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JOURNAL OF EMERGENCY MEDICAL SERVICES

## In Pursuit of Excellence

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# THE CREWS ARE KEY!

## Specialized EMS team deployment yields best results



This issue features an in-depth profile of the Jersey City (N.J.) Medical Center EMS (JCMC EMS) system—a high-call volume system that was in need of redesign and optimization seven years ago; one that had not advanced its equipment and processes with the times. Its dedicated crews provided the best care possible with the equipment and resources they had in America's most ethnically diverse city, but they knew they could do better and accepted massive changes implemented in their system.

Their success is an example of what can be accomplished when a hospital administration puts trust, finances and support behind an EMS management team. And an example of what can be accomplished when the crews providing the care on the streets are patient, understanding and supportive of change.

"Patience" is an important word because the changes began in 2005 and are still underway. But the patience and dedication of the crews is paying off because, within the past 18 months, JCMC EMS achieved what no other system in America had achieved: accreditation, certifications and national recognition by five of the most rigid and challenging organizations in the EMS industry.

When I visited JCMC several years ago, I was intrigued with their processes and impressed with the attitude of the providers running the calls. I was allowed full access to their system, and the crews welcomed me along on their calls each time I visited.

So I decided to follow JCMC EMS closely and team up with consultant Jonathan Washko to develop an article that would present the processes followed to revamp the Jersey City system. It's a good case study that many EMS systems, struggling to improve, can benefit from.

I had never been to Jersey City before, only passing by its freeway exits on my way to Newark airport. My images of this diverse city were much like those shown on the opening of the *Sopranos* as Tony Soprano drove across the bridges of New Jersey and



The JCMC EMS BLS and ALS crews work together as a team.

New York and all you could see were industrial buildings, smokestacks and water.

But I discovered several things through my experiences in Jersey City that I want to share with you.

First, when I rode with the crews and supervisors on multiple day and night shifts, I discovered that Jersey City was a vibrant, redeveloping city, a city that's home to the Statue of Liberty, Ellis Island and beautiful Liberty State Park, which offers visitors the most magnificent waterfront views of New York City across the Hudson River.

I also discovered how well the BLS and ALS crews worked together as a team, had genuine respect for their patients, and trusted their managers, supervisors and communications center to "train them and aim them."

There's a lot of merit to that "team" thing because the deployment of resources, and the resuscitation results, are clearly better when a more focused team approach is used. The combined first response engine/ALS ambulance crew approach works well in many systems, but there are clear improvements seen when *everybody* on a critical case specializes in EMS and is truly engaged in all phases of care and resuscitation.

The specialized BLS and ALS approach used in Seattle, Boston and Jersey City is what I'm talking about when I refer to the focused team deployment model, systems where ambulance EMT-specialists respond

in tandem with a few ALS paramedic-specialists positioned strategically throughout a system.

In these BLS/ALS ambulance systems, there's roughly double the number of BLS to ALS ambulances deployed at any time. In Jersey City, the deployment is based on historic call volume and a demand analysis tool built by Washko and Associates.

In Jersey City, this means that almost every critical case gets a first response engine with an AED

from Jersey City Fire Department (with a crew of four that's trained by JCMC EMS staff), a JCMC BLS ambulance (with two EMT specialists) and two paramedics in one of only a few strategically placed ALS units that manage a high volume of critical calls each shift. That means that these high-acuity cases get a coordinated "all hands on deck" team of eight, and cardiac arrests receive mechanical CPR, quick EZ-IO establishment and therapeutic hypothermia in the field.

If you don't think all this makes a difference, look at the results. After redesign and implementation of this team approach, return of spontaneous circulation rates jumped from 18% in 2005 to an incredible 46% in 2011, with 17% of their patients discharged neurologically intact from the hospital. That's on par with results in the Seattle Fire Department and Boston EMS systems.

Why are they so similar? In my opinion, it's because of *how* they deploy and use their BLS/ALS resources (lots of sharp BLS ambulance teams), *how* they approach patient management on scene and the way their crews work together in a unified, almost choreographed manner. These systems triage and accelerate (or peel off) resources as necessary. It's a deployment approach worth studying. [JEMS](#)

# JERSEY CITY MEDICAL CENTER EMS REINVENTS ITSELF & ACHIEVES FIVE MAJOR NATIONAL EMS RECOGNITIONS

>> BY JONATHAN D. WASHKO, BS-EMSA, NREMT-P, AEMD, & A.J. HEIGHTMAN, MPA, EMT-P



# EMSR OY



It was an EMS system that needed its own life support. A skeleton team struggled to keep up with demands that frequently pushed the organization beyond its limits. It faced all this, plus:

- >> An-almost expired primary service 9-1-1 contract that was going out to bid;
- >> A hospital administration that didn't fully understand the nuances of EMS;
- >> Old construction trailers used as make-shift EMS offices in the back corner of the hospital parking lot; and
- >> A call volume as diverse and difficult to serve as any urban inner-city environment could be.

