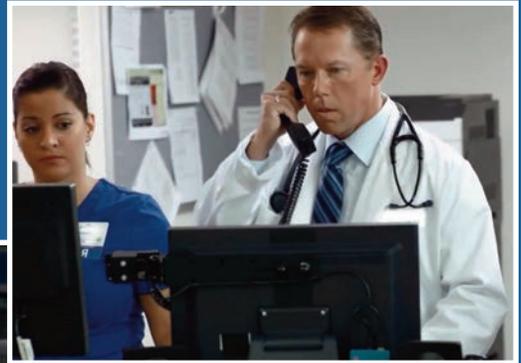


Mobile Telemedicine: An Innovation Whose Time Has Come



With obstacles to implementation rapidly falling, telemedicine apps provide cost-effective solutions for EMS to streamline healthcare delivery and improve patient health.

Presented by



Responsive Innovation.



“Telemedicine is moving like lightning. We’re able to do so much more than before.”

– Andrew Watson, MD, Chief Medical Director of Telemedicine, University of Pittsburgh Medical Center, *Forbes*, Jan. 15, 2015

“Today we have a convergence of telemedicine and videoconferencing technology, smaller and more powerful mobile devices, widespread wireless broadband mobile data, and an emphasis on healthcare cost reduction, improved quality and patient satisfaction—the Triple Aim.”

– Curt Bashford, President/CEO, GD, Ridgefield, N.J., *EMS World*, Jan. 6, 2015

“Telemedicine can play a critical role in improving health and managing chronic disease.”

– Andrew Baskin, MD, Vice President and National Medical Director for Quality Performance, Aetna.com, July 16, 2014

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Connecting Patients with Healthcare Providers – Anytime, Anywhere

Telemedicine, according to the U.S. Department of Commerce, is a broad term for electronically transmitting medical information to sustain or improve a patient's health. Also called telehealth or mHealth particularly when referring to applications that enable consumers to monitor their own health, telemedicine may include:

- Sharing documents, test results, images and other written or visual data between clinicians in various locations, or between patients and clinicians.
- Remote monitoring of a patient's vital signs.
- Secure, HIPAA-compliant messaging, such as texts or other multimedia alerts.
- The ability for healthcare providers to observe, diagnose and recommend treatment via video clips or live streaming video.

For over a decade, healthcare leaders have touted the potential of telemedicine to expand access to healthcare; lower costs through enhanced efficiency, better preventive care and improved care quality; and improve patient outcomes.

Yet widespread use of mobile telemedicine has remained elusive – until now, that is.

Setting the stage for the widespread adoption of mobile telemedicine

Trends in healthcare policy and financing coupled with technological advances suggest that telemedicine is an innovation whose time has come. A recent article in the *Journal of the American Medical Association (JAMA)*¹, one of the nation's most influential medical publications, highlighted three forces fueling a surge in the widespread adoption of mobile health tools.

- The need for "disruptive solutions" to control unsustainable healthcare spending.
- Rapid improvements in reliability and availability of wireless connectivity, with more than 3.2 billion mobile users worldwide, and the capacity for instantaneous, bidirectional transfer of information.
- A shift toward "more precise and personalized" medicine, which requires individualized data streams that go beyond current data collection systems.

The role of telemedicine in EMS

In its vital role as the nation's emergency medical responders, EMS is in a prime position to take advantage of the transformative potential of telemedicine to benefit patients and the EMS profession. Already, EMS agencies are implementing or exploring telemedicine as a means to:

- Enhance decision-making during time-sensitive emergencies such as stroke and trauma.
- Improve preparedness, triage and situational awareness for disaster or mass casualty situations.
- Improve the integration of EMS with hospitals and the wider healthcare delivery system.
- Demonstrate the value of EMS to the community through mobile integrated healthcare or community paramedicine programs that reduce healthcare costs and improve patient care.
- Provide a better mechanism for medical-legal documentation and quality improvement.
- Pave the way for new and alternative care and transport models.

In this white paper, we'll explore the shifts that have laid the foundation for mobile telemedicine to take hold in healthcare and in EMS. We'll also look at several case studies that explore how EMS agencies are currently using telemedicine.

Finally, we'll consider future uses for telemedicine as barriers to implementation fall, and both consumers and healthcare providers embrace "disruptive solutions" to better meet the nation's healthcare needs.

