

Critical Communications and EMS management of the Boston Marathon bombing

APCO EMERGING TECHNOLOGY FORUM DECEMBER 3RD, 2013

DEPUTY SUPERINTENDENT JOE O'HARE EMT-P COMMANDER BOSTON EMS DISPATCH OPERATIONS

Critical Communications and EMS management of the Boston Marathon bombing



 You should know that some of the photographs contained in this presentation are quite graphic in nature.

• Please feel free to excuse yourself if necessary.

City of Boston overview



City of Boston



Demographics



21 Neighborhoods Resident Population: 617,594 (2010 Census) 4.8% increase from 2000 22nd in U.S. Size: 48.4 sq/miles 2nd smallest of 30 largest cities 3rd Highest Population Density (13,321/sq. mi) NYC - 26,403 San Francisco – 16,634 Daytime Population: Approx. 1.2 million (BRA) Commuters Health Care Tourism Special Events 94% Increase 2nd in U.S. to Washington, D.C.



Public Safety Agencies

- Boston EMS
 - 350+ Uniformed EMTs & Paramedics
 - 19 BLS Units / 5 ALS Units (Peak Times)
 - 111,000+ calls/year.
- Boston Fire
 - 1,467 Uniformed Personnel
 - 70 Fire Companies & Units
 - 72,000+ calls/year
- Boston Police
 - 2,000+ Uniformed Personnel
 - 800,000+ calls/year





Healthcare Systems within the city



- 10 Hospitals
 - 5 Adult Level 1
 Trauma Centers
 - 3 Pediatric Level 1 Trauma centers
 - Shriner's Burn Inst.
 - Mass Eye and Ear
 - 2 VA Hospitals,
 one with an ED



Drills, Exercises, & Real World Events



- Operation Urban Shield (Nov. 2012)
- MBTA Green Line Crash (Nov. 2012)
- Flu Public Health Emergency (Jan. 2013)
- Tour Bus Crash (Feb. 2013)
- "Nemo" Blizzard (Feb. 2013)



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NOVEMBER 3-1 2012

Ongoing Training



- Monthly training for all uniformed members 9 months per year.
- HazMat tech training for all uniformed members
- ICS training for all uniformed personnel
- Force protection training with Boston Police
- Bomb Squad training with Boston Police
- Heavy oversight from in house medical control physicians. (1 medical director and 3 associate medical directors) All are board certified in emergency medicine.

Ongoing Training cont.



- APCO certification for all EMCOs
- EMD training updated as data guides responses
- New CAD system to be implemented in January 2014 shared by all public safety agencies in Boston
- Interoperability with BPD, BFD, and others.
- All of our call takers, dispatchers, and CMED operators are Boston EMS EMTs and receive monthly training in all aspects of EMS alongside their field counterparts.

Communications



- BEMS operates on UHF with 1 primary dispatch channel. 3 other tactical channels also available
- All members issued a portable radio
- All 911 calls for EMS are triaged and processed by uniformed Boston EMS EMTs.
- Manage Metro-Boston CMED radio system which facilitates ambulance to hospital communications for 61 cities and towns in metropolitan Boston region
- Manage BAMA radio network which allows direct radio communications with 11 mutual aid partners.

Boston Marathon

- Multi-Day Event
- ICS Implemented
- Zone Concept
- 9 BLS / 4 ALS
- 11 Bicycles



- Medical Stations / Proceed Out Teams
- Dispatch Operations
- Coordination Centers: UCC, MEMA, MIC

Boston Marathon by the numbers

- 27,000 + registered runners
- 5,000+/- "Bandit" (non-official) runners
- 550,000+/- spectators and family members
- 1,100 members of the media
- Approx. 100 Boston EMS members assigned to the event on bikes, gators, golf carts, and in ambulances and medical tents
- Largest single day sporting event after the Super Bowl and world's oldest annual marathon.

The Race Course Boston Mara 95 ietBlue STON MARATHON 20 20 128 NEWTON FINISH WOODLAN 27 126 HILL RESERV BOSTON JOHNN KELLEY STATUE 85 BROOKLINE **Poland Spring** FRAMINGHAM 30 MASS PIKE EXIT 12 NATICK LAKE Z NELLESLEY MASS PIKE EXIT 11A TOWN ASHLAN CLOCK T ASHLAND FXIT 22 OPKINTON STATE PARK 128 P (Parking with START LINI EXIT 21A/21B YRIAKIDE **Poland Spring** HOPKINTON 126 **BOSTON MARATHON®** SOUTH STREET LOT P (Parking with shuttle to start **Official JetBlue Course Map** Gatorade and Poland Sprin are available to runners at every mile mark along the

- Formal planning begins Jan. of each year.
- Only 2.6 miles officially "in" Boston.

