

CITY OF BOSTON EMERGENCY MEDICAL SERVICES



Saving Lives Since 1877



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BOSTON EMS 2011

ANNUAL REPORT

785 Albany Street · Boston, MA · 02118 · 617-343-2367 · www.cityofboston.gov/ems



78,692

Transports

108,343

Clinical
Incidents

358

EMTs &
Paramedics

69

Community EMT
Course Graduates

477

Car Seats
Checked

95%

Overall Patient
Satisfaction Rating

2,600+

People Trained by the
DelValle Institute

18

New Boston
EMS EMTs

3,513

People Trained
in CPR

5.7 min

Priority 1 Median
Response Time

1,010

Public Access
AEDs in the
Database

Saving Lives
Since

1877

9-1-1

THE ONLY NUMBER YOU NEED TO KNOW

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A WORD FROM THE CHIEF

Each and every day Boston EMS EMTs and Paramedics serve the people of Boston with pride. They deliver exceptional pre-hospital emergency medical care 24 hours a day, 365 days a year. While Boston EMS is widely recognized as one of the best emergency medical providers in the country, we continually strive to improve service delivery and elevate our standards of excellence. Our team works tirelessly to bring high-quality, compassionate care to the streets of Boston.

2011 was a year of great achievement for Boston EMS. Our EMTs and Paramedics responded to over 108,000 emergency medical calls and transported nearly 79,000 patients to area hospitals. We continued to surpass our response time goal for urgent/life threatening calls and earned honors both regionally and nationally. The Department graduated a class of 18 new EMTs from the Boston EMS Training Academy and marked the promotions of one Superintendent, two Deputy Superintendents, and one Lieutenant.

Additionally, we officially opened a new Boston EMS Headquarters at 785 Albany Street, consolidating all administrative functions into one building. To better serve our public health and public safety partners, Boston EMS' DelValle Institute for Emergency Preparedness launched an online "Learning Center", which provides access to various emergency preparedness training courses and resources. Further, our Community Initiatives Division continued to provide

educational community programming teaching over 3,500 people CPR.

As part of the Boston Public Health Commission (BPHC), Boston EMS strives to improve access to healthcare across the City. In 2011, Boston EMS launched a new program in collaboration with BPHC's Division of Healthy Homes and Community Support to better serve patients with asthma. The "Asthma Project" links patients with severe asthma ages 9-24 to support services that will help them better manage their asthma and improve their quality of life. Through the Asthma Project, Boston EMS has created a model for future support and referral programs that will help improve the overall health of Boston residents.

As Chief of Department, I can proudly say that Boston EMS' greatest asset is our personnel. The achievements we earned in 2011 are a direct result of the hard work and dedication of the entire Boston EMS workforce. While our field staff may be the "face" of the Department, we are incredibly fortunate to have an equally committed and talented support staff that works behind the scenes to ensure a smooth and efficient operation.

I anticipate that the year ahead will bring new challenges and opportunities for achievement. I am confident that through hard work and dedication, we will continue to strengthen what is already an exemplary organization and reach new heights in the years ahead.



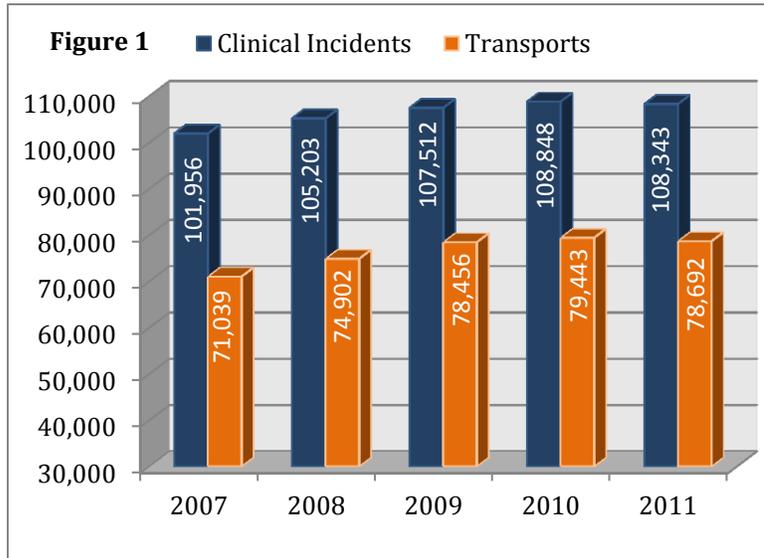
Jim Hooley
Chief of Department

BOSTON EMS AT A GLANCE

Boston Emergency Medical Services is the primary provider of emergency medical services for the City of Boston. As a bureau of the Boston Public Health Commission, Boston EMS is one of the nation's oldest providers of pre-hospital care, tracing its roots back more than 100 years. In fact, Boston EMS has been saving lives since 1877.

With a resident population of over 600,000 which expands to approximately 900,000 people during the work day, the City of

Boston is the largest city in Massachusetts, and the 22nd largest in the country. Given Boston's size, diversity, historical significance and designation as the capital city of Massachusetts, Boston EMS operates in an exciting and vibrant urban environment.



The Department employs 350 Emergency Medical Technicians (EMTs) and Paramedics and responds to over 100,000 emergency medical calls each year, making Boston EMS one of the largest and busiest municipal emergency medical services providers in the country. Boston EMS utilizes a two-tier response model offering Basic Life Support (BLS) and Advanced Life Support (ALS) services and leverages the latest advances in both medicine and technology. In addition to patient care, the Department also plays a critical role in the

Figure 2 SERVICE AREA OVERVIEW
Area Served: The City of Boston
Boston Land Area: 45.7 sq mi
Resident Population: 617,594 ¹
Daytime Population: ~900,000 ²
Residents Living Below Poverty Line: 19% ³
2010 Homeless Population: 7,286 ⁴
Residents Who Report Speaking a Language Other than English at Home: 34% ⁵
EMS Services Provided: ALS (Advanced Life Support) and BLS (Basic Life Support)

City of Boston's emergency preparedness efforts and provides community programming designed to educate the public about important health and safety topics. The men and women of Boston EMS provide excellent pre-hospital care to every patient they treat and serve the people of Boston with pride and compassion.

¹ <http://2010.census.gov/2010census/>

² <http://www.census.gov/population/www/socdemo/daytime/daytimepop.html>

³ U.S. Census Bureau, 2008 American Community Survey

⁴ Homeless Counts, City of Boston Emergency Shelter Commission

⁵ U.S. Census Bureau, 2009 American Community Survey

A YEAR OF REUNIONS

A RUNNER'S TALE

Just a month before what would have been his 14th marathon and fourth Boston Marathon, Bernie Zelitch collapsed on the commuter rail at North Station and went into cardiac arrest. Boston EMS EMTs Mike Regan and Steven Garceau along with Paramedics Greg Bond and Robert Locke responded within minutes and provided lifesaving treatment. Boston EMS revived Bernie with CPR and AED and applied therapeutic hypothermia, a process of cooling the body which helps to protect brain function and improve survival and neurological outcomes of cardiac arrest victims.

Boston EMS EMTs and Paramedics respond to an average of 300 emergency medical calls each day. It is not often that department members have the opportunity to reunite with the patients they treat, but in 2011 several crews had the chance to reconnect with their patients celebrating some absolutely wonderful health outcomes.

Boston EMS transported Bernie to Massachusetts General Hospital for further treatment. After undergoing quadruple bypass surgery, Bernie feared that he would never be able to run again.

But not long after his surgery, Bernie began the rehabilitation process. His walk slowly turned into a jog which eventually turned into a run.

Thirteen months after he nearly died, Bernie ran the 2011 Boston Marathon on April 22nd, finishing well ahead of his expected time. Sporting a sign that read "Thanks to Boston EMS/Mass General - Revived Repaired 2010", Bernie served as a running Boston EMS testimonial, literally. Upon finishing the race, Bernie reunited with Boston EMS

Paramedics Bond and Locke who saved his life along with EMTs Regan and Garceau. Keep running Bernie!

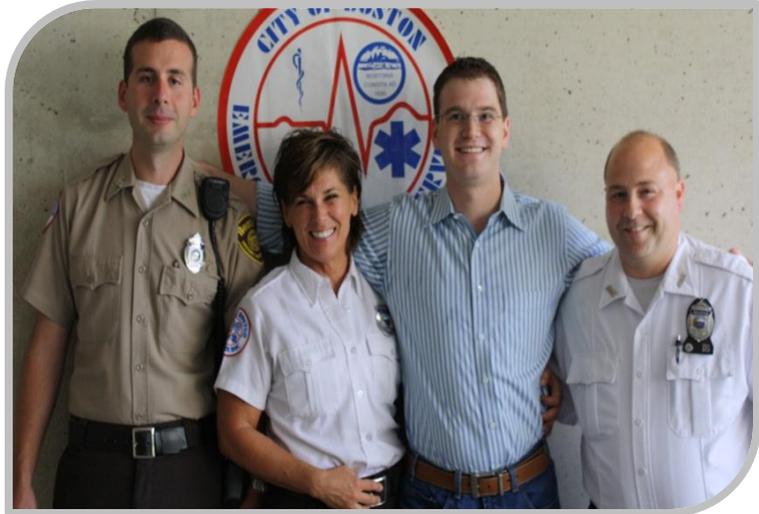


A YEAR OF REUNIONS

WHEN EVERY SECOND COUNTS

In July 2008, a then 24-year-old Mark Nielsen fell down a flight of stairs at the Arlington T station, causing serious head and brain injuries. EMTs Tom Smith and Matt Furlotte, as well as Paramedics Laura Lee and Mike Yaffe, responded within minutes and swiftly transported the unconscious patient to Beth Israel Deaconess Medical Center.