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EMS and Mobile Telemedicine: A Brief History

If telemedicine encompasses sharing documents or test results electronically, then EMS's first foray into telemedicine was the transmitting of single-lead telemetry in the 1970's, and more recently, 12-lead ECG readings from the ambulance to the hospital. Used to diagnose STEMI (ST-segment elevation myocardial infarction), a deadly form of heart attack, 12-lead ECGs enable field practitioners and physicians to quickly determine whether to take patients directly to hospitals equipped with 24-7 catheterization labs, and whether to incur the cost of activating the hospital's catheterization team.

Though 12-leads are well-accepted as a crucial part of integrated regional STEMI care, for other conditions and situations, EMS has continued to communicate using the same methods as it has for many decades – radio or phone.

Limitations of voice

The limitations of voice communications to paint a picture of a patient's condition or to fully describe a scene are well known to EMTs, paramedics, emergency physicians and public safety professionals.

To address those limitations, shortly after the nation's first broadband wireless networks were built, a few pioneering EMS agencies experimented with two-way video conferencing between ambulances and hospitals.

Early experiments

In 2006, Tucson Fire Department became the first EMS agency to pilot a commercial city-wide mobile telemedicine program when it equipped 17 ambulances with video cameras that were fixed in place and could transmit a live video feed to doctors at a Level 1 trauma center. "Of the 21 patients treated in the first 13 months of this program, I believe five could have died without the access that teletrauma provides," Dr. Rifat Latifi, associate director of the Arizona Telemedicine Program, said at the time.²

Yet a few years after installation, the video cameras had fallen into disuse. A main reason was the limitations of broadband coverage at the time. The municipal wireless network deployed in the city was unable to reliably transmit live video.

In 2009, East Baton Rouge EMS in Baton Rouge, La., had a similar experience when it tried using two-way video in ambulances. "We knew it had potential, but the wireless technology hadn't caught up yet," said Bryant Hernandez, East Baton Rouge EMS's Community Integrated Health Program coordinator. "Dealing with 3G was hit and miss. We couldn't get the picture quality to where we needed it to be in a moving ambulance."

Because of its reliance on wireless networks, mobile telemedicine in the field was proving more difficult to implement than wired telemedicine in hospitals, which were starting to use carts equipped with videoconferencing and other diagnostic equipment to link physicians and specialists off-site with the patient's bedside inside the hospital.

For a few years after these pioneering EMS experiments fizzled, telemedicine in the field hit the pause button, with few new programs coming on board. But over the next several years, significant changes in healthcare and technology enabled a new mobile telemedicine to emerge.

Major Trends in Healthcare and Technology Fuel Telemedicine's Growth

In healthcare and technology, four major trends are creating the conditions for telemedicine to flourish.

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1. Healthcare reform

In 2010, the passage of the Affordable Care Act shook the status quo and fueled the growth of new healthcare delivery models and financing structures.

Traditionally, healthcare payment and reimbursement was set up to reward volume of care above all else – the more treatments or services provided, the more healthcare providers could bill. Today, healthcare financing is shifting to a value-based system, in which patient outcomes and costs are taken into account.

To achieve those efficiencies and improve patient health, alternative healthcare delivery models, such as Affordable Care Organizations, patient-centered medical homes, and in EMS, mobile integrated healthcare and community paramedicine (MIH-CP), have emerged. Those trends are leading to increased interest in tools such as telemedicine apps that can facilitate the delivery of high-quality, cost-effective care.

The Triple Aim

The priorities of healthcare reform are encapsulated in the Institute for Healthcare Improvement's Triple Aim: lowered costs, improved patient outcomes and improved patient experience. Telemedicine can help achieve the goals of the Triple Aim by:

- Connecting patients with the right resource at the right time.
- Bridging healthcare gaps and expanding access to care.
- Saving time and money for patients and providers.
- Improving the patient experience by bringing care to them, wherever they are.

2. The expansion of wireless networks

When referring to wireless networks, "G" stands for the generation of mobile technology used in phones and cellular networks. In 2003, third-generation (3G) mobile networks established the nation's broadband. Since then, 3G networks have continued to both expand and improve. Today, a wide variety of telemedicine activities are becoming more feasible because of the expansion of 4G networks able to transmit large amounts of data – text, images, video clips and live streaming video – with clarity, speed and reliability.