EMS Compound – Load In





Draw Equipment - Checkout









Medical Tents – Set-up





Boston EMS Dispatch Operations







Metro Boston CMED/BAMA OPS

BASE 13-LITTLETON	MED 4	MED 5	MED 8
ITTLETON	BURLINGTON		
UKLINGTUN	CHELSEA	CHELSEA	
CONVEDEN F1.	FOYROBOLICH	TEP. RESERVE PIS	YES BEALING BIS.
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SCHNULDEN FI.	SCHROEDER PI.	SCHROEDER PI.	SCHROEDER P1.
WABAN HILL	WABAN HILL	WRITEN HILL BUS	
	WALTHAM DIS.	PLATE PLAT	WIDHIN TILL PLS .
DACE O DUDI INCTON	VB-1	VB-1	VB-1
BURLINGTON	VB-3	. 216 E-BU	VB-3
COMMELDGE Dis.	TWT UB-7 Dis.	TWT UR-2 Dis.	TWT VB-6 Dis,
LITTLETON	BASE 4-WALTHAM	155.200	155 348
SCHROEDER PI.	WALTHAM Diz.	Mass. General	100.010
	SCHROEDER PL DI	SCHROEDER PI.	SCHROEDER PI.
	LITTLETON	TWT UB-7 Bis	TWT UB-6 Dis.
-12:36)Run	HIB has	been initialized.	INT VE-7 PIS.
	Di	211	



Boston EMS Gold Elite Console





New CAD mapping on mobile units



Boston EMS Dispatch Operations

- Minimum staffing is 6 EMCOs and 1 Supervisor on days and evenings.
- All EMCOs are APCO and state certified in EMD
- All EMCOs are Boston EMS trained EMTs, all have field experience.
- All EMCOs are capable of functioning at any position at any time. After the explosions, EMCOs were shuffled amongst positions as needed.
- Very technology dependent, but procedures in place for back up in the event of failure.

Operations Staffing for Marathon

Normal Staffing level

- 2 Supervisors
- 3 call takers
- 2 dispatchers
- 1 CMED operator
- 1 dispatcher in the UCC

Marathon Staffing level

- 3 Supervisors (1 Split Day/Eve) 5 call takers
- 3 dispatchers
- 2 CMED operators
- 1 dispatcher in the UCC
- Note: After the explosions, some staff held over from day tour, all voluntarily.

Dispatch OPS Floor Plan





9:32 a.m. - The marathon officially starts in Hopkinton – Elite Women



10:00a.m. – General start x 3 waves Includes Elite male runners at front



11:05 a.m.: First pitch in the Rays-Red Sox Patriots Day game at Fenway Park.



Wheelchair Finishers



Hiroyuki Yamamoto Japan

Tatyana McFadden United States



11:59 a.m.: Rita Jeptoo of Kenya crosses the finish line first in the women's race, in 2:26:25.



12:10 p.m.: Lelisa Desisa of Ethiopia crosses the finish line to win the men's race, clocking in at 2 hours, 10 minutes, 22 seconds



2:08 p.m.: Boston's Mike Napoli ends the Red Sox game with a walk-off hit in the bottom of the ninth inning. 35,000 fans pour out from Fenway Park into Kenmore Square



2:49:45 p.m.: A powerful explosion occurs close to the finish line at Copley Square.




Aerial View



APRIL 15, 2013 BOSTON MARATHON BOMBINGS

WANK C.

NCSP





MCI PHASE DESIGNATIONS

- Phase 1 1 to 10 potential victims
- Phase 2 11 to 30 potential victims
- Phase 3 31 to 50 potential victims
- Phase 4 50 to 200 potential victims
- Phase 5 Greater than 200 potential victims
- Phase 6 Incident or Event Requiring Sustained EMS Operations (longer than twentyfour hours)

3 p.m. (approximate): President Obama, in the White House, is informed of the explosions in Boston.



"We will find out who did this. We'll find out why they did this. Any responsible individuals, any responsible groups, will feel the full weight of justice."

