



Managing Surge Needs for Injuries: Emergency Medical Service Response



PURPOSE

To provide guidance for local emergency medical services (EMS) response and to operationalize additional EMS-related resources needed in a community within four hours of an explosion. These resources are intended to treat 300 injured patients for up to 72 hours.

BACKGROUND

The Madrid terrorist bombings were used as a model to help develop solutions for managing rapid surge problems during a mass casualty event.

On March 11, 2004, 10 terrorist explosions occurred almost simultaneously on commuter trains in Madrid killing 177 people instantly and injuring more than 2,000. That day, 966 patients were taken to 15 public community hospitals. More than 270 patients arrived at the closest facilities between 0800 and 1030 hours.

Federal resources should not expect to arrive sooner than 72 hours from the time of explosion. Resources can be delayed by the time take to deploy them and by responding to multiple communities.

Emergency Medical Service Response

Emergency Department
Response

Surgical and Intensive Care
Unit Response

Radiology Response

Blood Bank Response

Hospitalist's Response

Administration Response

Drugs and Pharmaceutical
Supplies

Nursing Care

GOAL

To mobilize the appropriate number and type of EMS resources to adequately evaluate injuries, initiate triage, begin transporting 300 injured patients, and to establish ongoing EMS operations for up to 72 hours.

RESOURCES REQUIRED

1. Personnel who are:
 - Appropriately equipped and knowledgeable about chemical, biological, radiological, nuclear, and explosives (CBRNE) detection, personal protection, and decontamination.
 - Educated in the care of blast-related injuries for adult and pediatric patients.
 - Prepared to institute triage.
 - Prepared to institute and participate in unified incident command.
2. A communications system which is interoperable with the public safety disciplines (fire, law enforcement, EMS, and emergency management) and with receiving hospitals and local public health officials.
3. Rapid access to sufficient ambulance resources to transport critically injured patients.
4. Rapid access to sufficient alternative resources (e.g., buses) to transport noncritical injured persons.
5. Have the necessary material and the capability to detect CBRNE agents to assist with decontamination plans.
6. Decontamination equipment for ambulatory and non-ambulatory patients; equipment should be rapidly deployable to the explosion site, a secondary treatment site, or a hospital.

7. Determine/implement secondary triage and treatment sites within the community.

ASSUMPTIONS

1. EMS systems in the United States are highly variable, with a wide range of available resources, experience, and financing.
2. A functional EMS system is a critical component for planning the prehospital management of injured bombing victims.

ACTION STEPS

1. Education:
 - Train responding EMS personnel about how to treat primary, secondary, tertiary, and quaternary blast-related injuries. For guidance, go to www.bt.cdc.gov/masstrauma/explosions.asp.
 - Train EMS personnel about National Incident Management System (NIMS) compliance; Incident Command System (ICS Homeland Security Presidential Directive 5); and importance of command, staging, triage, and treating initial casualties (regardless of rank of the provider) should be emphasized.
 - Train EMS personnel about the use of personnel protective equipment (PPE) and the risks of transporting potentially contaminated patients. The relative importance of gross vs. technical decontamination should be reviewed.
 - Train EMS officials in advanced ICS (ICS 700 or equivalent).
2. Local policy and planning:

Fire, EMS, law enforcement, emergency management, hospitals, and public health should collaborate to develop and complete written plans within six months, as listed below. Within one year, other agencies listed in these plans (including mutual aid agencies, etc.) must be included in ongoing planning and evaluation.

 - Plan for mobilizing 50 ambulances within 10 minutes after the blast. At least 75% of these resources should arrive at staging areas in the first hour with all arriving in the first 90 minutes. This should be accomplished using 9-1-1 EMS resources, mutual aid agreements with other EMS providers, or mutual aid agreements with nonemergency transport providers.
 - Plan describing each agency's role in the command structure. This should include how critical functions of command, staging, triage, and treatment will be accomplished in the first 10 minutes of a response; how additional ICS elements will be filled over the first hour; and how the ICS structure will be formally filled by officials trained in advanced ICS (ICS-700 or equivalent) by the end of the first hour.
 - Plan describing how alternative transport for 200 ambulatory patients will be initiated in the first 10 minutes after an explosion.
 - Plan describing the details of interdisciplinary communications (primary and alternatives). Representatives from fire prevention, EMS, law enforcement, emergency management, hospitals, and public health must be included in this plan.
 - Plan for decontamination and protecting personnel that address the following:
 - Agency responsible for scene assessment and determining what (if any) decontamination measures are required.
 - Realistic assessment of the time required to deploy decontamination resources for ambulatory and non-ambulatory patients.
 - Deployment of decontamination resources to event site, secondary triage sites, or receiving hospitals.
 - Transport of patients after gross decontamination (technical decontamination of patients before transport; appropriate personal protective equipment, or PPE); and appropriately equipped destination choices).

- Plan to establish secondary triage points for ambulatory patients (ideally, within the first hour after the explosion). This plan should address the following:
 - How sites can be activated and staffed with at least one transport ambulance, sufficient law enforcement personnel for security, and adequate support staff to record arrivals.
 - How gross and technical decontamination could be accomplished at affected site(s).
 - How medical care at secondary triage sites could be converted to treatment areas (e.g., provision of medical supplies, additional medical personnel, and other logistical concerns).
- Plan to establish criteria for determination of death at the scene, particularly in a mass casualty situation, and appropriate management of the deceased.

EVALUATION

1. Plan and conduct a community-wide drill. Afterwards, evaluate it by assessing overall operations and EMS resources such as personnel, ambulances, and PPE. Evaluate compliance with NIMS.
2. Assess and refine plan.