Things were looking bad; the system was on the brink of being terminated, and morale was low. The dedicated crews worked hard to keep up with a high call volume, an aging fleet and equipment limitations. They were doing what they loved, responding to the needs of a diverse population, as best they could. It wasn't their fault the system lacked the efficiencies of a high-performance system. They knew things would worsen without dramatic changes and the support of the staff and medical community.

## TIME FOR CHANGE

Although about as bleak of a story you would ever find in our industry, the resolve

of the JCMC crews and EMS leadership was unrelenting. This was their city and the EMS community they loved serving, and no one was going to take that from them.

JCMC EMS personnel—taught throughout their EMS training of the need to overcome, improvise and adapt to the most difficult situations—were determined to turn their system around. And they did. They addressed every adversity, whether external or internal, redesigned their entire EMS system and became nationally recognized in five major specialty areas, the first in the nation to achieve all five in just three short years. Their epic efforts set a new standard for overcoming adversity, EMS system redesign, clinical excellence and employee acceptance.

## THE UPHILL CLIMB

Limited financial resources, a challenging unionized environment, the regional northeast EMS elitist mentality, New Jersey-specific regulations that limit the use of an all-ALS service delivery model, a dilapidated equipment infrastructure, a fractured and divided administrative team and an out-of-compliance contract that was up for renewal made the odds for this approach to be successful against everyone involved.

Add to that being the first EMS system in New Jersey to fully embrace the concepts of

BLS/ALS transport, high-performance EMS and system status management (SSM) as the means out of their dilemma; it's clear it wasn't going to be easy.

This was an all-in hand of poker that you couldn't bluff, with everything to lose (including the uniforms off their backs). But the JCMC EMS staff knew there were tremendous gains for patients and providers alike if they developed a clinically and financially sound strategy for enhancement and growth of their system. They also knew that if they played their cards right, they would offer a service that would greatly enhance the image of the hospital in the community.

The approach used by Rinn and the staff at JCMC EMS was to win over the entire organization from the ground up by educating, involving and engaging the workforce at all levels and within every department in the healthcare network. They decided to break the mold and do it the best way possible—operationally and clinically. Good service and care was not the goal. Excellence was.

Tradition had to be forsaken, and a new attitude adopted by everyone involved, including the hospital administration. The process and strategy was well thought out. They used a time-tested recipe for success, which included specific education on how to balance patient care, employee well-being

## ABOUT JERSEY CITY, N.J.

Jersey City is the seat of Hudson County, N.J., & the state's second-largest city. With a resident population of 247,597, it's the 72nd most populous city in the U.S.<sup>1</sup> It has a daytime population estimated at close to 750,000. Among cities with a population higher than 100,000 ranked in the 2000 Census, Jersey City was the fourth most densely populated large city in the U.S., behind New York City, Paterson, N.J., & San Francisco, with Hudson County (another JCMC EMS service area) being the most densely populated in the country. There are 96,859 households, & 57,671 families residing in the city, giving it a population density of 16,617 people per square mile.<sup>2</sup>

Often overshadowed by its close proximity to New York City, Jersey City is a vibrant city that lies between the Hudson River & Upper New York Bay. Jersey City, which is across from Lower Manhattan, the Hackensack River & Newark Bay, is a part of the New York metropolitan area. It's one of the most racially diverse cities in the world.<sup>3</sup>

Jersey City, with a port of entry with 11 miles of waterfront & significant rail connections, is an important transportation terminus & distribution & manufacturing center for the Port of New York & New Jersey.

Over the past decade, Jersey City's waterfront has been redeveloped, & the city now has one of the nation's largest downtown districts. The famous historic sites located in the JCMC EMS response area include Liberty State Park—home to the restored Central Railroad of

New Jersey Terminal, the Interpretive Center & Liberty Science Center, which is an interactive science & learning center that boasts the world's largest IMAX Dome theater.

Ferries travel from Liberty State Park to Ellis Island, home of the Immigration Museum, & Liberty Island, home of the Statue of Liberty. Both historic locations are served by JCMC EMS. The Jersey City piers were made famous when they served as the exodus termination & treatment locations on 9/11 after the collapse of the World Trade Center towers. (For more, see Volume II of *Out of the Darkness* on JEMS.com for details on the herculean efforts on 9/11 by JCMC EMS staff.)

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### JCMC EMS developed a new training and simulation center to provide more realistic training for its EMS providers.

and financial success (often referred to as “the EMS success triad”). They employed quality unit-hour concepts and production model theories that were rooted in EMS economist’s Jack Stout’s vision of SSM and high-performance EMS, but in a kinder approach for the employees and support staff.

Sarah DeGeorge, JCMC EMS technical coordinator states, “We were forced to thoroughly examine our operating budget and find strategic areas to cut costs without impact to our services. We found that there was a significant amount of overtime, out-of-service time and supply waste associated with our old vehicle restocking procedure. Limited restocking time between shifts and having a variety of vehicle cabinet designs were some of the challenges we had to overcome.”

