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Boston Marathon Bombings: The Positive Effect of Planning and Preparation on Response

SUMMARY

This Lessons Learned document provides the Whole Community with an analysis of the multi-agency coordination effort after the Boston Marathon blasts. Response plans and pre-established coordination centers enabled first responders and emergency managers to coordinate this extraordinary response effort and save lives.

DESCRIPTION

On April 15, 2013, two improvised explosive devices (IEDs) detonated near the finish line of the 117th Boston Marathon, approximately three hours after the winners completed the course. The first IED explosion occurred at 2:49 pm Eastern Daylight Time (EDT), and the second took place 13 seconds later.¹

Both IEDs consisted of pressure cookers concealed in backpacks with low-grade explosives, nails, shards of metal, and ball bearings. The devices exploded 200 yards apart, near the metal barriers that separated the spectators from the runners.

At the time of the explosions, approximately 17,000 runners completed the race while almost 9,000 were still advancing towards the finish line.² The explosions occurred in the last 225 yards of the course, near a large number of spectators, resulting in three deaths and 264 people injured. The scale of the incident required local, state, and federal partners to carry out a coordinated multi-agency response.

Event Preparedness

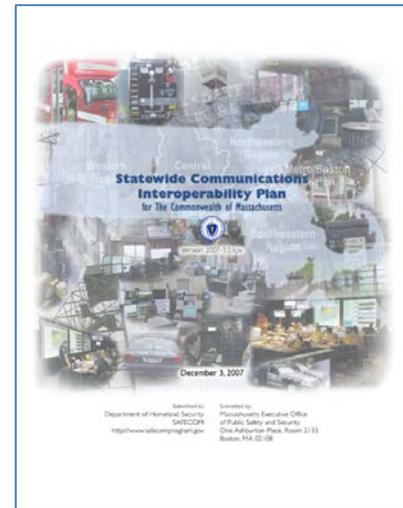
During the response to the Marathon bombings, emergency responders' performance demonstrated the benefits from advanced planning and exercising for an MCI during large mass-gathering events.³ Local, state, and Federal agencies, private-sector partners, and nongovernmental organizations in Boston developed plans to define roles and responsibilities during the Boston Marathon. Additionally, these agencies conducted exercises to test these plans, as well as communication and coordination during large-scale events.

The Emergency Medical Care Advisory Board's Standing Committee on Mass Casualty Incident Planning and Evaluation in Massachusetts defines a Mass Casualty Incident (MCI) as "one in which the number of people killed or injured in a single incident is large enough to strain or overwhelm the resources of local EMS providers."

Plans

Following the 9/11 attacks, Massachusetts emergency management and response communities from multiple jurisdictions developed and enhanced plans to strengthen response capabilities. These communities routinely updated plans and procedures to reflect changing circumstances.

- In 2007, Massachusetts's Statewide Interoperability Executive Committee (SIEC), consisting of members from Massachusetts' five security regions, developed the Statewide Communications Interoperability Plan (SCIP) to address communication systems interoperability problems across the state.⁴ Within the SCIP, the SIEC recommended expanding communication systems interoperability problems across the state. The SIEC updates SCIP initiatives annually to reflect evolving needs and requirements.⁵
- Several states, including Massachusetts, New Hampshire, and Rhode Island, and the urban areas of Boston and Providence created and implemented an IED Annex to their regional response plans. The IED Annex, based on multiple simultaneous-IED attack scenarios, directs a coordinated deployment of resources when responding to an IED incident⁶, such as the Boston Marathon bombings.



Statewide Communications Interoperability Plan for the Commonwealth of Massachusetts (Source: Commonwealth of Massachusetts)

Exercises

Public safety agencies and private-sector participants in Massachusetts regularly conduct exercises to facilitate communication, situational awareness, and functional area coordination.⁷ The exercises listed below contributed to Boston's level of preparedness on the day of the Marathon:

- In 2011, regional hospitals in the [Metro Boston Homeland Security Region](#) (MBHSR) exercised and evaluated MCI response plans during Operation Falcon II. The goal of the exercise was to test whether the hospitals involved could coordinate to provide care for a large number of victims.⁸

The exercise evaluated information sharing, coordination of critical resources, and medical surge capacities for regional hospitals and community health centers. The exercise identified areas of improvement, but largely validated the response plans during an MCI for Boston hospitals, community health centers, and Emergency Medical Services (EMS) agencies.⁹

- The greater Boston area and Massachusetts, in March of 2011, used Federal grant funds from the National Counterterrorism Center, through the Homeland Security Grants Program, to conduct a [Joint Counterterrorism Awareness Workshop Series](#) (JCTAWS) to plan, train, and exercise for IED-related threats and hazards.¹⁰ The JCTAWS, which included 200 local, state, and Federal community participants, focused on the integrated response to a complex terrorist attack in the Boston Metropolitan Area. Participants included representatives from law enforcement, fire, EMS, communication centers, private sector communities, and non-governmental organizations.

The JCTAWS workshop resulted in private-sector participants and federal partners developing relationships that bridged existing communication gaps, enhancing information exchange. Workshop participants developed a comprehensive response matrix that identified the roles of each jurisdiction to test and update response plans as needed.