On September 15, 2011, Mark along with his parents visited Boston EMS Headquarters to reunite with the EMTs and Paramedics who saved his life. Today, Mark is healthy and doing well. His doctors credit his excellent recovery to the immediate care he received from Boston EMS, among other factors. Mark and his parents could not thank the crews enough. Mark's recovery is proof that in an emergency, every second counts.



IT'S A GIRL!!

On October 12, 2011 a couple from the Norwood area was traveling to the hospital on I-93 when their baby just couldn't wait any longer to greet the world. Boston EMS responded to the couple's 911 call with no time to spare. EMT Recruit Michelle Chu along with Field Training Officer Miguel Diaz delivered a beautiful, healthy baby girl named Serene.



The baby was EMT Chu's first delivery. Upon graduating from the Boston EMS Training Academy two weeks after the baby's birth, EMT Chu had the opportunity to reunite with Mother Ena El-Hadidy and Baby Serene at the Boston EMS graduation ceremony. EMT Chu proudly presented the mother with a pink "Delivered by Boston EMS" onesie. Baby Serene was one of 24 babies delivered by Boston EMS in 2011. Congratulations to mom and dad!

BOSTON EMS BY THE NUMBERS

The Department's top priority is to provide excellent pre-hospital care. In order to ensure optimal service delivery, Boston EMS systematically monitors and analyzes key operational and clinical performance data on a routine basis. The Department utilizes data such as call

volume, patient satisfaction results, response times, and various patient outcome measures, among others, to make strategic decisions. With a tireless commitment to quality, Boston EMS attempts to maximize efficiency and effectiveness with every response.

Figure 3

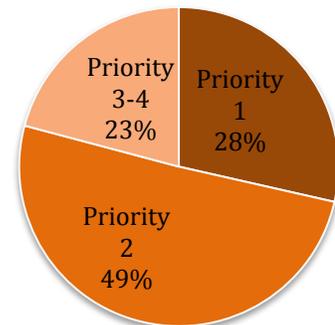
2011 INCIDENTS BY TYPE	NUMBER	PCT.
Illness (abdominal pain, fever, etc.)	31,181	29%
Investigations ("man down", alarm, etc.)	20,458	19%
Injury (lacerations, fractures, etc.)	15,587	14%
Cardiac Related (unconscious, CPR, etc.)	11,135	10%
Respiratory (asthma, CHF, etc.)	8,702	8%
Psychological/ Suicidal	6,777	6%
Motor Vehicle (MVA, pedestrian, cyclist struck, etc.)	5,711	5%
Neurological (CVA, seizures, etc.)	4,520	4%
Fire/ Hazmat/ Standby/ Environ.	2,014	2%
Trauma (penetrating injury, long fall, etc.)	1,289	1%
Overdose	969	<1%
2011 Total	108,343	100%

Figure 5*

2011 INCIDENTS BY NEIGHBORHOOD	NUMBER	PCT.
Allston/ Brighton	6,395	6%
Back Bay	8,610	8%
Beacon Hill/ West End	2,944	3%
North End	3,754	3%
Charlestown	2,185	2%
East Boston	6,788	6%
South Boston	5,899	5%
South End	12,412	11%
Roxbury	15,936	15%
Dorchester North	16,310	15%
Dorchester South	7,543	7%
Roslindale	4,138	4%
Jamaica Plain	3,225	3%
West Roxbury	2,838	3%
Hyde Park	4,763	4%
Mattapan	3,419	3%
Long Island	415	<1%
Other/Not Listed	769	1%
2011 Total	108,343	100%

*Figure 5 captures the location where the incident occurred

Figure 4
2011 INCIDENTS BY PRIORITY



Priority 1: urgent/life threatening
 Priority 2: serious/potentially life threatening
 Priority 3-4: non-life threatening illness or injury

Figure 6
2011 TRANSPORT MIX

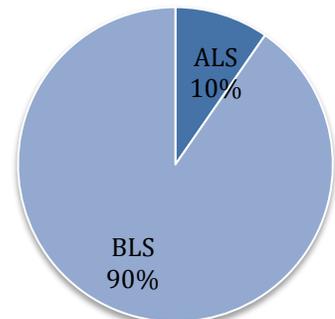
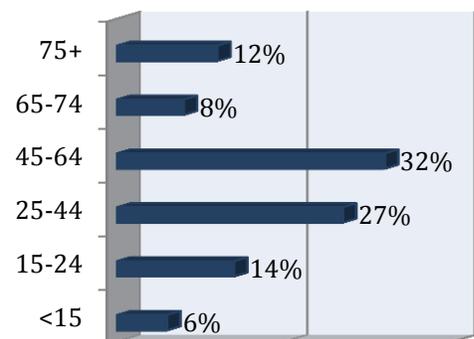
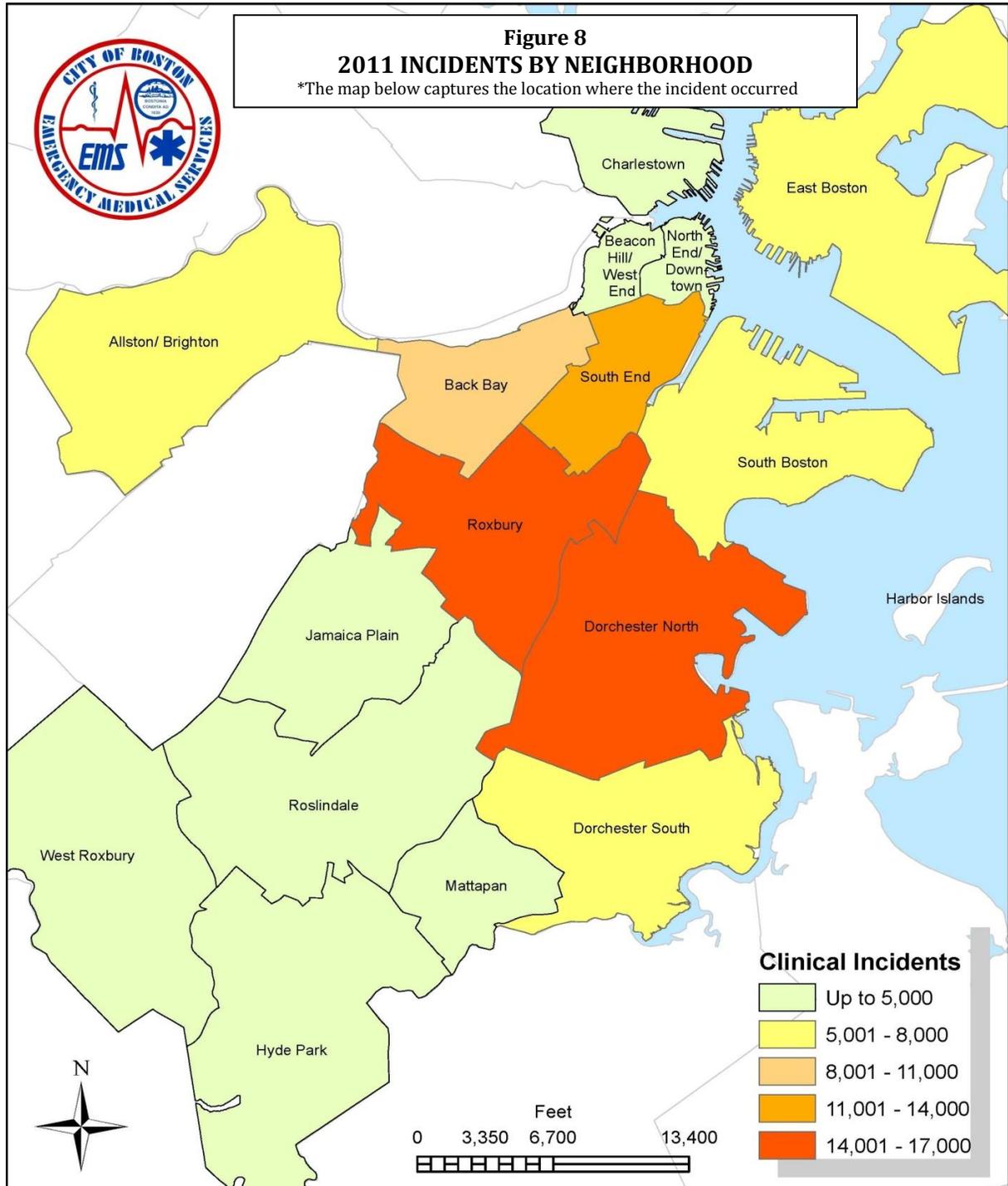


Figure 7
2011 TRANSPORTS BY AGE



BOSTON EMS BY THE NUMBERS



**Note: This map does not control for neighborhood geographic or population size. Generally speaking, larger and more densely populated areas have a higher number of clinical incidents.