To improve its operational efficiency, JCMC EMS staff visited other high-performance systems to learn and adopt best practices being used throughout the industry. DeGeorge says, “We implemented a bin system, which was designed to make it easier for our employees to check their vehicles, standardize supply locations within the ambulances, minimize out-of-service time at the start of shift, reduce excess supplies in the vehicles and reduce the need to restock throughout their shift. The bin set-ups now allow vehicle service technicians to quickly and efficiently restock vehicles at the end of the shift.” (For more, look for an upcoming article in March *JEMS* on speed loading.)

### BEST PRACTICES & LEADERSHIP TRAINING

The next steps were to introduce best

practices. These included system process changes with communications, deployment, operations, fleet maintenance, supply and logistics, scheduling, human resources, billing, training and quality improvement. They were coupled with organization-wide leadership and process change training.

Washko and Associates was hired to guide JCMC EMS in developing the turnaround plan and provide the organization with training on high-performance EMS, the specific EMS system design changes that were necessary to accomplish the goals and what effects these changes would have on both the organization and staff. They were also tasked with providing reasons why these changes had to be made.

### MANAGEMENT TRAINING

Washko and Associates was also asked to recommend and provide management training to help focus the staff and guide the process. This training included every member of the JCMC EMS team, including field staff, dispatchers, mechanics, supervisors and managers, as well as hospital administrators. “This training helped to lay the groundwork necessary to make such dramatic organizational changes possible while limiting field-force rejection to these changes as everyone was on the same page, understood where we were headed and how we were going to get there,” says Rinn.

In November 2009, Rinn and his senior EMS staff introduced the JCMC EMS leadership development program, lead by Frank P. Mineo, PhD, FACHE, CHSP, EMT-P. It provided the managers with the education,

knowledge and tools necessary to strengthen their leadership skills. The program was kicked off with a 360° personal leadership assessment.

The JCMC EMS managers then gathered at a two-day summit that December. They learned about leadership styles and cultures specific to EMS. They also reviewed their personal leadership assessment findings.

From this exercise, each manager developed and signed a “leadership contract.” These contracts required managers to align with a fellow leader to identify and leadership strengths and opportunities for improvement.

Over the next several months, Mineo conducted additional leadership education programs in concert with JCMC EMS quarterly leadership meetings. Each program had two primary objectives. The first was to introduce leadership skills and concepts, such as improving communications, building trust, using/misusing power, and leading a multi-generational workforce. The second was to review actions taken on each individual leader’s “leadership contract.”

Performing these reviews on a regular basis helped to maintain a focus on the issues identified in the initial 360° evaluation, allowing each leader to not only continue their journey of professional development and improvement, but also to share in some of the successes of their colleagues.

“Personal reflection of this type is considered a valuable tool in helping individuals understand and appreciate that becoming a better leader is both possible and valuable to both the leader and their organization,” says Rinn.

Simultaneously, the use of specific technologies were being implemented to improve supply chain efficiencies and effectiveness. Dramatic improvement in response times was seen, and significant savings realized, which enabled massive improvements in equipment, facilities, infrastructure and compensation.

Additionally, by bringing billing in-house and documentation onto a modern, electronic patient care report platform, JCMC EMS was able to improve revenues, which also helped fund the components and tools necessary to pull off such an organizational turnaround.

Due to its financial situation, JCMC EMS was forced to find unique ways to prepare itself for large-scale incidents while

minimizing costs. In the aftermath of 9/11, a large funding source was opened for EMS grants in the New Jersey urban area security initiative (UASI) region.

As the EMS providers for a core city in this region, JCMC EMS became a key stakeholder in the preparatory efforts. JCMC EMS was a founding member of the statewide EMS Task Force, which coordinated distribution of EMS related UASI resources. (For more, see Volume II of the *Out of the Darkness 9/11* supplement on JEMS.com.)

JCMC EMS became one of the first EMS agencies in the state to be allocated these resources. Jersey City was allocated a 100 patient mass care response unit mounted on a Spartan chassis. With the financial difficulties facing the department, JCMC EMS officials had to find creative ways to manage these assets.

The department partnered with the local office of emergency management to develop a creative deployment model for the vehicle. The Jersey City Fire Department (JCFD) agreed to house, maintain and provide a driver for the vehicle when needed, while JCMC EMS retained responsibility for staffing and EMS deployment of the unit.

The deployment model worked, giving JCMC EMS access to a much-needed asset while sharing associated costs with the local municipality. The vehicle and associated deployment model has proven its worth numerous times since its inception, including response to the 2009 crash of U.S. Airways Flight 1549 into the Hudson River.

It proved so successful that the same model and partnership with JCFD was used when the city took possession of a 20-patient Sartin medical ambulance bus allocated by the EMS Task Force in 2011. EMS Operations Coordinator Robert Luckritz says, "This partnership with the local office of emergency management has allowed us to not only enhance our special operations capabilities, but it helped to foster a better working relationship at the staff level between our EMTs and paramedics and the firefighters responding as part of the local medical first responder program."