President Obama speaks with Boston Mayor Thomas Menino and Massachusetts Gov. Deval Patrick by telephone soon after.





























EMS Staging Area



Event Timeline

- 14:49 Explosions
- 14:51 MIC put out notice on WebEOC & HHAN
- 14:53 COBTH notified via disaster radio
- **14:55** BAMA notification to privates
- 14:58 1st ambulance leaves scene to MGH
- **15:05** Site of 1st explosion is clear of patients
- **15:17** Second site is reported clear—no patients remaining on Boylston Street
- **16:06** last patient is transported from the medical tent—there were several patients with minor injuries/complaints who were reluctant to even be transported
- We took some more patients later in the evening- some were residents of the apartment buildings who couldn't go home and had nowhere else to go, etc.

Boston PSAP 911 calls by hour 1250 through 2250. Cell phone service was drastically effected within minutes after the explosions. The system was overloaded, not shut down as reported. Text messages were less effected.



BAMA and HHAN

- BAMA Boston area Ambulance Mutual Aid network is a DoJ funded project that allows interoperability among disparate radio systems. Further build out was accomplished through UASI grant funding. Implemented in December of 2008, and fully operational in April of 2009, BAMA is managed by Boston EMS and allows dispatch to dispatch and dispatch to ambulance communications between Boston EMS and its mutual aid partners in the private sector.
- HHAN Health and Homeland Alert Network is a state network that allows users to quickly notify subscribers, via multiple electronic means, of any event by priority. It has the ability to require acknowledgment by the subscribers to assure receipt.

Lawlor Medical Intelligence Center (MIC)

- Department

 Operations
 Center &
 Multi-Agency
 Coordination
 Center
- Seats 64
- Follows NIMS ICS
- Operational 24/7



Unified Command Center (UCC) at Boston police Headquarters



Situational Awareness - Web EOC

regional significant events unsplay - windows internet explorer provided by poston emo

https://eoc.cityofboston.gov/eoc7/boards/board.aspx?tableid=253&viewid=844&uvid=1.5300

Record #: 4093		The MBTA has shut down all green line service from Kenmore Square to Park Street.		
Event Type:	Transportation	HEA - Boston Medical Intelligence Center - Michael Colanti at 15:18:31 on 4/15/2013		
Jurisdiction/Agency:	Boston			
Section:				
Position:	HEA - Boston Medical Intelligence Center			
Date:	04/15/2013 15:18:31			
Attachments:				
Map:				
Address/Location:		High	Incident: 2013 Boston Marathon	
		This information is	not for public disclosure and is intended for authorized WebEOC users only.	
Record #:	4090	A large explosion has	s been reported outside of Medical Tent A, prepare for unexpected injuries to report.	
Event Type:	Duty Officer	HEA - Boston Medical Intelligence Center - Michael Colanti at 14:50:59 on 4/15/2013		
Jurisdiction/Agency:	Boston	Please note that volunteers are reporting there was a manhole cover evplosion. Dartmouth and Clarendon area are being cleared out. Many		
Section:		patients are being seen that will require transports to the hospitals. HEA - Boston Medical Intelligence Center - Michael Colanti at 14:53:25 on 4/15/2013		
Position:	HEA - Boston Medical Intelligence Center			
Date:	04/15/2013 14:50:59			
Attachments:				
Map:				
Address/Location:		High	Incident: 2013 Boston Marathon	
		This information is	not for public disclosure and is intended for authorized WebEOC users only.	
Record #: 4088 Per BAA, Medical Stations 1, 2, 3, and 4 are closed as of 1425hrs.				
Event Type:	Duty Officer	HEA - Boston Medical Intelligence Center - Michael Colanti at 14:29:53 on 4/15/2013		
Jurisdiction/Agency:	Boston			
Section:				
Position:	HEA - Boston Medical Intelligence Center			
Date:	04/15/2013 14:29:53			
Attachments:				
Map:				
Address/Location:		Low	Incident: 2013 Boston Marathon	
		This information is	not for public disclosure and is intended for authorized WebEOC users only.	
A Page 11 of 11 >> Disable Refresh				
			1943 PM	