BOSTON EMS BY THE NUMBERS

As one of the busiest EMS services in the country, Boston responds to an average of 300 calls per day. Figure 9 below details 2011 response and transport activity by unit.

Figure 9 2011 RESPONSES AND TRANSPORTS BY UNIT							
Unit*	Responses 2011	Responses 2010	% Chg		Transports 2011	Transports 2010	% Chg
24 HOUR/DAY BLS							
A1	6,555	6,825	-4%		4,268	4,366	-2%
A2	7,933	8,360	-5%		5,372	5,787	-7%
A3	6,375	6,451	-1%		4,383	4,464	-2%
A5	4,350	4,216	3%		2,747	2,718	1%
A6	7,223	6,908	5%		4,620	4,515	2%
A7	4,775	4,918	-3%		2,703	2,928	-8%
A11	6,601	6,666	-1%		4,499	4,596	-2%
A13	6,476	6,513	-1%		4,260	4,400	-3%
A14	4,388	4,370	0%		2,768	2,862	-3%
A15	4,049	4,433	-9%		2,372	2,645	-10%
A18	4,217	4,081	3%		2,769	2,629	5%
20 HOUR/DAY BLS							
A8	5,539	5,613	-1%		3,189	3,334	-4%
A10	6,178	6,192	0%		4,124	4,231	-3%
A12	5,936	5,811	2%		4,218	4,004	5%
A16	6,650	6,274	6%		4,064	4,031	1%
16 HOUR/DAY BLS							
A4	5,721	5,811	-2%		3,421	3,692	-7%
A9	3,686	3,466	6%		2,366	2,335	1%
A17	3,816	3,871	-1%		2,541	2,546	0%
A19	3,887	4,026	-3%		2,709	2,849	-5%
24 HOUR/DAY ALS							
P1	5,459	5,284	3%		1,496	1,448	3%
P2	6,305	5,896	7%		1,703	1,601	6%
P5	4,408	4,144	6%		1,557	1,420	10%
16 HOUR/DAY ALS							
P3	3,233	3,173	2%		1,148	1,256	-9%
P16	3,823	3,612	6%		1,185	1,134	4%

*See page 25 for unit location

**Note: The table above includes only BLS and ALS transport units and does not include Supervisor, Command Staff or Special Operations unit responses

***2011 figures in bold indicate the busiest BLS and ALS units categorized by hours in service

BOSTON EMS BY THE NUMBERS

Patients expect a quick response when they call 911 for help. As outlined in the Boston EMS Service Zone Plan⁶, the Department’s response time goals establish aggressive response time targets; Boston EMS strives to arrive on scene at priority 1 calls (urgent/life threatening calls) within 6 minutes. The Department consistently surpassed its response time goals for both priority 1 and 3 incidents, but narrowly missed its goal for priority 2.

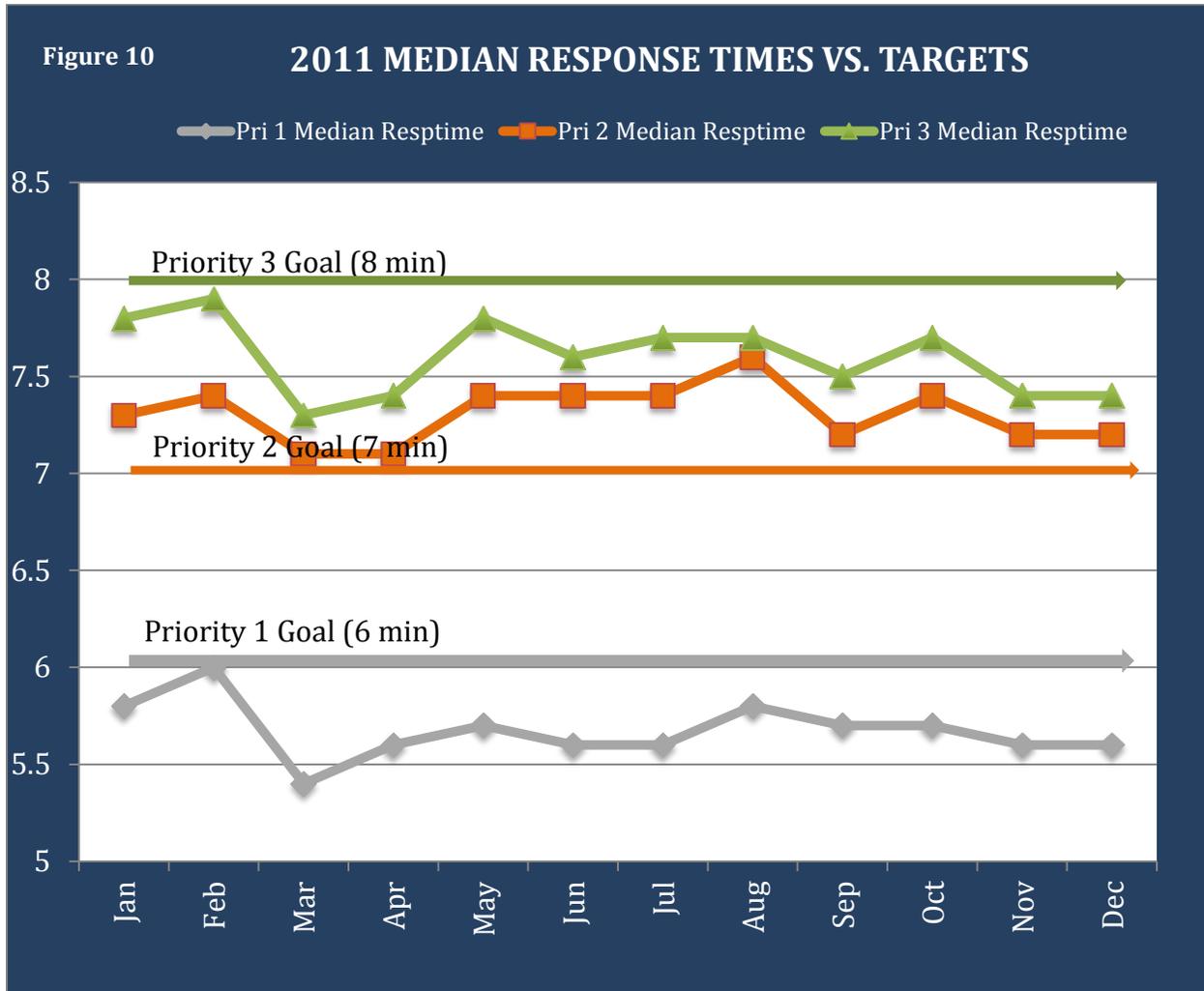


Figure 11 2011 MEDIAN RESPONSE TIMES

Priority Level	2011	Goal
Priority 1 (urgent/life threatening)	5.7 minutes	6.0 minutes
Priority 2 (serious/potential life threatening)	7.3 minutes	7.0 minutes
Priority 3 (non-life threatening illness or injury)	7.6 minutes	8.0 minutes