The end results speak for themselves. JCMC EMS has improved response time compliance and reliability, as well as survival rates for cardiac arrest and other critical patients. In addition, it has rebuilt itself with new equipment and administration, a new training and operational support

facility, financial fortitude and a workforce that embraces the results. All this happened in just three years, an unprecedented turnaround in near-record time. But JCMC EMS was not done, not even close.

## EXTERNAL VALIDATIONS

Although the team at JCMC EMS realized it had worked miracles, it wasn't satisfied with knowing what they had accomplished; they wanted external validation to ensure they had built a new organization that was the best EMS could offer. So in 2008, JCMC EMS began the next steps in organizational improvement by initiating the arduous process of simultaneously pursuing multiple EMS industry accreditations and validations for every available aspect of the organization.

Accreditation organizations, and the processes used to develop their standards and certification issuance, are often developed in a collaborative fashion from various industry experts, representatives and stakeholder groups and work to define "a gold standard" mix of best practices, modern techniques, quality, safety, efficiency, effectiveness and regulatory compliance all combined that organizations can then use to compare and benchmark themselves against.

Accreditation often means the organization has gone through a transparent, external validation process that compares how it does business with the standards set by the accrediting body. Agencies that programatically and operationally meet these standards typically receive accreditation certification. Leadership visionaries often use the accreditation process as a tool to transform their organizations from mediocre to great. The team at JCMC EMS set its sights on realizing these goals.

"Even though so much had been accomplished in turning the organization around, initiating the accreditation process for each of our functional areas made us realize just how much more we needed to accomplish," says Steve Cohen, assistant director of quality, performance improvement and education. "This approach forced us to change many of the ways we had been traditionally doing business, especially with our policies and procedures, many of which we never realized we needed."

The organization's pursuit for accreditation was just as tenacious as its operational turnaround, necessitating that the EMS division and hospital administration pull out



PHOTO: J. HEIGHTMAN

**The JCMC EMS rate for ROSC rose from 18% in 2005 to 36.7% with a survival to discharge rate of 9.3%.**

all the stops and not settle for just good care or operations. This meant that JCMC EMS wouldn't pursue just one accreditation, but *five*, in what could be another example of the "all-in hand" approach that JCMC EMS had become accustomed to. In this hand, however, JCMC EMS played the best suit possible—a royal flush that would bring excellence and pride to their organization, which included the following:

- 1. Commission on Accreditation of Ambulance Services (CAAS):** This represents the gold standard of modern EMS programs and EMS system design as determined by the ambulance industry;
- 2. International Academy of Emergency Dispatch's (IAED) Accredited Center of Excellence (ACE):** This represents best use of the medical priority dispatch system (MPDS) emergency medical dispatch program;
- 3. Commission on Accreditation of Allied Health Education Programs (CAAHEP) Committee on Accreditation of Educational Programs for the Emergency Medical Services Profession (CoAEMSP):** This is an upcoming 2013 requirement for training programs who wish to provide students with National Registry of EMT certifications;
- 4. National Academy of Ambulance Coding (NAAC) Certified Ambulance Coder (CAC) Program:** This represents standards of excellence in compliance, ethics and integrity in all facets of ambulance billing and coding. It's a certification of individual coders and is the minimum standard of training for JCMC EMS billing staff; and



**5. National Institute for Automotive Service Excellence (ASE):** This represents excellence and certification of mechanics for automotive repair and maintenance.

### WHAT IT TOOK

“Just as tough as the organizational turnaround, pursuit of multiple accreditations and certification took lots of energy, time, commitment and resources if it was going to be done right,” says Rinn, now an assistant commissioner for the N.J. Department of Health and Senior Services.

When asked to recall what they experienced as part of this process, the JCMC EMS leadership team shared several common denominators: collaboration, teamwork, personal sacrifice and effective communications, as well as good, old-fashioned hard work.

Nothing came easy with the process, which included changing existing and creating new internal policies and procedures, working with hospital administration to educate and inform, getting field providers up to speed and brought into all the changes.

“Getting our entire team to understand what we were doing and why when no one else in the region was doing it, this was one of our greater challenges—as was getting the team to embrace transparency. While some saw transparency as a negative thing, from our perspective it was great,” Cohen says.

DeGeorge agrees. “The entire process was such an eye-opening, enriching and educational experience. Our team of dedicated employees really pulled together to accomplish our ultimate goal, to provide the highest quality patient care to our community,” she says.

In the end, more than 15,000 pieces of paper were prepared, bound and shipped off for review after the intensive two-year effort, followed by both on- and off-site scrutiny. However, the work effort was effective and efficient, with JCMC EMS receiving some of the lowest deficiency rates ever seen by reviewers in an organization on a first-time accreditation review.

### TRAINING, TECHNOLOGY & COMMUNICATIONS

In the late 1990s, when JCMC EMS recognized that there was a critical shortage of qualified applicants for available paramedic positions and for future expansion of their paramedic service, they partnered

with Hudson County Community College to develop an associate’s degree program in paramedic science. The joint program is the only degree-required program in New Jersey and the first CoAEMSP-accredited program in the state.