3. The mass adoption of mobile devices

Today, 90 percent of Americans own a cellphone, 58 percent have a smartphone and 42 percent have a tablet.³ Mobile devices are integral to everyday life – used to get directions, make purchasing decisions and to seek health information. In 2013, a Manhattan Research survey found that 38 percent of smartphone users agreed that their device is “essential” for finding health and medical information.⁴

Today, consumers are increasingly interested in using mobile devices not only to seek health information, but as tools for monitoring their health and communicating with healthcare providers. According to a 2014 Deloitte survey, 6 in 10 Americans are interested in using mobile solutions to monitor or manage health conditions⁵, while a Salesforce survey, “2015 State of the Connected Patient” found that 60 percent of millennials are interested in using video chat with a doctor so they don’t have to come into the office for an appointment.⁶

4. Healthcare providers, including EMS providers and medical directors, see value in telemedicine

The Deloitte survey also found that 9 in 10 physicians were interesting in using telemedicine solutions. A 2015 survey of EMS providers and medical directors about the operational uses for telemedicine conducted by the National Public Safety Telecommunications Council (NPSTC) found strong support for exploring a variety of prehospital telemedicine uses.

- 64 percent said they thought live video or images could assist with real-time, critical care support and direction to field personnel.
- 61 percent said they thought video or images could result in better decision-making and risk mitigation on patient refusal requests.
- 57 percent said they thought telemedicine could help with decision-making and support for mobile integrated healthcare and community paramedicine visits.
- 67 percent thought video could give the hospital emergency department greater awareness of the status of incoming patients.
- 60 percent believed video could aid in stroke, STEMI or trauma team activation, while 61 percent believed it can result in improved patient care due to better visualization of the scene or mechanism of injury.
- More than 60 percent believed video or pictures can be useful in post-incident training or quality assurance.

New Apps Bring Down the Cost of Telemedicine

The expansion of broadband wireless networks isn’t the only technological advance that’s furthering the growth of telemedicine.

New, inexpensive and HIPAA-compliant telemedicine apps can be downloaded onto ordinary smartphones, tablets and PCs. Whereas many in-hospital telemedicine solutions require the purchase of expensive monitors and equipment, mobile telemedicine apps are far less costly.

Telemedicine Reimbursement Expanding, But Challenges Remain for EMS

Even with support from many sectors of healthcare for telemedicine, its expansion was hindered by a lack of reimbursement from public and private payers. That, however, is rapidly changing.

There are bills to define telehealth, telemedicine and practice standards, to remove barriers or improve coverage and payment options pending in 36 states, according to the American Telemedicine Association.

Twenty-two states now have telemedicine parity laws stipulating that telemedicine consults should be compensated at the same rate as in-person visits, according to the association. The most recent to be signed into law was in New York, where starting in 2016 state law will require Medicaid and private insurance to reimburse many types of licensed health providers for telehealth and telemedicine services. The law also differentiates between telemedicine and telehealth. Telemedicine is defined as real time, two-way audio/video communications, including video conferencing, while telehealth is defined as telephone and remote patient monitoring.⁷



In November 2014, the Centers for Medicare and Medicaid (CMS) issued a rule expanding reimbursement for telehealth services.⁸

However, telemedicine legislation generally doesn't address telemedicine activities by EMS providers because EMS is reimbursed for *transporting* patients to an emergency department, not for an office or home visit, or even for providing healthcare services.

How are EMS agencies funding mobile telemedicine?

To pay for mobile telemedicine, some EMS agencies have secured grants, some of the largest of which have come from the CMS Innovation Center. Mt. Sinai Hospital/the Icahn School of Medicine received a \$9.6 million grant to launch and test a program it calls Mobile Acute Care Team Services, in which physicians, nurses, community paramedics, social workers and others work as a team to take care of groups of patients with diseases such as congestive heart failure, asthma, diabetes and chronic obstructive lung disease. As part of the program, community paramedics will use a mobile telemedicine app to facilitate video conferences between patients in the home and physicians.⁹

Others, particularly fire-based and public/municipal agencies, are paying for telemedicine out of their own tax-supported budget, often in support of mobile integrated healthcare or community paramedicine programs, but also as part of overall efforts to improve stroke care, other emergency care or preparedness. The cost of telemedicine apps can be relatively inexpensive and are often easily justifiable especially when factoring in potential improvements in care, cost savings, and risk or liability mitigation.