⁶ http://www.cityofboston.gov/ems/service_zone.asp

BOSTON EMS BY THE NUMBERS

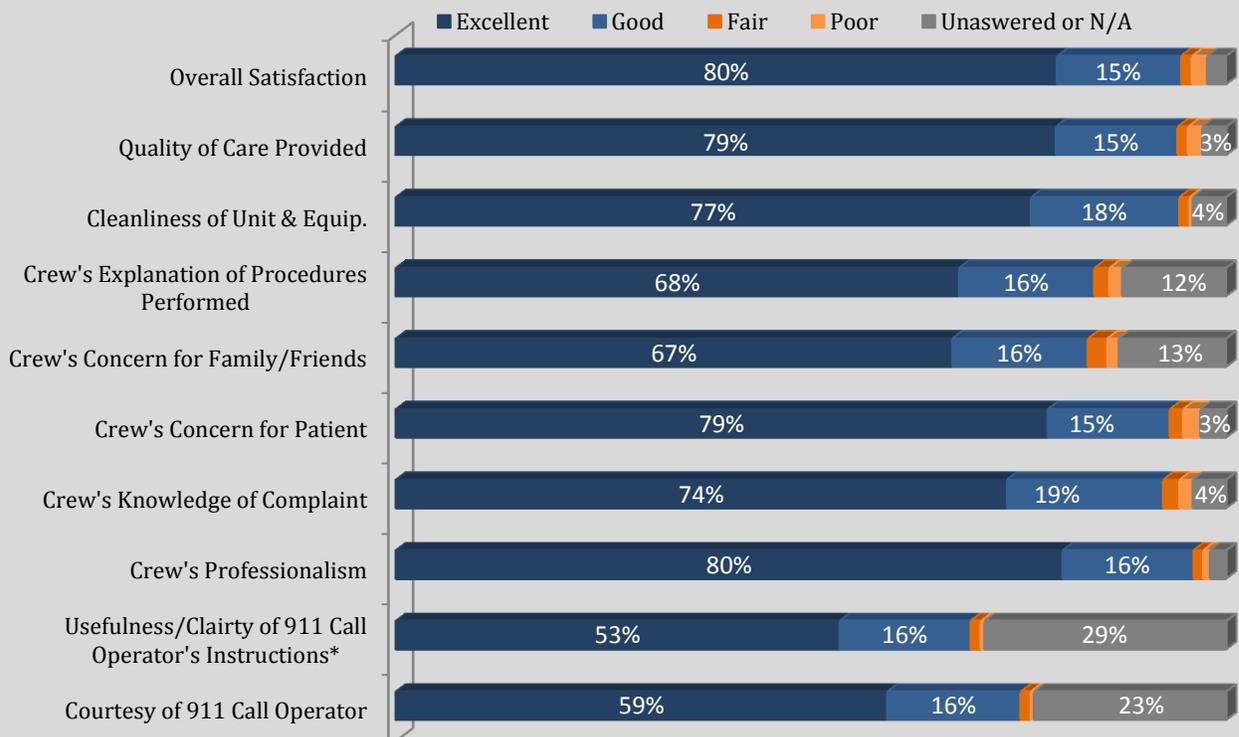
Boston EMS highly values input from its patients. Among other things, the Department relies on patient feedback to help identify areas where service delivery can be improved. In 2011, Boston EMS continued to send patient satisfaction surveys to every patient transported asking them to rank 10 specific areas of the service as excellent, good, fair or poor. The Boston EMS Patient Satisfaction Survey also provides respondents the opportunity to submit

WHAT OUR PATIENTS ARE SAYING...

“My rapid recovery is due to your excellent staff and their wonderful service and care.” **
 “The EMTs were compassionate and provided outstanding care.” **
 ** “They saved my life. Thank you.” ** “I was treated with dignity and respect.” ** “The service I received was superior. It could not have been better.” **
 “They're wonderful. End of story” ** “They could not have been kinder or calmer.”

written comments about their experience. While only 7% of individuals transported returned surveys, the Department was incredibly pleased to learn that 95% of respondents felt Boston EMS' overall service delivery was either excellent or good (80% and 15% respectively). Additionally, 94% of respondents felt Boston EMS' quality of care was either excellent or good (79% and 15% respectively).

Figure 12
2011 PATIENT SATISFACTION SURVEY RESULTS



*Some calls are entered by other agencies, so not all callers requesting an ambulance speak to a Boston EMS Telecommunicator

**Respondents have the option not to reply or to choose n/a for any category

***For visual clarity, data labels for responses representing <3% of the total have been removed

BOSTON EMS BY THE NUMBERS

Boston EMS has several diversified revenue streams including funds from commercial insurance providers, Medicaid, Medicare, private payers, grants, as well as the City of Boston. In fiscal year 2011, approximately 76% of the Department's annual revenue came from billing and insurance. In mid-2010, Boston EMS developed a new relationship with a company that specializes in EMS billing. As a result, the Department experienced an increase in overall net patient service revenue over the course of FY11. However, just like many other City departments, Boston EMS has felt the

effects of the economic downturn and has remained vigilant in its efforts to operate in the most fiscally responsible and cost-efficient manner possible.

As a key member of the City of Boston's public safety triad, Boston EMS delivers a critical service to the people of Boston. The Department remains committed to focusing all available resources toward the execution of its core mission, providing excellent patient care to the visitors and residents of the City of Boston.

Figure 13
FY11 FUNDING BREAKDOWN

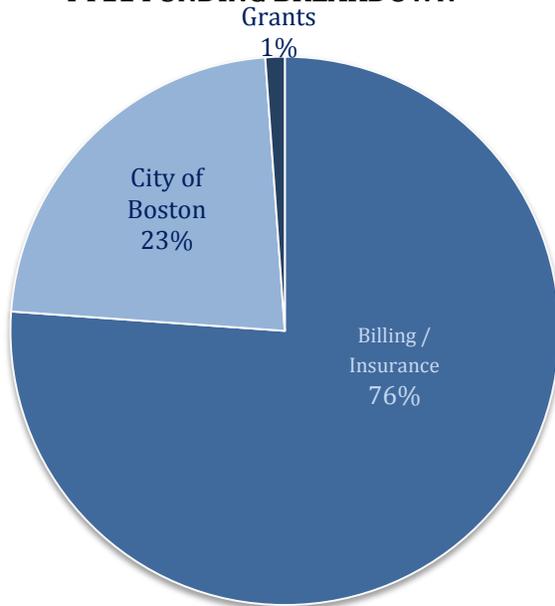
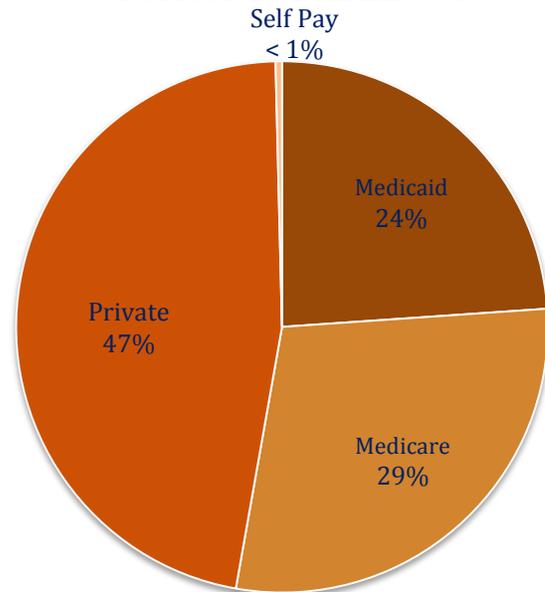


Figure 14
FY11 PAYER BREAKDOWN



EVERYDAY HEROES

Working as an EMT or Paramedic in a busy urban environment is physically and mentally demanding and fraught with risks from vehicle crashes, exposure to communicable diseases, injury and assault. Boston EMS EMTs and Paramedics demonstrate great bravery and compassion on a regular basis as they serve the people of Boston. EMTs Joe Anderson, Rick Chiaravalloti, and Edmund Burke are just three examples of those who exhibited true heroism in 2011.

*Joe Anderson, EMT-B
Rick Chiaravalloti, EMT-B*



EMTs Joe Anderson and Rick Chiaravalloti were on duty the morning of August 10th when shots rang out in the neighborhood of Brighton. An elderly man had been shot in an apartment building. As Boston Police and Boston EMS arrived, the shooter continued to fire shots. Boston Police took up a defensive position in a basement apartment and were able to protect EMTs Anderson and Chiaravalloti as they entered the building to provide aid to the victim. The victim was in critical condition and required immediate treatment and transport. As the EMS

crew was about to extricate the patient from the building, another shot was fired forcing the crew and the police officers escorting them to take cover. During a second attempt out of the building, another shot was fired. In the best interest of the patient, Boston EMS and Boston Police decided to proceed. Throughout the entire incident, the patient remained the main concern of both EMTs Anderson and Chiaravalloti. With police forming a circle around the EMS crew, the patient was rushed out of the building without further injury. The crew transported the victim to the hospital for further treatment and evaluation. The tremendous bravery and selflessness exhibited by EMTs Anderson and Chiaravalloti undoubtedly make them every day heroes.

Edmund Burke, EMT-B



On August 24th, off-duty EMT Burke, who has been with Boston EMS since 1996, was on his way to work when he heard a call on the radio about a fire in Brighton. Burke immediately rushed to the scene arriving before fire crews. He raced into the burning house and rescued a 10-year-old boy who was unconscious and in respiratory distress. Burke carried the child out as other emergency responders arrived. The child suffered from smoke inhalation and was taken to the hospital for further treatment. EMT Burke demonstrated great bravery as he fearlessly risked his life to save that of another.

DISPATCH OPERATIONS



Dispatch Operations is responsible for prioritizing incoming emergency medical calls, dispatching emergency units and coordinating with other public safety agencies as well as local hospitals. The Division also manages the Metro-Boston Central Medical Emergency Direction (CMED) radio system which allows for coordination between EMS field providers and area hospitals throughout the 61 cities and towns in Metro Boston. All Boston EMS Telecommunicators are uniformed EMTs who have received an additional 19 weeks of specialized training in Emergency Medical Dispatch. Boston EMS Telecommunicators serve as the critical link between the public and the EMS crews on the street.

In 2011, Dispatch Operations continued to focus on improving communication with the Department's partners as well as the public. The Division implemented new policies to allow for direct communication with the dispatch centers of Logan Airport and MassHighway Operations, which has resulted in better coordination and streamlined response. Dispatch Operations also expanded the use of the Boston Area Ambulance Mutual Aid Network (BAMA), a radio network

A CRITICAL LINK...