The training center also offers EMT training classes, ALS and BLS continuing education courses, and is an American Heart Association (AHA) community training center for BLS, ACLS, pediatric ALS and ACLS for the experienced provider.

In addition to training the EMS staff, the center trains all of the Jersey City Medical Center staff. Training is also provided to other local healthcare providers and community members. Recently, the training center staff in conjunction with the hospital and the AHA-trained all Jersey City public school seventh graders in CPR and provided them with “CPR Anytime” kits to bring home and train their friends and family members.

A section of JCMC EMS’s new headquarters facility also houses a state-of-the-art simulation center with dedicated rooms that mimic home and emergency department environments through use of four high-fidelity patient care simulators. These manikins are used for everything from basic EMT training to the most advanced paramedic level training, including annual skills competencies. EMS Medical Director Bill Cheng-Teng Wang, MD, FACEP, credits high-fidelity patient care simulators in these skill sessions with not only increasing the field learning environment for the staff at JCMC EMS, but also raising the level and quality of the care rendered to their patients.

As part of the JCMC EMS system redesign, Hudson County Communications Emergency Network (HUDCEN), the EMS communications center located within Jersey City Medical Center, was updated and now serves as a true regional communications center. Located in a secure area with limited access, HUDCEN is the designated public safety dispatch point (PSDP) for emergency medical 9-1-1 calls in Jersey City. In addition, HUDCEN monitors and maintains communication capability on very-high frequency New Jersey EMS radio system channels 1–4, including the Hudson County emergency management radio system, New Jersey mobile intensive care unit radio network, and trauma radio network, and ultra-high frequency MED channels.

Richard Sposa, JCMC EMS communications coordinator, says, “We realized in 2005 that our system as a whole was in need of improvement in a multitude of areas, and the most notable were our response time and asset deployment. With the help of Bradshaw Consulting and the MARVLIS [mobile area routing and vehicle location information system], we were able, in less than a year’s time, to reduce our response time by over two minutes.

“Our accreditation as an ACE validated the work we do day in and day out. The biggest change I noticed was the uniformity of the call-takers in the room. All are saying the same words, in the same style. The only difference from call-taker to call-taker is their voice. It’s a pleasure to know that everyone who calls our system is getting a uniform, response, according to the best methods developed by the academy.”

In 2006, HUDCEN received a major upgrade in infrastructure, making it the only coastal EMS 9-1-1 dispatch center in the Northeast to integrate global positioning systems, training, state-of-the-art call technology and computer technology to predict where calls will come from. It allows JCMC EMS to put the right resources at the right locations to ensure responders arrive quickly for medical emergencies.

The center also uses National Academies of Emergency Dispatch medical priority dispatch and EMS systems to give them greater flexibility in adopting their response plans through their medical director and bases its practice on medical research and outcomes.

To further enhance services, JCMC EMS uses FirstWatch, a real-time, Web-based, situational awareness data surveillance and early-warning software system. FirstWatch is a custom-built utility that monitors trends and patterns in 9-1-1 call center data that could indicate a possible weapons of mass destruction occurrence. FirstWatch allows users to securely monitor statistically significant occurrences in user-defined criteria. (For more, see Tools for Success, p. 10.)

### THE OUTCOME

Jim Dwyer, director of EMS for JCMC, points out, “There is an adage that says, ‘What you can’t measure, you can’t improve.’ We have implemented technology to measure and improve. Technology has been a key in our ability to better utilize our limited resources.

Our department is now almost completely paperless. We use technology to analyze and position our assets in the field, record patient care reports and drive our billing process.

“When I assumed my current position, the organization was like a sports team that had just completed a championship season, and like that team, we had to begin to prepare for the future seasons to come. Serious challenges still faced us; some always will. The financial position of all healthcare systems is still precarious, and as in all organizations, if you cannot expand, you are doomed to collapse. Our resources are limited, and we must be very judicious in how we use them. We will continue to focus our energies on our core values of patient care, safety, customer satisfaction and clinical excellence in order to enhance our value to the hospital and to the city and the county we serve. In addition, new and innovative models for prehospital care are on the horizon, and we are determined to take a leadership role in exploring and implementing them.”

Wang proudly boasts the contributions of the field crews in turning the system around and advancing its clinical excellence. “The dedication of the men and women of JCMC EMS is what had made this endeavor possible. Each member of this team, from the field providers and dispatchers, to the support staff that keeps our agency operating, strives to maintain the highest standards so as to enhance the lives of those who need us.

“As a result of all of the improvements made to the system, and the hard work of the staff of JCMC EMS, there have been significant improvements in the care provided to the patients they serve. One of the most obvious results was an increase in the survival of the victims of sudden cardiac arrest. In 2005, the ROSC [return of spontaneous circulation] rate at JCMC EMS was 18%, and the survival to discharge rate was unknown. Following the improvements in response time, updated protocols and procedures, and a focus on cardiac arrests, the JCMC EMS ROSC rate is now 36.7%, with a survival to discharge rate of 9.3%.”