Still other EMS agencies have entered into contractual agreements with hospitals or other healthcare entities who see the value of mobile telemedicine in reaching specific goals, which can include preventing readmissions of recently discharged patients, for curbing 911 and emergency department use among frequent users or other vulnerable groups; or for enhancing trauma and stroke care. In these agreements, the hospital may pay a fee for service or fee per patient. These programs have the dual aim of improving patient health while avoiding fines and penalties on hospitals related to readmissions.

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The Time is Right for EMS and Mobile Telemedicine

With consumers and healthcare providers enthusiastic about using mobile devices, wireless networks significantly improved and healthcare entities incentivized to innovate, EMS agencies are again seeing opportunity in using mobile telemedicine to serve their patients and their communities.

Only now, instead of seeing mobile telemedicine primarily as real-time, two-way video conferencing, EMS telemedicine innovators realized that mobile telemedicine could also encompass sharing other forms of HIPAA-secure data, such as group alerts, texts or other documents; images; or video clips. These activities were not only extremely feasible, but potentially just as impactful as live streaming, depending on the situation.

Obstacles to Mobile Telemedicine	Changes Underway
3G wireless networks too slow to support reliable live streaming data transmission	Rapid expansion of high-speed 4G coverage, FirstNet public safety broadband
Lack of secure messaging and data transfer	Secure, HIPAA-compliant messaging and data transfer now available through new telemedicine apps
High cost to purchase specialized telemedicine equipment	Lower-cost, telemedicine apps now available by subscription and run on ordinary smartphones, tablets and PCs
Lack of understanding among healthcare providers about telemedicine uses	Interest and excitement growing as mobile technology becomes more widely embraced
No funding for telemedicine activities	Private insurers, Medicaid and others see value in telemedicine consults and are offering payments, reimbursement
Prohibitive statutory or legislative barriers	Legislation pending in 36 states to open doors to more telemedicine; 22 states have telemedicine parity laws
Fee for transport reimbursement	Changes in healthcare and potentially EMS reimbursement to reward value instead of volume

A New View On Stroke Care

Ischemic stroke is one of the most common, time-sensitive conditions that EMS responds to. To have the best odds of preventing long-term disability, current guidelines call for the clot-buster drug tPA (tissue plasminogen activator) to be given with 4.5 hours, and ideally 3 hours or less, of symptom onset.

In the real world, this can be difficult. Patients may have a stroke while sleeping, or not recognize stroke symptoms, and delay seeking medical care. In rural areas, transport times to hospitals may be lengthy. And many community hospitals don't have neurologists available to do stroke evaluations and administer tPA. Instead, these smaller hospitals may transfer patients to tertiary referral hospitals, adding more time.

According to a study published March 4, 2015 online in *Neurology*, one-third of the U.S. population does not have access to a stroke center within one hour by ambulance. (Stroke centers are hospitals certified as having met established stroke care quality indicators.)

To reduce the time to diagnosis and treatment, a 2009 policy statement published in *JAMA* from the American Heart Association supports the use of videoconferencing systems connecting expert neurologists for rapid, remote examination and treatment of patients undergoing suspected strokes.¹⁰

"The goal of telemedicine, or any stroke system of care, is to provide the right care to the right patient in the right amount of time—every single time," said Dr. Lee Schwamm, lead author of the statement and vice chairman of neurology at Massachusetts General Hospital in Boston. According to the *JAMA* article, "The advantage of telemedicine is you get a stroke expert at the bedside..."

Linking stroke patients in the field with physicians

In using telemedicine with stroke patients, EMS has two options.

Option 1

EMS providers send live streaming video of the patient to the emergency department or a neurologist at a stroke center. This enables physicians to conduct the stroke assessment and interact directly with the patient. The challenge in using this strategy is that a physician has to be available to conduct the assessment.

Option 2

EMS providers conduct the stroke assessment, and share a video clip with their local emergency department, where it can be viewed or forwarded to a stroke center. The advantage of this strategy is that a physician does not have to be available at the moment the assessment is conducted.