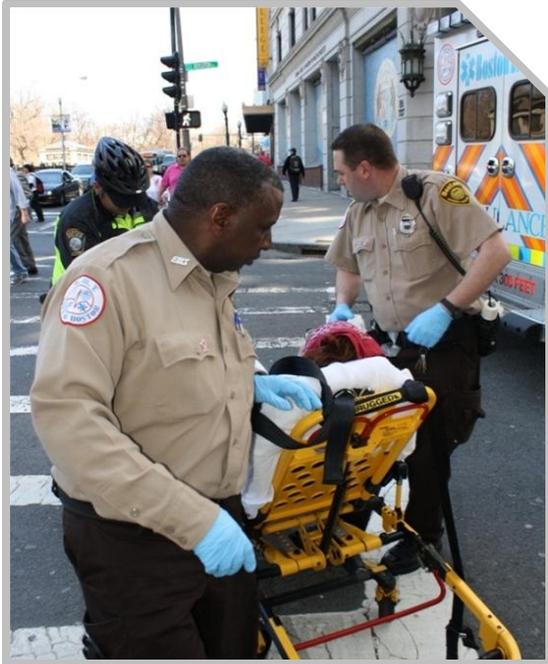
On December 31st, EMT Sara Curry received a 9-1-1 call from a pregnant female in active labor who was attempting to drive to the hospital. The caller also had children in the car, the oldest her 12-year-old daughter Tanisha. After instructing the patient to pull over, Curry quickly determined the location of the vehicle. She then calmly instructed Tanisha how to help her mother deliver the baby. Together, Curry and Tanisha helped to keep the new baby safe before crews arrived. Both EMT Curry and Tanisha were honored at the 2012 Massachusetts 9-1-1 Heroes Awards® Ceremony.

allowing interoperability with partnering ambulance services. Additionally, the Division updated some of its pre-arrival instructions including those for CPR. Telecommunicators provide pre-arrival instructions to callers to initiate medical care before ambulance crews arrive. Updated CPR pre-arrival instructions reflect the latest CPR guidelines which have proven to increase the survivability of patients suffering from sudden cardiac arrest.

The Boston EMS Operations Center also underwent a complete renovation in 2011 and now features updated radio consoles, new furniture, and the latest equipment providing a much more efficient and ergonomically friendly workplace for Dispatch Operations personnel.

CLINICAL INNOVATION

As a leader in the field of pre-hospital emergency medicine, Boston EMS has long held a reputation for clinical excellence and is committed to remaining at the profession's forefront. The Department provides the latest advancements in pre-hospital emergency care, conducts significant research and operates a comprehensive quality assurance program. In 2011, Boston EMS Paramedics achieved an intubation success rate of 96.5%⁷ and the City of Boston remained ranked as one of the top cities for cardiac arrest survival rates.



Boston EMS' Research, Training, and Quality Improvement (RTQI) team, made up of emergency department physicians, EMTs, Paramedics, and Training Officers, works to ensure that the Department's

⁷ Each time a Boston EMS Paramedic attempts an intubation, the incident is reviewed by a Paramedic Research Coordinator and at least one Boston EMS Physician as part of the Boston EMS Airway Registry

EMTs and Paramedics are prepared to consistently deliver high-quality patient care. The team is currently researching best practices in cardiac resuscitation, the effectiveness of alternative intravenous access devices, and the impact of new breathing equipment, among other pre-hospital care interventions.

In 2011 Boston EMS continued to participate in the Massachusetts Department of Public Health EMS Stroke Quality Improvement Initiative. Throughout the year, members of the RTQI team participated in state-wide meetings and educational forums designed to improve stroke care. Further, the Department continued its stroke quality improvement and management program. Over the course of 2011, RTQI reviewed an average of 40 medical records of stroke or potential stroke patients each week assessing specific performance indicators. Data gathered through the quality improvement program was utilized in Department training and education sessions and has ultimately led to improved stroke patient care by Boston EMS EMTs.

Over the last year the Department has also continued to carefully monitor cardiac arrest data. Since 2004, RTQI has reviewed all cardiac arrests that occur in the City of Boston. In order to identify ways to improve patient care, RTQI evaluates each incident individually and enters case information into an internal cardiac registry. Additionally, RTQI downloads and assesses pre-hospital electrocardiographic (EKG) information. Such comprehensive data collection allows RTQI to conduct in-depth research with the goal of identifying new methods and treatment protocols to enhance clinical care.

CLINICAL INNOVATION



In addition to carefully monitoring cardiac arrest data, Boston EMS continued to enhance and expand its innovative “AED Alert” program. Through AED Alert, the Department has been formally tracking the location of public automatic external defibrillators (AEDs) since 2009. All reported public AED data is entered into the Department’s computer aided dispatch (CAD) system.

When a 911 call comes in from a public facility and an AED is on site, CAD will trigger an alert prompting Boston EMS Telecommunicators to provide the caller with instructions on where to retrieve the device and how to apply it. Studies have repeatedly shown that immediate bystander CPR combined with defibrillation within 3-5 minutes of a collapse can help significantly improve cardiac arrest survival rates. Additionally, studies have shown that a large proportion of cardiac arrests happen in public places such as athletic facilities and office buildings. Through AED Alert, Boston EMS Telecommunicators have the tools to provide 911 callers with lifesaving instructions immediately after a witnessed cardiac arrest.

In July 2011, Boston EMS launched a new online AED report form on its website (www.cityofboston.gov/ems) with the assistance of the City’s Department of Innovation and Technology.⁸ The online form allows organizations to easily input and submit their AED information. Boston EMS experienced an increase of 15% in reported AEDs during 2011 bringing the total number of AEDs tracked in CAD to 1,010.



In 2011, Boston EMS continued its application of therapeutic hypothermia, the process of cooling the body and maintaining mild hypothermia (32-34°C) in the first 12 - 24 hours after cardiac arrest. Therapeutic hypothermia has proven to help protect brain function as well as improve survival and neurological outcomes of individuals suffering from cardiac arrest. The Department became one of the first adopters of pre-hospital therapeutic hypothermia in 2008. In 2011, Boston EMS Paramedics provided this life-saving therapy to 116 patients.

⁸ <http://www.cityofboston.gov/ems/aedlocation/>

ASTHMA PROJECT

Leveraging EMS data to improve patient outcomes

In early 2010, Boston EMS transported a 12-year-old to the hospital whose symptoms were suggestive of a severe asthma attack. Shortly thereafter, the hospital reviewed his case during clinical rounds. As part of this process, the nurse supervisor asked Boston EMS for the patient's electronic medical record. When searching for it, the Department discovered that the patient had been transported multiple times within a short time frame. The record further indicated a trend of his symptoms becoming increasingly severe with each transport.

Asthma is a chronic and relatively common illness, which is controllable with appropriate medication and care. This teenager's case highlighted the need to more closely monitor EMS transports for youth with asthma-related illness.

After conducting thorough data analysis and convening an interdepartmental working group, Boston EMS established a program in partnership with the BPHC's Division of Healthy Homes and Community Support to identify individuals with uncontrolled asthma in order to link them with appropriate healthcare services. With guidance from the Boston EMS Medical Director, the target group was identified as children and young adults ages 9 to 24 who had been transported by Boston EMS more than two times within the last six months and showed positive signs of 'increased work of breathing' (including wheezing, retractions, and prolonged expiratory

THE ASTHMA PROJECT

Launched: July 2011

Staff: Specially trained Paramedics

Direction: ePCR Manager & Medical Director

Criteria for inclusion: Patient between the ages of 9 and 24 with asthma-related illness who has been transported 2 or more times within 6 months

phase) and specific pre-hospital interventions for asthma (such as administration of Albuterol or Combivent, common asthma medications).

The Asthma Project, launched in July 2011, is currently staffed by two Boston EMS Paramedics who utilize the Department's electronic patient care reporting system to identify patients who meet the established criteria. Upon identification, the Paramedics contact the patient (or, in the case of a child, their guardian) by phone to assist them with referral services. With the assistance of the Medical Director, patients can also be linked directly to their primary care provider. The Asthma Project is a referral service only. In 2011 Boston EMS successfully linked several young people with services that will help them better manage their asthma, reducing the severity and frequency of severe attacks.

TRAINING & EDUCATION

The Training Division within Boston EMS' Research, Training and Quality Improvement (RTQI) team, is responsible for the initial and ongoing training as well as the professional development of Boston EMS EMTs and Paramedics. Through its accredited Training Academy, the Division operates a comprehensive 6-month course designed to prepare EMT recruits for the challenges of delivering pre-hospital emergency medicine. The course, taught by training personnel with extensive field experience, includes classroom work, rigorous field instruction, exercises, and drills. In August 2011 Boston EMS proudly graduated 18 new recruits from the Training Academy.