During the process of obtaining the accreditations, Joseph F. Scott, FACHE, president and chief executive officer of JCMC’s parent company, LibertyHealth System, participated in EMS ride-alongs and made frequent tours of the dispatch center with community

## TOOLS FOR SUCCESS

A significant number of JCMC EMS’s successes were based on process change & the hard work of their dedicated staff members. However, many of the mechanisms used to help improve patient care, efficiency, effectiveness & employee well-being were heavily rooted in investments made in technology, infrastructure, equipment & systems.

Washko & Associates helped JCMC EMS select, implement & train staff on how to best use & integrate these tools to maximize their effectiveness & return on investment.

### NEW TECHNOLOGY & SYSTEMS

JCMC EMS implemented the following electronic processes to streamline its operations:

- >> **VisiCAD by TriTech Systems:** This, coupled with a prioritized dispatch coding hierarchy, allows improved dispatch throughout, to reduce dispatch processing times & capture accurate data necessary to improve the system.
- >> **Eventide:** This digital recording systems records all aspects of communication for use in root-cause analysis improvement.
- >> **Custom operational reporting, situational awareness & proprietary demand analysis systems:** These systems, developed & deployed by Washko & Associates, which were used to measure response times, provide administrative staff with multi-day updates on system performance & provide the latest concepts in mathematical predictive modeling for temporal demand analysis.
- >> **SharePoint server:** Used for implementation of an administrative information management system (AIMS), this server captures & manages operational information & allows for trending reporting & workflow assignment & follow up, custom developed internally by Jim Dwyer, director of JCMC EMS.
- >> **FirstWatch syndromic surveillance & business intelligence system:** This system was first implemented to watch for terrorist events & is now also used to provide signals of operational concern when performance metrics are askew. Communications staff & EMS managers use the FirstWatch “dashboard” display on a frequent basis to recognize system trends & areas that need immediate attention.

>> **MARVLIS:** The Bradshaw Consulting Service’s EMS deployment decision support system MARVLIS improved effective & efficient deployment of resources based on patterns of demand that was pivotal to improving response times.

>> **International Academy of Emergency Dispatch’s (IAED) advanced medical priority dispatch system:** This, along with ProQA & AQUA technologies, provided accurate call triage & improved pre-arrival dispatch life support capabilities.

>> **Washko & Associates proprietary software tool:** This redesigned work schedules that accurately matched supply to demand while also improving shift options & types available for staff to work.

>> **ZOLL RescueNet Crew Scheduler:** This software was used to keep track of employee schedules, shift openings & manage paid-time-off & payroll.

>> **ZOLL RescueNet TabletPCR:** This is used for electronic patient care reporting, this streamlined electronic records management.

>> **Physio-Control Inc.’s LIFENET software:** Used to transmit & receive 12-lead ECGs, it’s also used to activate JCMC’s Code Heart system, which electronically transmits 12-leads to the entire percutaneous coronary intervention team’s personal digital assistants.

>> **General Devices CAREpoint console:** Used in the JCMC emergency department, this system allows the paramedics & physicians to communicate via phone or radio, with all conversations & ECG tracings digitally recorded. LIFENET software is integrated into the CAREpoint console, which allows the physician to touch the screen & transfer or simulcast the transmission of ECGs & vital signs to interventional cardiologists or the medical director for consultation. In the event of a patient with an ST-elevated myocardial infarction, the JCMC Code Heart team can also be activated immediately with a single touch of a screen icon. The CAREpoint console also serves as a key resource for the medical command physicians because it has an extensive resource library that includes the standing order protocols, HazMat guides & more available for immediate access on screen. For the purposes of quality assurance reviews,

remote software also allows for retrieval of recordings from the CAREpoint data storage system.

## NEW INFRASTRUCTURE

JCMC EMS improved its infrastructure to support new processes & technological advancements, including developing the following:

- >> **A new building:** This was designed to maximize system efficiency & minimize system waste.
- >> **A new training & simulation center:** This was developed to provide the best in simulation-based training for EMS providers. The ALS simulation lab provides hands-on training & experience. Instructors can automate the manikin response through a computerized system that mimics a real-life scenario. The system allows the instructor to alter the scenario based on the provider course of treatment. The instructors have the ability to record the session to review the student's performance. The center currently houses four types of simulation manikins: full simulation manikin Laerdal SimMan, difficult airway management simulator Laerdal AirMan, advanced airway & vital sign simulator Laerdal VitalSim & most recently added Laerdal SimMan 3G, which is a wireless, portable & completely self-contained ALS simulator that is the latest in high-fidelity medical simulation. The 3G was funded by a grant from Hudson County Office of Emergency Management.
- >> **New ambulance speed loading system:** Designed to standardize equipment placement, improve equipment & supply reliability, this also reduces wasted medical supplies & saves substantial labor costs by reducing restocking & vehicle cleaning costs while maximizing available unit hours for deployment. (For more on this system, check out the upcoming article on speed loading in March *JEMS*.)
- >> **New maintenance facilities & staff:** This allowed JCMC EMS to provide the best in automotive repair practices by implementing preventative maintenance schedules that reduced critical failures & extended the life of their fleet.