Using either method can assist with rapid decision-making about patient care, help determine where to take the patient and whether to transport by ground or air medical transport.

An added benefit: because stroke symptoms may change or appear to resolve between the time of EMS arrival and hospital arrival, videos can also be used to document the patient's condition. This may help EMS in communicating the patient's condition to a physician, and may assist the neurologist.

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One Look is All it Took: Mobile Telemedicine in Other Emergency Situations

There are many other uses for mobile telemedicine in emergency response, including:

Situation: Burn patient. EMS providers send an image to a physician at hospital or burn center.

Impact: Physicians can determine severity of the burn, decide if the patient should go to a specialized burn center, instruct EMS on the care and dressing of the wound prior to arrival and better manage pain.

Situation: STEMI. EMS can snap a picture of an ECG readout and send it to physicians at the hospital.

Impact: Although many ambulances have monitors that can transmit ECGs, not all services have these capabilities. Snapping a picture of an ECG and sending it via secure message provides an alternative. Confirming STEMI (ST-segment elevation myocardial infarction) in the field can save time by quickly getting patients to a hospital equipped with a 24-7 catheterization lab to open blockages sending ECGs can help prepare hospitals so they are ready to receive those patients.

“We had a patient who was expedited straight to the cath lab from the ambulance with a potential STEMI. Had we not had [GD’s] e-Bridge [Mobile Telemedicine] to communicate the patient’s condition from the ambulance to the cardiologist in the hospital, the patient might not be alive today.”

–Brian Arkwright, Telehealth Coordinator, Mission Hospital, Asheville, N.C.

Situation: A patient's condition is rapidly deteriorating during a long transport, and paramedics request advice.

Impact: Physicians, viewing a live video or video clip, can conduct an assessment and provide step-by-step instructions.

Situation: Patient refuses transport, against medical advice. EMS takes a video of the patient's refusal, or facilitates direct video conference session between the patient and physician.

Impact: Liability protection for both EMS and the directing physician. If EMS advises a patient to go to the hospital and the patient refuses, EMS will document this in the electronic patient care report. Documenting the refusal on video provides added protection against any future claims against the EMS agency.

Situation: Serious trauma, car accidents. Using their smartphone or tablet, EMS providers take a picture of the mechanism of injury, to document and securely message it from the field to physicians or trauma teams, instead of attempting to paint a picture verbally.

Impact: Physicians can advise EMS about on-scene treatment direction can better determine if the patient needs to go to a trauma center.

“We can try to describe things all day long. The tree was this big around. The whole roof was ripped off the top of the car... But to be able to show it gives the complete picture.”

– Matt Tatum, Deputy Director, Henry County Public Safety, Martinsville, Va. Tatum recently used GD’s e-Bridge™ Mobile Telemedicine to show emergency physicians the mechanism of injury in a car accident in which five people were injured, including one fatally.

The Doctor Will See You Now: Improving Stroke and Trauma Care in Lynchburg, Va.

When responding to a suspected stroke, firefighters at the Lynchburg (Va.) Fire Department take out their iPads. After getting permission from the patient and family members, firefighters video the patient doing the Cincinnati Prehospital Stroke Scale assessment, which asks people with suspected stroke to smile, raise their arms in front of them, and repeat a simple sentence.

“The video helps us better document, consult and share information. The hospital can make sure the CT scan is available, and physicians can see the patient for themselves.”

– Heather Childress, EMS Battalion Chief, Lynchburg Fire Department

The video clip is then sent to physicians at Lynchburg General Hospital, where a medical team reviews it. “The video helps us better document, consult and share information,” said EMS Battalion Chief Heather Childress. “The hospital can make sure the CT scan is available, and physicians can see the patient’s condition for themselves. This allows them to know where we’re coming from, literally and figuratively, so they are better prepared to accept the patient when we get there.”

HIPAA-secure image and video sharing

For the last two years, Lynchburg Fire Department has used e-Bridge™ Mobile Telemedicine app, made by GD. e-Bridge enables responders to share HIPAA-compliant video clips – as well as text, images and live video streaming – from smartphones or tablets.

To protect patients, images and videos can only be sent to those in the user’s network. Lynchburg Fire Department’s network includes the CAREpoint™ Workstation, used by Lynchburg General Hospital to manage all EMS-hospital communications on a single interoperable, easy-to-use device, as well as the fire department’s medical director and several EMS supervisors.