Patient Distribution Boston hospitals respond to Marathon bombing WESTERN AVE CHARLES WESTERN MA MAIN ST WESTERN AVE PED/ Mass General Hospital MASI 57 ONGENEL LOW / CAMERIOGE ST received 29 patients, eight MASSACHUSETTS INSTITUTE OF TECHNOLOGY - WEDDOLE ST of whom are critical. LESCHA. MASSACH SETTS TURNERS CACO! CUS THE **First explosion** 1052.004 The first explosion occurred near the finish line of the race, around 2:50 p.m. CHINTON AN POALSETTS TURNER COMMONWEALTH AVE STORIOW DR BOSTON UNIVERSITY PLAYOROUND N TH MIL COMPACIAL TH AVE **Tufts Medical Center** St. Elizabeth's Medical Center MED CEN saw 17 patients, none of whom MASSACHUSET TURNPIKE ARMORY PLAYEROUND NENCON ST received 18 patients. had life-threatening injuries. **Copley Square** Second explosion Staging area for casualties. THISTOR The second explosion occurred Beth Israel Deaconess Medical Center VERWAY about 300 feet away and 12 received 24 patients. seconds after the first. UNIVERSIT USEUM OF NE ARTS SUACON ST **Boston Children's** HARWARD In known has seen 10 patients, with CUNTON RD three still hospitalized. **Boston Medical Center** CENT received 23 patients. THOMAS CASS III VC Ten of them are critical MALCOLN Y YON STON . COLUMBIA RO PEREST ELOT ST **Brigham and Women's Hospital** "EADY has seen 31 patients, five of 40 ION:STON ST whom are critical. PLATOROUND. ROOKLANE ESERVOIR

CONNOLLY PLAYGROUND

Not shown on map:

H Carney Hospital

saw seven patients, all of whom have been

treated and released.

SOUARE

CENTRE ST

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60

WATH

dvisory

ompany

MAREN ST

C The Advisory Board Company All tigures as of 12:30p.m. April 16th 2013 | Image Credit: IStock Photo

Brigham and Women's

Learn more at: advisory.com/daily-briefing or follow @daily_briefing on Twitter

Faulkner Hospital

received 13 patients.

Mount Auburn Hospital

treated and released

five patients.

EXPO CENTER

JERNON ST



Mutual Aid Partners











Boston EMS would like to thank our mutual aid partners that sent support to the Boston Marathon bombing incident. The level of support we received was immediate, coordinated and responsible for saving a number of lives.

Thank you for answering the call















Communications

- Field Operations
 - BAMA
 - CMED
 - 800MHz Radios
 - HAM (Amateur)
- Systems
 - WebEOC (Boston, MDPH, MEMA)
 - HHAN Alerts (MDPH, COBTH, MEMA)
- Cell Failure Impact
- Fast Moving Information
- Rumor Control







Fatalities on Scene



Martin Richard 8 yrs

Krystal Campbell 29 yrs Lu Lingzi 23 yrs

Additional Injuries later in the week



Sean Collier 26 Y/O fatal GSW while seated in cruiser Richard Donohue Jr. 33 Y/O survived despite femoral artery wound.

And the week went on...






And on...





And on...To Finish





Lessons Learned

- Responding in a high threat environment bombing incident proved that time saves lives.
- Autonomy/independence of our own personnel to perform lifesaving measures under austere conditions with little or no direction from supervisory personnel
- Tourniquets save lives, as does distribution of patients to appropriate facilities
- Personal Protective Equipment evaluation during events what is enough?
- Don't depend on cellular devices Radio discipline is critical. Consider WPS or GETS for official cells

Lessons Learned continued.

- Radio interoperability was critical all week long
- The ability to monitor other agency radio traffic was critical to situational awareness and the safety of our members.
- For ongoing events, agencies must consider support for both radio and other wireless devices such as chargers for portables and cell phones.
- Unified command minimizes confusion and speeds requests for assistance. Shared CAD system allows two way information flow among city public safety.

Lessons Learned continued

- Patient tracking was difficult for EMS and receiving hospitals. Many patients were moved so quickly, some with their clothing blown off and/or were separated from their bags. Not all had triage tags.
- Many patients with less severe injuries self evacuated and presented later at emergency departments.
- Peer Support and debriefings are critical for the well being of everyone involved. We had peer support in house that night and held multiple debriefings over the weeks following. We also held debriefings prior to our next major event (July 4th).

Preparedness

Preparedness is the key to Effective Incident Management Awareness Training Equipment Resources Planning Exercises



This is why we do what we do



Jane Richard 6 yrs



Jeff Bauman 27 yrs



Thank you

Questions or Comments?



Thanks to Capt. Robert Haley, BEMS Special OPS, and all the men and women of Boston EMS