in immediate structural collapse, occurred within a confined space, or occurred in open air were reviewed.
Methods: Eligible reports were identified via a MEDLINE search of articles on terrorist bombings published between 1966 and August 2002 and a manual search of published references. Pooled mortality, immediately injured survival, emergency department (ED) utilization, hospitalization rates, and pooled injury frequencies in injured survivors were determined for each bombing type.
Results: There were 33 eligible reports concerning 30 terrorist bombings that collectively produced 8,542 casualties, including 903 immediate deaths and 7,639 immediately surviving injured. Pooled immediate mortality rates were: structural collapse 12% (95% CI = 11–13%); confined space 8% (95% CI = 7–10%); and open air 4% (95% CI = 3–5%). Bimodal distributions of mortality were identified in all bombing types. Pooled hospitalization rates were: structural collapse 15% (95% CI = 14–16%); confined space 40% (95% CI = 36-45%); and open air 17% (95% CI = 15–20%). Unique patterns of injury frequency were identified in all bombing types.
Conclusion: Understanding the epidemiologic patterns of mass casualty, terrorist bombings may assist ED and hospital disaster response to such events.
Keywords: bombing; collapse, structural; distribution; epidemiology; mass casualties; mortality; terrorism
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Bioterrorism-Related Beliefs, Attitudes and Behaviors of Community-Based Clinicians

Robyn R.M. Gershon, MHS, DrPH; Kristine A. Qureshi, RN, DNS [C]; Stephen S. Morse, PhD; Marissa A. Berrera; Catherine B. Dela Cruz
Columbia University Center for Public Health Preparedness at the Mailman School of Public Health, New York, New York USA

Introduction: In order to properly assess the readiness of the healthcare workforce to respond appropriately to the threats posed by bioterrorism, we assessed the beliefs, attitudes, and behaviors of community-based clinicians, including nurses, nurse practitioners, physicians, and physician assistants.
Methods: Anonymous responses to a two-page questionnaire were obtained from 310 clinicians (85% response rate) that surveyed respondents about the following: (1) Beliefs about the risks of bioterrorism; (2) Attitudes about their ability and willingness to treat victims of bioterrorism agents; (3) Fear of contagion; and (4) Intentions regarding infection control practices and their efficacy.
Results: Of the clinicians surveyed, 86% felt that their patients were concerned about bioterrorism diseases, and 61% were concerned personally as well. A majority (77%) of clinicians believed that the U.S. likely would be subject to future attacks, while only 14% felt that the nation was well-prepared for such attacks. While few were concerned about contracting cutaneous anthrax from patients, many were unaware of the correct infection control procedures that should be followed. Nearly half of the clinicians (49%) stated that they would recommend the smallpox vaccine to their patients.
(The Centers for Public Health Preparedness are funded through a cooperative agreement with the CDC and ASPH #A1013-21/21).
Keywords: attitudes; behaviors; beliefs; bioterorism; contagion; fear; infection control; preparedness; professionals; readiness; response; smallpox; threats; vaccination; workers, healthcare
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Prehospital Management of 1,392 Victims of Blast Injuries Caused by Terrorist Explosions in Israel (August 2001 to January 2003)

Zvi Feigenberg, MD; Doron Kotler EMT-P, MA
Medical and Operational Divisions, Magen David Adom in Israel

Maged David Adom (MDA), the Israeli emergency medical services (EMS) system teams provided prehospital management to 1,392 victims of 22 multi-casualty incidents (average 63 injured per incident) caused by explosions of suicide bombers. Of these, 175 (13%) were killed at the scene, and 281 casualties(21%)were categorized as "urgent".

Mechanism of injury: The explosion of powerful charges (in 3 incidents more than one charge) resulted in: (1) inside six buses with an 18% mortality rate; (2) in seven confined places with a 14.3% mortality rate; (3) and nine in open spaces with a 7.9% mortality rate. In most instances, metal objects were inserted inside the explosive charges (nails, screws, screw nuts): these devices increased the damage associated with the explosions significantly.

MDA Forces amassed (average per incident): 42 emergency vehicles (22% ALS); 116 team members (12% ALS). Timetable: From time of the explosion (average per incident) to arrival of the first ambulance = 4.6 minutes. Evacuation of first urgently injured = 11.5 minutes. Evacuation of last urgent injured = 28.3 minutes.
Triage: At the ALS level, 281 (61.5%) were triaged as urgent casualties of whom 32 were DOA (11.4%); 176 (62.5%) had sustained severe injuries (ISS >16), and 73 (26.1%) sustained less severe injuries (medium).
Life Saving Procedures: 68 life saving procedures were performed in the field (32.7% of severely injured): 48 were intubated; seven had chest drainage peformed; and arterial hemorrhage was controlled in 13: 45 of the casualties on whom these procedures were performed (62.2%) survived.