Documenting mechanism of injury in trauma

The fire department also uses the e-Bridge app to take pictures of the mechanism of injury in car accidents or other trauma. “We’ve used it in trauma situations where the mechanism of injury is significant, but the patient is outwardly doing OK,” Childress said. “If the damage to the vehicle is significant and it is clear there was a lot of energy transfer, the picture can drive home our point and raise the physician’s index of suspicion, and also help them decide where to look for injuries.”

Childress and her team are also exploring using images and videos to document suspected neglect, abuse, exploitation or unsafe living conditions, which they must report to the city’s Human Services Division, Childress said.

“We want our community to have the best possible service, at the minimum cost,” Childress said. “e-Bridge doesn’t cost a lot and it doesn’t require a lot of training, but it has the potential to make a huge impact on patient outcomes and in preventing permanent disability for stroke and other conditions, such as trauma.”

The Eye of the Storm: Mobile Telemedicine and Preparedness

From transporting Ebola patients to treating the victims of school shootings to responding to natural disasters, EMS is called on to respond in times of crisis.



"EMS holds a special position at the intersection of public health, health care, and public safety. Cooperation and integration of EMS and public health ... can improve a community's preparedness and response to acts of terrorism as well as other identified public health needs," according to the American College of Emergency Physicians.

By adding the ability to send images, video clips or live streaming video to the EMS repertoire, mobile telemedicine gives EMS agencies a tool to enhance preparedness for mass casualties or disaster situations.

Situation: Mass casualty incidents, such as bus accidents, active shooters or terrorist attacks.

Impact: By having the ability to share images and video from the field with physicians, emergency communications or command centers, EMS can improve situational awareness as events unfold, improve triage if there are multiple casualties, and provide information that will be useful in resource allocation.

Situation: A lethal virus or hazmat situation.

Impact: Using teleconferencing, video clips or even still images can minimize the number of responders, healthcare providers and members of the public potentially exposed. For example, protocols for viruses may direct patients to be taken only to certain hospitals equipped to handle such patients. When responding to a patient suspected of having the condition, EMS can use telemedicine to enable physicians to view the patient remotely, helping facilitate a diagnosis without direct patient contact and risk of hospital exposure.

Situation: Send a group message or alert regarding a hospital closure, mass casualty event, terrorist attack or other large-scale event.

Impact: Instead of needing to make individual phone calls, send a HIPAA-secure group message or alert to a designated network.

FirstNet: A Future Game Changer

While today's emergency responders have to rely on commercial wireless networks when using cell phones or smartphones, in 2012, Congress authorized up to \$7 billion to fund the creation of a high-speed, nationwide, interoperable wireless public safety broadband network. FirstNet (First Responder Network Authority), an independent authority overseeing the creation of the network, has identified mobile telemedicine as a potential use of the network by EMS.¹¹

There are several early FirstNet projects underway, including JerseyNet, a "deployable" network slated to include multiple trailers equipped with LTE and other wireless capabilities. These "cells on wheels" can provide day-to-day public safety wireless broadband, or deploy as needed to boost or replace existing communications during large-scale disasters. GD's e-Bridge Mobile Telemedicine is being considered for the EMS use-case applications to link field providers with CAREpoint™ Workstations in the state's hospital emergency departments. CAREpoint™ is used in hundreds of emergency departments nationwide to manage all EMS-hospital communications on a single interoperable, easy-to-use desktop device.

Seeing EMS in a New Light: Mobile Integrated Healthcare and Community Paramedicine

Back in 2002, a study in the *Journal of Prehospital Emergency Care* estimated telemedicine consults between emergency physicians and paramedics in the field could cut EMS transports by more than 15 percent by helping to identify non-urgent complaints that could be safely treatable outside the emergency department.¹² Those settings may include primary care, urgent care, mental health or substance abuse facilities, or even self-management at home.

The idea that EMS practitioners could navigate patients to the right level of care instead of transporting everyone to the emergency department is at the foundation of an emerging service being provided by EMS, known as community paramedicine and mobile integrated healthcare (MIH-CP).