- In November 2012, the MBHSR conducted [Urban Shield](#) Boston, an annual 24-hour full-scale exercise of emergency personnel response to various scenarios. The exercise, designed to test the adequacy of regional policies, plans, procedures, and protocols, involved over 600 emergency responders from 50 agencies. The primary focus of the exercise was to validate the speed, effectiveness, and efficiency of response capabilities.¹¹



SWAT teams being briefed on Urban Shield scenarios. (Source: Office of Emergency Management)

A major lesson learned from Urban Shield was the need to improve communication between the Boston Police Department and the city's fire departments. According to Police Commissioner Edward Davis, the improvements that were made to enhance "interoperability made a difference in our ability to respond to the Marathon."¹² Additionally, WebEOC use during the exercise provided leadership with familiarization of the system and the opportunity to develop best practices for the tool.¹³

- Prior to the Marathon, the Massachusetts State Emergency Operations Center hosted the annual Pre-Boston Marathon Tabletop Exercise to build relationships between the organizers and responders. This exercise tested plans and procedures for a possible MCI during the Marathon. Participants exercised multiple scenarios, one of which consisted of an IED incident during the Marathon.¹⁵

In 2004, the Massachusetts Emergency Management Agency (MEMA) installed WebEOC, a tool to enable real-time sharing of information between members of the emergency management community. Massachusetts Hospital Association (MHA) cited WebEOC as the most effective tool during the Boston Marathon bombings to acquire and communicate important data concerning critical needs and resources.¹⁴

Coordination Activities during the Response Effort

Describing the response efforts after the blasts at the Marathon, Kurtz Schwartz, Massachusetts Undersecretary of Public Safety, stated, "the cooperation and collaboration across agencies, disciplines, and jurisdictions was immediate and extraordinary. There was a unity of focus and unity of purpose at the command level and through the ranks all the way down to the first responders."¹⁶ According to Richard Serino, FEMA Deputy Administrator, "the fact that the response was so well executed wasn't an accident – it was a result of years of planning and coordination."¹⁷ The following coordination centers played a key role in the coordination effort on April 15th:

- The Multi-Agency Coordination Center (MACC), located at the Massachusetts Emergency Management Agency (MEMA) headquarters, was a coordination point for representatives involved with the Marathon.¹⁸ Each year, MACC participants during the Boston Marathon include representatives from MEMA, the Boston Athletic Association (BAA), local, state, Federal, private and volunteer agencies and organizations.¹⁹

Throughout the Marathon, the MACC remained in constant communication with Emergency Operation Centers (EOCs) in the eight cities along the 26.2-mile course,

and personnel stationed along the course through the use of interoperable channels.²⁰

The interoperability plans and tools, such as the NICS, allowed leadership at the coordination center to communicate with responders and emergency management personnel on the ground. This facilitated the exchange of information and resulted in a near real-time situational awareness.²¹

- The Medical Intelligence Center (MIC), opened in 2009, serves as a coordination and information-sharing center for the city's public health and healthcare organizations. The MIC provides centralized coordination and management for public safety and health organizations during a major emergency or disaster.²⁴

Minutes after the blasts, on-scene EMS alerted the MIC that an incident occurred near the finish line. The MIC immediately notified hospitals in the surrounding area about the possible surge of victims. The MIC also disseminated reports to appropriate agencies and hospitals during the aftermath of the incident that included information on patients, hospital supply needs, ongoing security updates, and services available to victims.²⁵

- The National Weather Service (NWS) Boston forecast office was responsible for determining weather impacts on the Marathon throughout the day. After the explosions the NWS staff altered its support to determine whether the explosions contained toxins or hazardous chemicals. After conducting an air dispersion model and determining that no toxins or chemicals were released in the blasts, the NWS liaison briefed the MACC leadership on the results and continued to provide assistance to the MACC staff.²⁶

Next Generation Incident Command System (NICS) – Adopted by the Massachusetts Emergency Management Agency (MEMA) in 2012, the NICS helps coordinate and manage events and disasters by providing situational awareness to emergency managers. Developed by MIT's Lincoln Laboratory, the NICS is a command-and-control system that includes a multi-layered incident map and a virtual whiteboard for responders to post information and plot strategies.²² During the Marathon, the NICS displayed real-time information on runners through Boston Athletic Association's (BAA's) tracking chips, location of mobile command posts, location of lead and trail vehicles on the course, medical tents and their capabilities, and road closures and re-openings along the marathon route.²³



Medical Intelligence Center (Source: Boston Public Health Commission)

Transferable Lessons

Many of the lessons learned and applied to achieve this well-coordinated response can be replicated by other jurisdictions and regions by conducting the following preparedness efforts:

- Share situational awareness across public agencies, race organizers, and nongovernmental and private organizations
- Participate in exercises and training to institutionalize unity of effort

- Pre-stage supplies and resources for first responders to carry out critical response efforts
- Develop scaled maps for specific events that facilitate dispatch and designate specific zones for incident reporting
- Use large public events (e.g., Fourth of July) as an opportunity to train and test emergency plans in anticipation of an MCI

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