economic, or political environments impose constraints on the adequacy of care for the population in need. The provision of sophisticated surgical care in austere environments is a significant challenge for disaster providers. (See photo, page 15).

Contemporary international disasters follow no rules. No one can predict the time, location, or complexity of the next disaster. All disasters, regardless of etiology, have similar medical and public health concerns. A consistent approach to international disasters, based on an understanding of their common features and the response expertise they require, is becoming the accepted practice throughout the world. This strategy is called the Mass Casualty Incident Response. Similar to the ABCs of trauma care, Mass Casualty Incident Response includes four components: search and rescue, triage and initial stabilization, definite medical care, and evacuation.⁴

Surgeons are uniquely qualified to participate in all four aspects of disaster medical response because of their expertise in triage, care of critical patients, and rapid decision making. International civilian surgical disaster teams are designed and trained to provide specific functional areas of disaster care.^{3,5-7}

Clinical competencies, not titles, determine the role of civilian surgeons in international disaster relief. The complexity of today's disasters demands civilian and military surgical partner-

Overleaf: Main photo: In the wake of the tsunami, Banda Aceh, Indonesia, 2004, civilian and military surgical teams from many countries were part of the international disaster relief efforts.

Left-hand photos, top to bottom: (1) Bam, Iran, site of a 2003 earthquake; (2) a U.S. civilian surgical team performing emergency surgery in Bam; (3) Field Hospital, U.S. IMSuRT, working after the Bam earthquake; (4) Search and rescue teams at work in the aftermath of an earthquake in Turkey, 1998.



In the aftermath of the Bam, Iran, earthquake: 15 countries, including the U.S., provided field hospitals with both civilian and military surgical teams.

ships, which are key to effective international disaster response.

Search and rescue

In disasters involving large numbers of victims trapped in collapsed structures, the local response team may lack the technical equipment and expertise to facilitate extraction of the victims. Many countries, including the U.S., have developed specialized search and rescue teams as an integral part of their national disaster plans. Members of these teams, which receive specialized training in confined space environments,

generally include the following:

- A cadre of medical/surgical specialists
- Technical specialists knowledgeable in hazardous materials, structural engineering, heavy equipment operation, and technical search and rescue methodology
- Trained canines and their handlers

Triage and initial stabilization

Triage is the most important—and often the most psychologically taxing—mission of international disaster response teams, especially with disasters occurring in austere environments



Left: A crush injury patient in the wake of the Bam earthquake.



Medical evacuation by civilian surgical teams utilizing converted military aircraft, El Salvador earthquake, 1989.

and involving a large number of casualties. Triage is the rapid categorization of victims at casualty sites by experienced medical personnel with knowledge of various injuries (for example, burns, blast and crush injuries, and exposure to hazardous materials). (See left-hand photo, this page.)

Definite medical care

The increasing need for multidisciplinary surgical teams to assist in international disasters is rapidly expanding due to the diversity and

complexity of today's international disasters. Disaster care is initially "minimally acceptable care" due to the large number and diversity of victims. Surgical care may be rendered at fixed or mobile facilities. Many countries have mobile field hospitals with the full spectrum of surgical care.

In the U.S., the National Disaster Medical System (NDMS) is part of the U.S. Federal Response Plan under the auspices of the Department of Health and Human Services. The NDMS has created three rapidly deployable international disaster teams, called International Medical

Surgical Response Teams (IMSuRTs). Each team is sponsored by an academic trauma center: Massachusetts General Hospital, Boston, MA; Ryder Trauma Center, Miami, FL; and Harborview Medical Center, Seattle, WA.^{3,7}

The IMSuRT teams are composed of multidisciplinary surgical specialists and designed to provide the full spectrum of medical care at the disaster site, especially in austere environments. Each team possesses a deployable, rapid assembly field hospital with the capacity for initial stabilization, operative interventions, critical care, and evacuation. The team logistical cache contains flexible and mobile equipment and supplies, including ventilators, monitors, ultrasound machines, blood, and pharmaceuticals.^{3,7}

Evacuation

Evacuation can be useful in a disaster as a means of decompressing the disaster scene. Evacuation of victims with serious injured casualties to off-site medical facilities not only improves their chances of survival but also allows increased attention to the remaining casualties at the disaster site. (See right-hand photo, page 16.)

Conclusion

International disaster response presents unique challenges: geographic, organizational, ethnic, cultural, and political. Politics, more than a lack of personnel or the availability of supplies and equipment, often limit the effectiveness of international disaster response. The political players might include the affected country, other donor governments, international relief organizations such as the United Nations, and not-for-profit organizations. Too often the needs of the international relief organizations, not the medical needs of the disaster, dictate the international response, further complicating the disaster scene. Rapid assessment of disaster needs by experienced disaster responders should determine the need for civilian surgical teams to provide surge capacity.

Today's civilian surgeons continue a century-old tradition of excellence in international disaster response. Good intentions alone do not con-

stitute a successful disaster response. Surgeons must be clinically competent and understand the general principles of disaster response such as incident command, disaster triage, and decontamination. Intercultural effectiveness remains the ultimate key to successful international disaster response. □

References

1. Churchill, ED. *Surgeon to Soldiers*. Philadelphia, PA: J.B. Lippincott Company; 1972.
2. Nance ML. The Halifax disaster of 1917 and the birth of North American pediatric surgery. *J Ped Surg*. 36(3):405-408, 2001.
3. Briggs SM, Schnitzer JJ. The World Trade Center terrorist attack: Changing priorities for surgeons in disaster response. *Surgery*. 2001;132(3):506-512.
4. Briggs SM, Brinsfield KH. *Advanced Disaster Medical Response, Manual for Providers*. Boston, MA: Harvard Medical Press; 2003.
5. Born CT, Briggs SM, Ciraulo DL, Frykberg ER, Hammond JS, Hirshberg A, Lhowe DW, O'Neill PA: Disasters and mass casualties: I. General principles of response and management. *J Am Acad Orthop Surg*. 2007;15(7):388-396.
6. Lhowe DW, Briggs SM: Planning for mass civilian casualties overseas: IMSuRT-International Medical/Surgical Response Teams. *Clin Orthop Relat Res*. 422:109-113, 2004.
7. Schnitzer JJ, Briggs SM. Earthquake relief: The U.S. medical response in Bam, Iran. *N Eng J Med*. 2004;350(12):1174-1178.

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