## EQUIPMENT

- >> JCMC EMS improved updated the following equipment to support its new operations
- >> New EMS uniforms
- >> Specially designed new vehicles with crew comfort, functionality & safety aspect built in (with consult from EMS safety advocate & researcher Nadine Levick, MD, MPH)
- >> New medical equipment & protocols, including:
  - >> LIFEPAK 15's (with EtCO<sub>2</sub>, 12-lead ECGs, LIFENET & CAREpoint)
  - >> LUCAS 2 devices
  - >> EZ-IO
  - >> Therapeutic hypothermia
  - >> CPAP
  - >> Mucosal atomization devices (MAD)
  - >> Personal CO monitoring
  - >> DuoDote kits for crew protection
  - >> Bariatric stretchers, ramps & winches
  - >> Tracked stair chairs

members. Scott says, "I am very proud of what we accomplished. JCMC undertook the process of seeking these accreditations to validate the improvements we made to EMS over the past several years.

"I am a true believer when an organization seeks accreditation it brings the organization to an even higher level of excellence. During the same time our hospital began and achieved the Magnet Award process for nursing excellence. This confirmed to me the importance of seeking independent confirmation of quality by an independent organization. This team of managers ensured not only that we received the recognition of each of these accreditations, but more importantly, they would track and analyze how we could make improvements in service," he says.

Mark Rabson, LibertyHealth corporate director of public affairs, is also proud. "I often attend public meetings and events, representing the hospital and EMS to various community groups and service clubs. Interestingly, I noticed over the past four years that I have been receiving an increasing number of positive comments about our EMS and few negative comments. People frequently now thank me for the work of our EMS, the EMS and its community involvement, injury and accident prevention programs and increasing fast response times and the professionalism of the staff.

"The attitude and spirit of our EMS staff [not only EMTs, paramedics and dispatchers but the whole team, including those in fleet maintenance and the office staff] has improved since we began the quest for and obtained these accreditations," he says.

As a result of all these efforts, JCMC EMS now sits at the pinnacle of its game; the provision of the best possible and most reliable patient care balanced with economic prudence and coupled with continuous efforts to improve job satisfaction, education, safety for its employees and enhanced hospital, EMS staff and community involvement.

None of these efforts came easy, but JCMC EMS survived. It represents the epitome of an American success story, facing tremendous adversity and winning against what seemed like insurmountable odds. To that end, remember that necessity is the mother of invention and drives acceptance of the previously unacceptable. Although JCMC EMS came to embrace what many EMS agencies shun or work hard to avoid, when faced with the ultimate survival of a "fix or die" situation, things that an organization "would never do" were, in fact, done.

This is something that EMS leaders must understand and can learn from. Always remember, you don't need a crisis to manage your way out of a hole; you just need be willing to take the risks you'd be forced to take had you been placed in survival mode. This approach is what separates the average manager from a visionary leader. [JEMS](#)

**Jonathan D. Washko**, BS-EMSA, NREMT-P, AEMD, is assistant vice president of operations for North Shore—LJ Center for EMS located in New York City and Long Island, and is president of Washko and Associates LLC, an EMS consultancy group dedicated to improving EMS agency performance around the globe. He may be contacted at [jwashko@nshs.edu](mailto:jwashko@nshs.edu) or [jwashko@washkoassoc.com](mailto:jwashko@washkoassoc.com).