Boston EMS continued its partnership with Northeastern University's College of Professional Studies in 2011. In the year prior, the Department launched an 18-month Paramedic course led by Northeastern instructors and Boston EMS staff educators. The program not only provides a strong foundation for Boston EMS students to achieve their clinical goals, but affords the opportunity to earn

and apply credit hours toward an undergraduate degree at Northeastern. Eighteen students graduated from the first class in July 2011 and are certified as paramedics. Due to the program's success, Boston EMS and Northeastern launched a second class in early 2011. Eight students successfully completed the classroom portion of the program and will participate in clinical rounds at Boston Medical Center in 2012.

In addition to training Boston EMS field staff, the Training Division provides a low-cost community Basic EMT Course designed to prepare aspiring EMTs for a career in pre-hospital emergency medicine. The 150 hour course offers exceptional classroom training, emergency room observation at Boston Medical Center and the opportunity to observe Boston EMS Operations during an ambulance ride-along. The Training Division offered two community courses in 2011, successfully preparing 69 graduates to pursue state EMT-Basic certification. The Department is currently awaiting results from the state to determine how many individuals successfully passed the examination.



SPECIAL OPERATIONS

The Special Operations Division plans for and responds to major emergencies within the City of Boston including both planned special events and unplanned natural and man-made disasters. The Division is responsible for overseeing Boston EMS' Bicycle Defibrillation Unit, Harbor Patrol Unit, Tactical Response Unit as well as its hazardous materials response efforts and rapid deployment team activities. A multitude of agencies, both public and private, rely heavily on Boston EMS to facilitate medical coverage and to participate in the coordination of assets, resources and logistics during special events and emergencies.



Every year, Boston hosts several major events such as the Boston Marathon and 4th of July Celebration which bring millions of people together and require significant emergency medical support. Boston EMS uses these events as “controlled” mass casualty incidents (MCIs) to test disaster protocols, systems and resources. In addition to these events, the Department also provides EMS support at hundreds of festivals, parades, and other gatherings citywide. In 2011, Special Operations oversaw the provision of medical services at 443 events.

In May 2011, Special Operations coordinated Boston EMS' participation in the Metro Boston Homeland Security Region's Urban Shield Boston Exercise. The exercise was used to assess the region's ability to successfully respond to and manage multiple terrorist events and other emergencies occurring simultaneously throughout the Boston Area. Through the exercise, Boston EMS personnel had the opportunity to test its ability to provide mass casualty triage and expedient field treatment of multiple casualties while law enforcement tactical teams provided force protection.



Photo Credit: <http://jamaicainpatch.com>

In preparation for Urban Shield, Special Operations worked with the Office of the Boston EMS Medical Director and the Boston Police Academy to develop an 8-hour active shooter training designed to better prepare EMS and police personnel to work more effectively together in response to an active shooter incident. The training consisted of three parts: (1) tactical and situational awareness, (2) focused medical care under force protection, and (3) active shooter rescue tactics. A total of 256 Boston EMS members received training in 2011 which has strengthened communication and integration with Boston Police.

EMERGENCY PREPAREDNESS

Boston EMS is committed to protecting the City’s residents and visitors from disasters of all size and scope. The Department plays a key role in the City’s emergency preparedness efforts. Through the DelValle Institute for Emergency Preparedness and the Boston Metropolitan Medical Response System (MMRS), Boston EMS offers specialized trainings and public health coordination preparing the City for large-scale emergencies.

DelValle Institute for Emergency Preparedness



The DelValle Institute for Emergency Preparedness provides high quality all-hazards training for the Boston community, the Metro Boston Homeland Security Region, and Eastern Massachusetts. DelValle serves emergency medical services, public health, health care and public safety personnel.

Through education and training, DelValle supports capabilities-based preparedness with the goal of reducing the public health and safety consequences of disasters. The Institute’s programs are based on the core functional areas of Emergency Support Function 8 (Public Health and Medical Services) with an emphasis on:

- capabilities specific to emergency medical services, public health, and healthcare;

- interrelated roles and responsibilities across all first responder and first receiver disciplines in a disaster; and
- emergency planning and preparedness for the community, particularly those most vulnerable.

In 2011, DelValle conducted over 100 programs for 2,600 public health and public safety professionals throughout Massachusetts. In February, over 300 participants attended the seminar *Managing Mass Fatalities*, which focused on exploring approaches to the implementation of the Commonwealth of Massachusetts’ Mass Fatalities Management Plan at the local level. In August, the DelValle Institute launched the “Learning Center”, an innovative online portal into trainings and resources, featuring the e-course *Continuity of Operations Planning: Awareness*.⁹ From August to December 2011, there were approximately 30,000 visits to the site.

The DelValle Institute for Emergency Preparedness programs sustain the vision of a coordinated preparedness system of public, private, and community stakeholders with the collective capabilities and capacity to protect against, respond to, and recover from all hazards with a focus on the public health and safety of all communities.

⁹ <http://delvalle.bphc.org/>

EMERGENCY PREPAREDNESS

Boston Metropolitan Medical Response System



Boston MMRS is a Federal Emergency Management Agency (FEMA) Grant Program that serves to support the integration of emergency management, health and medical systems into a coordinated response to mass casualty incidents caused by any hazard. Boston MMRS works to strengthen the health and medical preparedness of the City of Boston and its surrounding communities. Much of MMRS' work focuses on facilitating preparedness and planning efforts amongst a range of partners in the healthcare community.

During 2011, MMRS supported initiatives to protect Boston EMS' first responders by maintaining the first responder emergency pharmaceutical cache, procuring various types of personal protective equipment, and continuing the TLD (thermoluminescent dosimeter) card program to measure chronic levels of radiation exposure.

In addition to supporting Boston EMS' first responders, MMRS worked extensively with community partners including Boston's community health centers, hospitals, private EMS services, and long term care facilities to develop and augment their internal and regional

preparedness plans. MMRS lead and actively participated in several committees and workgroups including: Patient Tracking, Medical Response to Radiation Events, the Go Team, UASI Medical Surge, and the Boston Healthcare Preparedness Coalition.

MMRS also served in an operational support role for the Boston healthcare community in 2011. MMRS worked with several hospitals and community health centers to identify solutions for addressing power outages, closings, flooding and other weather-related issues to prevent any major disruptions in their services.

In 2011, MMRS hosted several events to support preparedness and response efforts.

Noteworthy events include:

- Supporting Patient Tracking efforts during the Boston Marathon & Fourth of July Celebration
- Emergency Preparedness Basics Training for community health centers
- Continuity of operations planning for Boston community health centers
- Support for city-wide flu clinics
- Bi-monthly Medical Intelligence Center Briefings

FLEET SERVICES



In January 2011, Boston EMS launched the use of a bariatric ambulance designed to more effectively accommodate obese patients. The Fleet Services Division played a lead role in retrofitting the vehicle, which is equipped with a special stretcher that can hold 850 pounds and a hydraulic lift with a 1,000 pound capacity. Over the course of 2011, the bariatric truck responded to 128 emergency medical calls and has not only improved the comfort-level of patients but has helped to reduce the risk of injury among crew members.



The Fleet Services Division's primary focus is to ensure both vehicle and crew safety. Fleet Services staff is responsible for the maintenance of Boston EMS' entire fleet including ambulances, supervisor vehicles as well as Special Operations vehicles. The Fleet Services Division has a team of in-house mechanics all of whom have at least 10 years of repair experience and are ASE (Automotive Service Excellence) certified.



Fleet Services maintains a wide variety of specialty vehicles which are capable of supporting the City in any emergency large or small. Chief among them is the state-of-the-art Boston EMS ambulance. The Department's ambulances are capable of meeting the dynamic emergency medical services demands of a major metropolitan area like Boston. Each truck is outfitted with the most advanced pre-hospital care equipment and is staffed by two field providers. The Division's mechanics perform routine preventative maintenance and ensure that every Boston EMS ambulance passes the annual inspection conducted by the State Office of OEMS. The skills and expertise of the Fleet Services Division is critical to the success of the Boston EMS operation.

COMMUNITY INITIATIVES

Boston EMS' Community Initiatives Division is a dedicated and trusted partner of the community. The Division is charged with conducting outreach to help raise awareness about important public health topics. Along with its many partners, Community Initiatives operates several programs designed to improve the health and safety of Boston.

One of the key areas of focus of the Community Initiatives Division is teaching the lifesaving skill of CPR. According to the American Heart Association, approximately 80% of cardiac arrests occur at home and about 92% of sudden cardiac arrest victims die before they reach the hospital.¹⁰ Bystanders who are able to: (1) recognize a medical emergency, (2) quickly call 9-1-for help, and (3) begin CPR, have the power to be life-savers. In 2011, Boston EMS trained 3,513 individuals in CPR. The Department hosts CPR classes in English and Spanish and utilizes a kit called "CPR Anytime" that includes a DVD and mini-mannequin, which allows participants to easily teach others what they have learned.



¹⁰ <http://www.heart.org/HEARTORG/>

In 2011, Boston EMS focused its community outreach efforts toward the elderly, one of Boston's most vulnerable populations. In partnership with the Elderly Commission and the Boston Housing Authority, the Department launched a series of weekly seminars to discuss health and safety issues that largely impact the elderly. Seminar topics included: weather safety tips, File of Life, blood pressure screenings, stroke awareness, diabetes management, among others. Sessions were incredibly successful with over 400 seniors attending.