Evacuation to Hospitals: 116 urgent cases were evacuated at the ALS level (42%); six incidents occurred in areas without trauma centers, 49 severely injured were evacuated to nearby hospitals (63% were referral secondarily to trauma centers), and 16 incidents occurred where trauma centers were available. A total of 127 severely injured were evacuated. 90 (71%) were diverted directly to the trauma centers. 37 were conveyed to nearby hospitals and of these, 40% underwent secondary referral by MDA-ALS vehicles to trauma centers.
Conclusion: An active national EMS system treating 50,000 trauma cases per year according to PHTLS guidelines operates equally well in emergency situations. The deployment of 450 ambulances (100 ALS level) staffed with 1,200 employees and 7,500 volunteers dispersed throughout the country enabled MDA to provide professional prehospital response to 22 multicasualty incidents (MCI) and to save the lives of many of the victims.
Keywords: blast; evacuations; explosions; injuries; prehospital; management;

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mechanisms; terrorism; trauma; trauma centers; triage
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Terror Australis: Preparedness of Australian Hospitals for Incidents Involving Weapons of Mass Destruction

Nicholas A. Edwards, MBBS, FRACP, FFICANZCA;[1] Christine C. Lee, RN, BNsg, RM;[2] David G.E. Caldicott, BSc (Hons), MBBS (London);[3] Alex Wurm, MBBS[4]
1. Staff Specialist, Intensive Care Unit, Royal Adelaide Hospital
2. Clinical Nurse, Trauma Service, Royal Adelaide Hospital
3. Registrar, Emergency Department, Royal Adelaide Hospital
4. Registrar, Emergency Department, Royal Adelaide Hospital

Introduction: The healthcare system will play a pivotal role in the response to mass casualty incidents from any cause. However, incidents involving chemical, biological, or nuclear (CBR) agents raise a number of key issues that are unlikely to be addressed adequately in standard major incident plans. This study aimed to assess the perceived level of Australian hospital preparedness for CBR incidents among senior emergency department physicians, as well as the resources available to them.
Methods: Questionnaires were mailed to the Directors of the 82 Emergency Departments in Australia that are accredited by the Australasian College for Emergency Medicine.
Results: Responses were received from 70 (85%). Sixty-nine reported that they had a disaster plan in place for their Department, of which 56 (81.2%) had a contingency for chemical, 53 (76.8%) for biological, and 48 (69.6%) for radiological incidents. In the past year, only 24 (34.3%) had tested their CBR plan as a tabletop exercise, and 16 (22.9%) as a field exercise. Twenty-one (30.0%) never had tested it. Ten (14.3%) had no decontamination facility, and a further 37 (52.9%) could not decontaminate more than 20 patients. However, >85% believed their hospital to be either somewhat or completely prepared for a chemical or biological incident.
Conclusions: Hospitals urgently require guidance from government as to what they are expected to be able to manage, as it would appear, despite perceptions to the contrary, that most would struggle to mount a meaningful response to anything but a CBR incident with very small numbers of casualties.

Keywords: biological weapons; chemical weapons; decontamination; drills; emergency department; exercises; hospitals; mass casualty incidents; preparedness; radiologic weapons; weapons of mass destruction (WMD)
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E-mail: nedwards@mail.rah.sa.gov.au

Regional Planning for Bioterrorism

Constance J. Doyle, MD, FACEP; Robert Domeier, MD, FACEP; Jenny Atas, MD, FACEP
University of Michigan, Ann Arbor, Michigan USA

The Region II South Bioterrorism Planning Committee and the Advisory Committee were formed to do planning and regional coordination for biologic threats and funded under U.S. HRSA grants to the states for planning. In the state of Michigan, the planning is coordinated by established Michigan State Police Emergency Preparedness regions.

The Regional Planning Board is comprised of the local Medical Control Authorities. The Board oversees the regional prehospital system and hospitals within each region. The Board operates in conjunction with local public health and regional coordinators for public health and pharmacy to provide oversight of local and federal resources. Its charge was to review information pertaining to vulnerabilities of the infrastructure and the region's 2.6 million population. Plans for biologic events by a review of the health and safety impact on citizens; and identifying resources for communication, screening or care of exposed or worried well and ill citizens, and developing local bioterrorism response procedures and mutual aid among the region's hospitals and clinics are expected to be completed in 2003. Drills of these plans across the region will occur at the end of the planning process.

The Advisory Committee medical directors and assistant medical directors were appointed by the Regional Planning Board. These medical directors have expertise in planning for disaster care of ill and injured citizens in multiple casualty situations. Subcommittees are chaired by each of the medical director members of the Board or their assistants. These subcommittees are composed of representatives of hospitals, communications specialists, and public health representation from the county and city level. Infectious disease, emergency medical services (EMS), hazardous materials, and fire experts will be tasked with planning and review and coordination with other areas in the region and even across state or national lines for bioemergencies. Coordination and cooperation in an emergency event and to assure that the region has a plan that is comprehensive and that will work well for all parties is essential. The county or city emergency operations coordinators have established plans for dealing with many of the disaster problems by law. The bioterrorism planning annex will be additional planning to help to codify and coordinate the responses that will include many layers of medical care. Other representatives include county and city commissioners, county sheriff, local police, state police, FBI, EMS commission chair, environmental health, Red Cross, and veterinary medicine. Work groups have been established to accomplish specific goals and tasks. The Planning Board and the Advisory Committee have met monthly since their inception. These meeting have proved an invaluable networking tool. Conference calls and email allow planning work documents and presentations on-line. Drills will test the regional planning and then plans can be adjusted to allow coordinated functioning.

Keywords: bioterrorism; drills; exercises; groups; planning; plans; public information; security; surveillance; veterinary
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