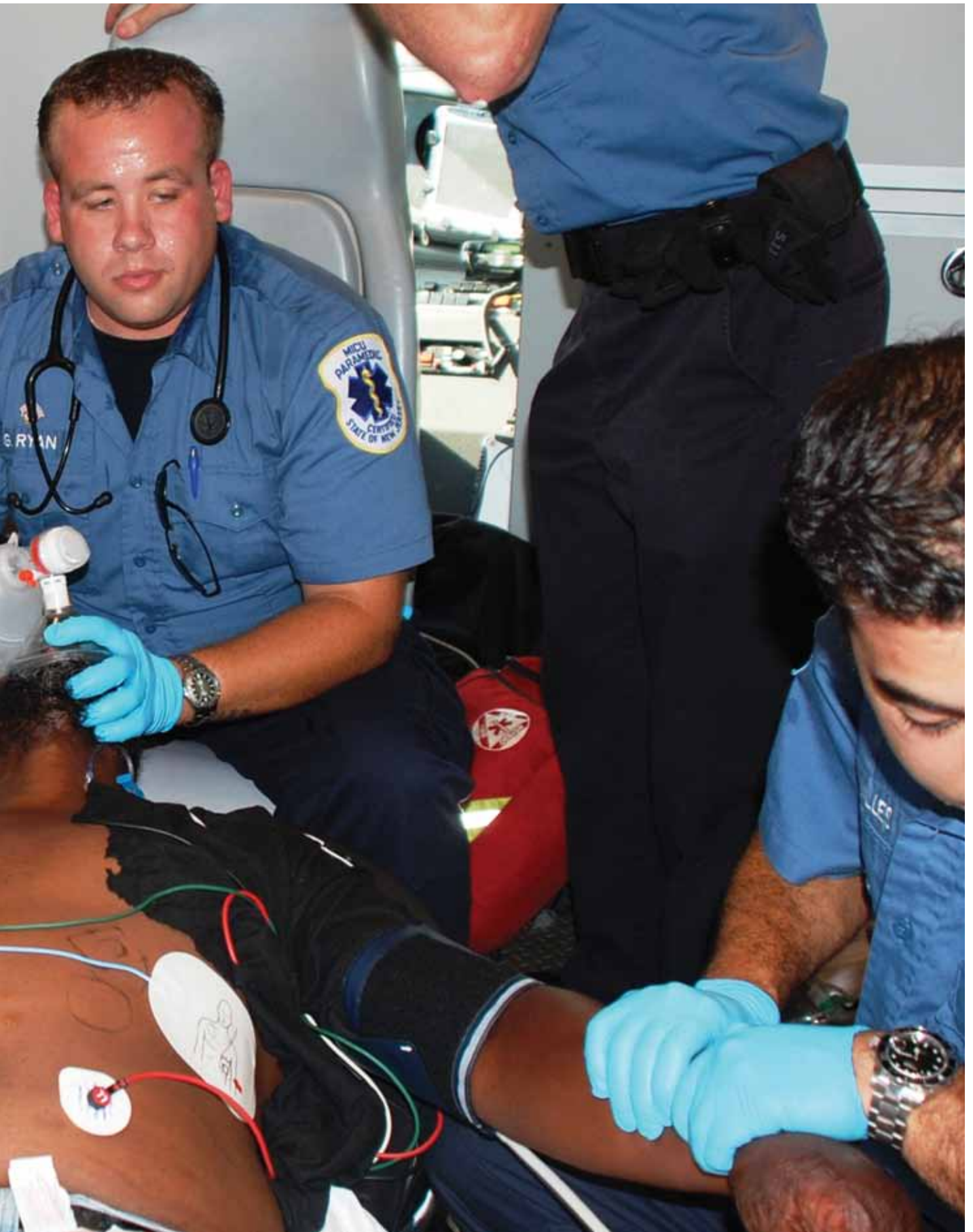
**A.J. Heightman**, MPA, EMT-P, is editor-in-chief of *JEMS* and has served as a regional EMS administrator, EMS service director of operations and EMS consultant. He may be contacted at [a.j.heightman@elsevier.com](mailto:a.j.heightman@elsevier.com).

## SCENE OF THE MONTH

### COMBATIVE SEIZURE

**J**ersey City (N.J.) Medical Center EMS personnel work to resuscitate a seizure patient who lapsed into respiratory arrest on scene. The patient had a long-standing and well-known seizure disorder secondary to a space-occupying lesion on his brain. He presented to BLS and ALS crews actively seizing. Medical command ordered 5 mg intramuscular midazolam with a repeat 5 mg dose. The patient continued to seize after both doses were administered, and a patent IV in the patient's antecubital fossa was ripped out by the patient's movement. A correctly sized nasal airway was placed, and bag-valve mask ventilations were timed with the patient's respirations. After multiple unsuccessful attempts to obtain peripheral IV access, the paramedic established an external jugular IV when the patient began to have intermittent periods of apnea. The patient was stabilized and transported to the emergency department postictally, with all vital signs within normal limits. He received further treatment and follow-up evaluation and was released from the hospital the next day.





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# Stories of Triumph

The positive impact the JCMC EMS has had on our community is best explained by the Jersey City residents who we've helped throughout the years.

**MARISA AND CHRIS TROTTO**, PARENTS OF AN INFANT SON WHO NEARLY CHOKED TO DEATH THIS PAST APRIL:

“Three ambulances immediately arrived at our home after we called 911. The Jersey City EMS had my son breathing again within seconds. We are blessed that this EMS responded to us that night.”

JERSEY CITY POLICE DETECTIVE **MICHAEL CAMACHO** WAS SHOT IN THE NECK AFTER RESPONDING TO AN INCIDENT WHILE ON DUTY:

“The very brave people of the EMS that we have here, once they heard gunfire they ran towards where we were. The hard work of Jersey City EMS getting me to JCMC promptly saved my life!”

**IVELISSE PEREIRA**, MOTHER OF PRISCILLA, A 5-YEAR-OLD WHO LOST CONSCIOUSNESS AFTER CHOKING AT A BACKYARD PARTY:

“She was like gone, blue and grey. She was just gone! Jersey City EMS saved her life!”

**RICARDO TORRES**, A JERSEY CITY RESIDENT, WAS HIT BY A CAR MOVING AT A HIGH RATE OF SPEED WHILE CROSSING THE STREET:

“Jersey City Medical Center saved my life. I was ‘born twice’ at the medical center.”

LibertyHealth.org

# TRIUMPH

JERSEY CITY MEDICAL CENTER