In addition to working with the elderly, Boston EMS also helped to keep Boston's youngest residents safe by conducting car seat installation safety checks. In 2011, Boston EMS' 15 certified technicians held weekly appointments with new parents which resulted in 477 car seat checks.



STATION LOCATIONS

Boston EMS deploys 19 Basic Life Support (BLS) ambulances and 5 Advanced Life Support (ALS) ambulances during peak hours to ensure quick response times. The department's stations are strategically located throughout the City. Based on call volume, several EMS crews shift change at a station and subsequently re-post to locations that typically experience a higher demand for service.



BOSTON EMS 2011 | ANNUAL REPORT



BOSTON EMERGENCY MEDICAL SERVICES

2011 VITAL STATISTICS
www.cityofboston.gov/ems



Boston Emergency Medical Services (Boston EMS), the primary emergency medical services provider for the City of Boston, is a nationally recognized leader in the field of pre-hospital emergency medicine. The Department leverages the latest advances in both medicine and technology to bring high-quality, compassionate care to the people of Boston. Boston EMS also plays a key role in the City's emergency preparedness efforts and provides community programming designed to educate the public about important health and safety topics.

Boston Land Area: 45.7 sq. miles
Boston EMS Uniformed Staff: 358
Paramedics: 70

Resident Population: 617,594
Non-uniformed Staff: 44
Number of Stations: 17

Daytime Population: ~900,000
Emergency Medical Technicians: 241
Peak Staffing: 19 BLS & 5 ALS Units

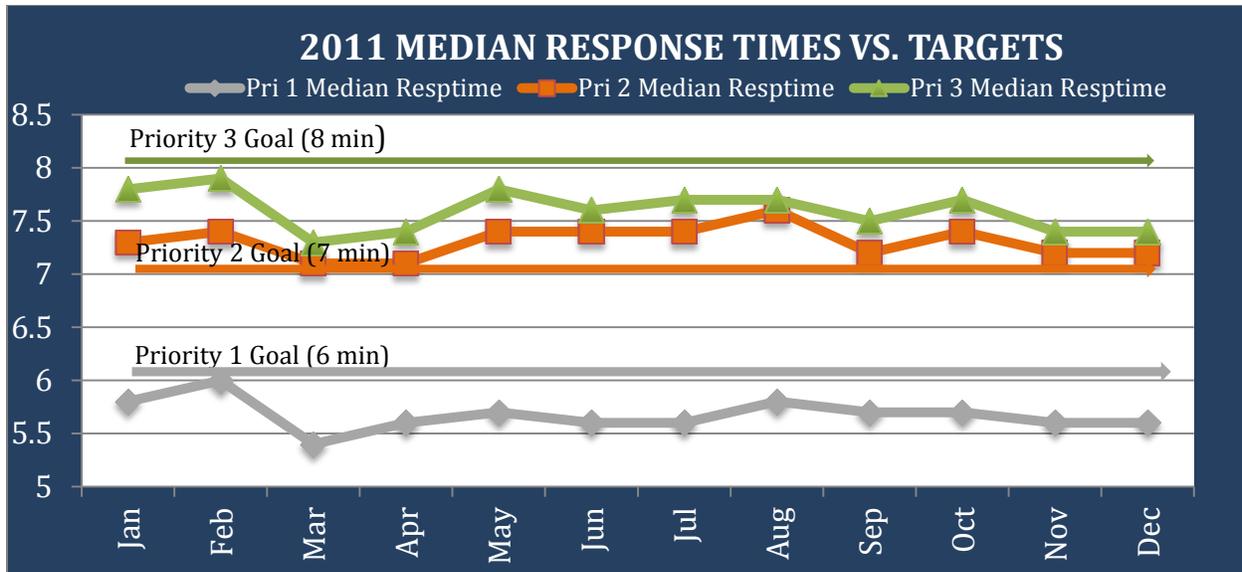
SYSTEM WIDE CALL VOLUME			
	2011	2010	Pct. Change
Total Clinical Incidents	108,343	108,848	.5% decrease
Total ALS and BLS Responses	134,522	136,653	2% decrease
Total Transports	78,692	79,443	1% decrease
Total ALS Transports	7,594	7,633	.5% decrease
Total BLS Transports	71,098	71,810	1% decrease

MEDIAN RESPONSE TIMES			
	2011	2010	Goals
Priority 1	5.7 min	5.4 min	6.0 min
Priority 2	7.3 min	7.0 min	7.0 min
Priority 3	7.6 min	7.1 min	8.0 min

INCIDENTS BY PRIORITY	NUMBER	PCT.
Priority 1	30,441	28%
Priority 2	52,732	49%
Priority 3	23,214	21%
Priority 4	1,956	2%
Total	108,343	100%

NEIGHBORHOOD	INCIDENTS	PCT.
Allston/ Brighton	6,395	6%
Back Bay	8,610	8%
Beacon Hill/ West End	2,944	3%
North End	3,754	3%
Charlestown	2,185	2%
East Boston	6,788	6%
South Boston	5,899	5%
South End	12,412	11%
Roxbury	15,936	15%
Dorchester North	16,310	15%
Dorchester South	7,543	7%
Roslindale	4,138	4%
Jamaica Plain	3,225	3%
West Roxbury	2,838	3%
Hyde Park	4,763	4%
Mattapan	3,419	3%
Long Island	415	<1%
Other	769	1%
Total	108,343	100%

INCIDENTS BY TYPE	NUMBER	PCT.
Illness (abdominal pain, fever, dizzy)	31,181	29%
Investigations ("man down", alarm)	20,458	19%
Injury (lacerations, fractures, etc.)	15,587	14%
Cardiac Related (unconscious, CPR, etc.)	11,135	10%
Respiratory (Asthma, CHF, etc.)	8,702	8%
Psychological/Suicidal	6,777	6%
Motor Vehicle (MVA, pedestrian)	5,711	5%
Neurological (CVA, seizures)	4,520	4%
Fire/ Hazmat/ Standby/ Environ.	2,014	2%
Trauma (penetrating injury, long fall, etc.)	1,289	1%
Overdose	969	< 1%
TRANSPORTS BY AGE	NUMBER	PCT.
Under 15	5,047	6%
15-24	11,213	14%
25-44	21,071	27%
45-64	25,344	32%
65-74	6,438	8%
75+	9,579	12%
Total	78,962	100%



OTHER SYSTEM HIGHLIGHTS			
Specialized Clinical Care		Community Initiatives / Training / Patient Satisfaction	
# of Naloxone Uses by Boston EMS BLS Providers ¹¹	86	Car Seat Checks Performed	477
# of STEMIs Identified ¹²	97	Individuals Taught CPR	3,513
# of Pts. Treated with Therapeutic Hypothermia ¹³	116	Individuals Trained through DelValle Institute	2,600+
Overall Intubation Success Rate	96.5%	New Recruits who Graduated from the Academy	18
# of Pts. Treated with CPAP ¹⁴	191	Students who Completed Boston EMS EMT Course	72
Public Access AEDs in Database (15% increase from '10) ¹⁵	1010	Pct. of Patients who Rated Service as Excellent or Good	95%

SIGNIFICANT EVENTS
<ul style="list-style-type: none"> In January, Boston EMS launched the use of a new bariatric truck with custom made hydraulic lift designed to more effectively accommodate obese patients; the bariatric truck responded to 128 emergency medical calls in 2011. Boston EMS' DelValle Institute for Emergency Preparedness held the seminar <i>Managing Mass Fatalities</i> in February, which focused on the Commonwealth of Massachusetts' Mass Fatalities Management Plan. In March, Boston EMS officially opened a new headquarters at 785 Albany Street. The Department's innovative "AED Alert" program was recognized by the Computerworld Honors Program in June. In July Boston EMS launched an asthma follow-up program targeting patients ages 9-24 who had been transported more than two times within a six month period; the program aims to link patients with asthma referral services. In August 2011, the DelValle Institute for Emergency Preparedness launched "The Learning Center", an online portal into various trainings and resources; the site received ~30,000 visits through 2011. As part of September's National Preparedness Month, Boston EMS and BPHC hosted a series of neighborhood events to teach residents CPR and help prepare them for emergencies of all type. In October, Boston EMS graduated 18 new recruits and celebrated the promotions of 1 Superintendent, 2 Deputy Superintendents, and 1 Lieutenant. Boston EMS members were recognized in four categories at the 11th Annual Metropolitan Boston EMS Council (EMS Region IV) awards ceremony in October.

¹¹ BLS Nasal Naloxone (Narcan®) – a Special Project Waiver allowing Boston EMS BLS providers to provide Naloxone to patients with known or suspected narcotic overdose.

¹² Boston EMS Paramedics are trained to read 12-lead ECGs and can identify various types of cardiac incidents including STEMIs (ST – Segment Elevation Myocardial Infarction). As a result, Boston EMS ALS units notify and transport these patients to specialty designated cardiac centers with the goal of improving survival rates.

¹³ The process of cooling the body and maintaining mild hypothermia (32-34°C) in the first 12 - 24 hours after cardiac arrest. Boston is among the first services in the nation and second in Massachusetts to utilize this advanced treatment in the pre-hospital arena.

¹⁴ Typically used in the hospital setting, Boston EMS began applying Continued Positive Airway Pressure (CPAP) in 2007. CPAP, a non-invasive procedure that forces oxygen into the lungs, is applied to patients in severe respiratory distress. CPAP often reduces the need for intubation and minimizes complications resulting in shorter hospital stays.

¹⁵ In 2009 Boston EMS launched "AED Alert", allowing call takers to identify the location of public AEDs throughout the City.

KEY DEFINITIONS

Boston EMS Emergency Medical Technician (EMT): A Department employee, certified by the Massachusetts Office of Emergency Medical Services (OEMS) as an EMT-Basic, who has successfully completed the Boston EMS recruit training and field internship, and is certified by the Department to perform Basic Life Support Skills in accordance with statewide and Boston EMS protocols and special project waivers.

Boston EMS Paramedic: A Department employee, certified by the Massachusetts Office of Emergency Medical Services (OEMS) as an EMT-Paramedic, who has successfully completed the Boston EMS Paramedic selection process, and subsequently successfully completed the Boston EMS Advanced Life Support (ALS) clinical training and field internship. A Boston EMS Paramedic is certified to perform ALS skills in accordance with statewide and Boston EMS protocols and special project waivers.

Basic Life Support (BLS): An EMT unit or the procedures and skills performed by an EMT-Basic. At peak times there are typically 19 BLS units in service, each staffed by two EMTs.

Advanced Life Support (ALS): A Paramedic unit or the advanced procedures and skills performed by a Paramedic. At peak times there are typically 5 ALS units in service, each staffed by two Paramedics.

Incident: Any request for emergency medical service which generates a distinct entry in the computer aided dispatch (CAD) system. A single incident may generate the response of multiple EMS vehicles or may involve multiple patients (i.e. a train crash would be considered one “incident”).

Response: A response is generated for each EMS unit assigned to a request for service. A

response is distinct from a clinical incident in that an incident is a request/need for EMS, while a response is the dispatch of a unit (i.e. a train crash would generate multiple “responses”).

Response Time: Unlike some systems that calculate response time from call dispatch until unit arrival, Boston EMS measures response time from call entry (i.e. the point at which a call taker determines the nature and location of an emergency and enters it into the computer aided dispatch system) to EMS unit arrival on scene.

Priority One: An incident category representing time sensitive, life threatening emergencies such as cardiac arrest, uncontrollable arterial bleeding, unconsciousness, etc.

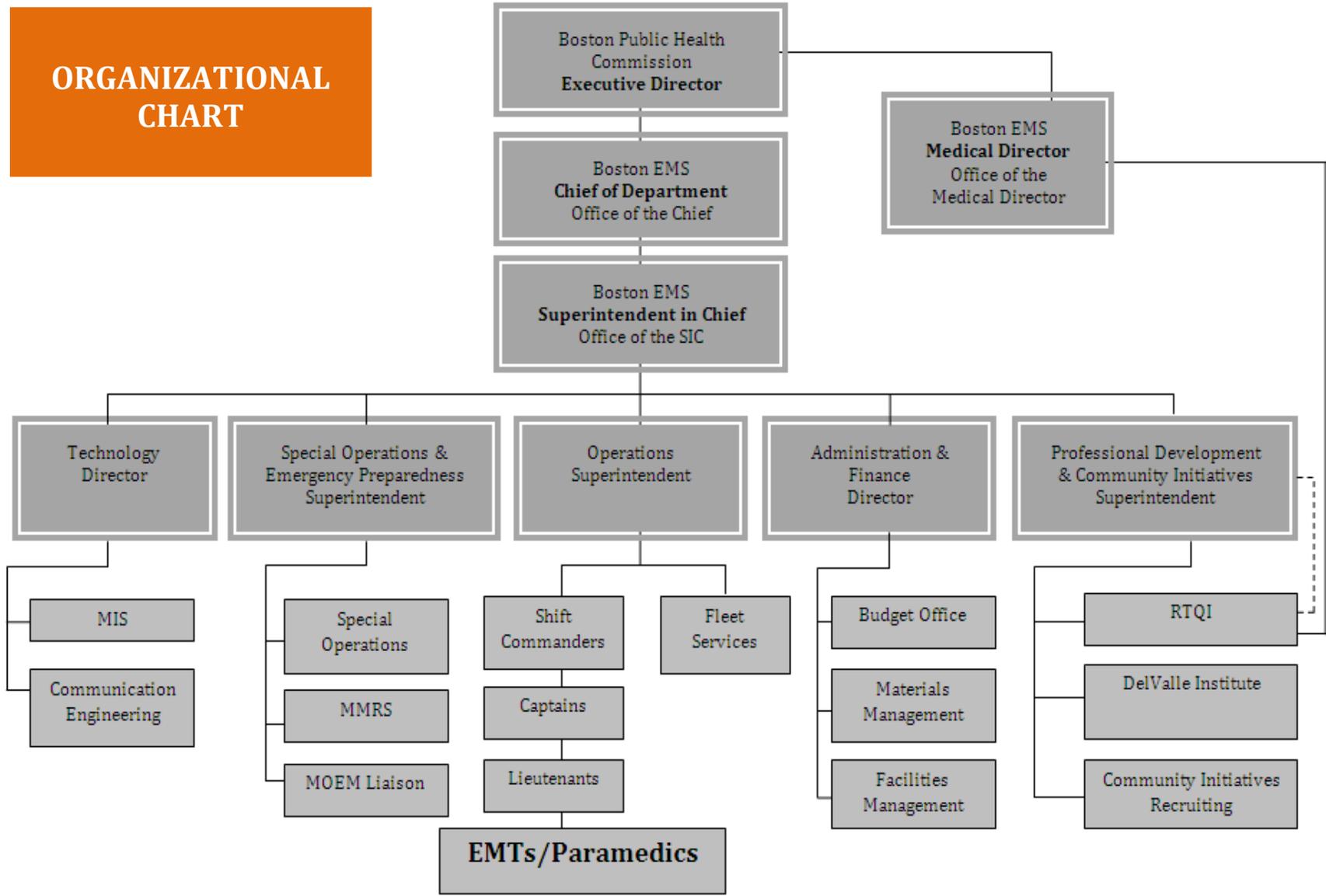
Priority Two: An incident category representing potentially life threatening emergencies such as orthopedic injury, lacerations with controlled bleeding, abdominal distress, etc.

Priority Three: An incident category representing non-acute injury or illness.

Priority Four: An incident that does not automatically generate an EMS response until there is verified need from another responding agency. This process is designed to reduce the number of EMS responses to incidents unlikely to result in a transport, thus freeing up EMS resources for other simultaneously occurring emergencies.

Neighborhoods: Back Bay includes Kenmore, Fenway, and Chinatown; North End includes portions of Downtown; Roxbury includes Longwood and Mission Hill; “Other” includes Boston Harbor and areas outside of Boston.

ORGANIZATIONAL CHART



MISSION

Boston EMS, the provider of emergency medical services for the City of Boston, is committed to compassionately delivering excellent pre-hospital care and to protecting the safety and health of the public.

PATIENT ADVOCACY

The health and well-being of the patient is always our first priority. We are professionals who treat every patient with respect and compassion.

PEOPLE

Our people are our greatest asset. The knowledge, experience, and compassionate nature of our employees make our service exceptional. Our workforce includes skilled professionals from different backgrounds and cultures, reflecting the diversity of the communities we proudly serve.

COLLABORATION

We strive to work effectively with our public safety and public health partners to solve problems, make decisions and achieve common goals.

VALUES

PRIDE & UNITY

We are proud of the work we do and the strength of our service. We are committed to one another and the patients we serve.

LEADERSHIP & INNOVATION

As a leader in the field of pre-hospital emergency medicine, we pride ourselves on innovating and leveraging the latest advances in both medicine and technology, bringing cutting edge care to the streets of Boston.

PREPAREDNESS

We are a leader in the field of emergency preparedness and take an active role in planning, training, response and recovery efforts to mitigate the medical consequences of a disaster. We maintain the highest level of organizational and individual preparedness.

CLINICAL EXCELLENCE

The members of Boston EMS are highly skilled and specially trained to provide state of the art pre-hospital emergency medical services. We provide every patient with excellent clinical care.

VISION

Boston EMS' vision is to expand upon our role as a critical public safety agency that delivers exceptional pre-hospital emergency medicine in an urban environment. The Department will remain at the forefront of EMS advancements, driving progress in clinical care, operations, research and training. As a leader in all-hazard emergency preparedness, we will enhance our workforce and community's ability to be resilient when confronted by man-made and natural disasters. Boston EMS will continue to be viewed as a challenging, diverse and rewarding place to work as well as a model for other EMS agencies

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