As of the end of 2014, more than 100 EMS agencies, often in collaboration with hospitals, had an MIH-CP program, according to a survey by the National Association of Emergency Medical Technicians (NAEMT).¹³ These programs may include sending paramedics and EMTs into patients' homes to assist with education and chronic disease management, or delivering patients to alternative destinations.



In an editorial published in the October 2013 issue of *JAMA*, Dr. Kevin Munjal of Mt. Sinai Medical Center noted the potential for EMS to lower “downstream” healthcare costs by implementing more patient-centered care and having the option of delivering patients to alternative destinations.¹⁴

Linking frequent users with care

A group frequently targeted by MIH-CP programs is frequent users – patients who call 911 or who visit emergency departments repeatedly for conditions that could be better dealt with elsewhere. These patients often have complex medical and psychosocial issues that may require the coordinated assistance of multidisciplinary team to manage.

In the MIH-CP context, EMTs and paramedics visiting patients in their home can use telemedicine tools such as videoconferencing to facilitate live consultations between EMS, the patient and a physician. This has the potential to reap substantial savings for healthcare systems and communities by leading to an overall decrease in the patients' use of more expensive healthcare resources such as hospitals, while improving the patients' quality of life.

Telemedicine adds value to MIH-CP

For EMS agencies seeking to establish partnerships or contractual agreements to provide MIH-CP services, the addition of telemedicine may add to perceptions of value among stakeholders. According to the NAEMT survey, about one in four EMS agencies with MIH-CP programs report using telemedicine. Using live streaming, EMS can facilitate physicians examining or interacting with patients remotely, and enable them to provide advice and guidance based on these consultations. This may serve to:

- Increase the comfort level of participating physicians in MIH-CP.
- Document activities for quality, training, and legal purposes.
- Make the MIH or CP service line more attractive to potential partners. Remote consultations can be used to reduce costs by preventing unnecessary admissions or readmissions, reducing costs – a service hospitals may be willing to pay EMS for providing.
- Improve patient satisfaction by enabling them to speak with doctors while they are in the home, and by preventing patients from needing to take a trip to the emergency department.

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Case Study

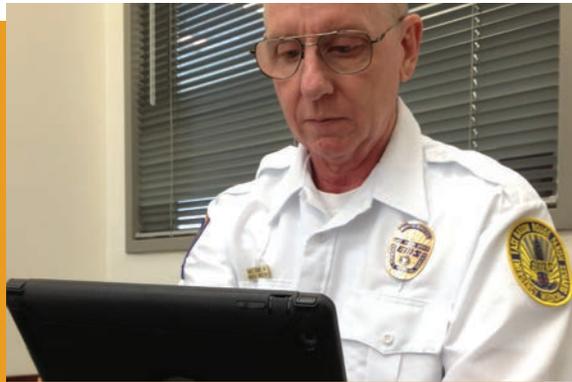
Using Telemedicine to Reduce 911 Calls and Emergency Department Visits for High-Utilizers in Baton Rouge

Like many EMS systems, East Baton Rouge EMS, which serves a population of 440,000 in and around Louisiana's state capital, had a group of patients who repeatedly called 911 for non-urgent situations. Though most had multiple medical and psychosocial issues, these patients needed primary care, mental health care, substance abuse treatment and other types of assistance more than emergency care.

“I can do a more thorough evaluation, make a better decisions, provide better care, and better answer the question, ‘What do we need to do for this patient?’”

–Dr. Dan Godbee, Medical Director, East Baton Rouge EMS

EMS data showed that during one recent 6-month period, 2,000 patients accounted for almost 7,200 calls and 5,500 transports. That group included 12 patients who accounted for 164 calls, or nearly 14 calls each.



To navigate these patients to more appropriate care and prevent hospital admissions and re-admissions, East Baton Rouge EMS partnered with four area hospitals to launch the Community Integrated Health Program in September 2014.

The hospitals pay East Baton Rouge EMS a fee per patient to conduct home visits, provide health education, assist with managing chronic diseases, and ensure patients are linked in with primary care and social services. When the patient or the paramedic feels a live physician consult is needed, paramedics use e-Bridge Mobile Telemedicine™.

“Sometimes patients are very anxious about their symptoms and they say, ‘All I want is to talk to a doctor’. We’re able to do that. The physician is making a house call via a camera. The patients love it,” said Bryant Hernandez, Community Integrated Health Program coordinator.

Since launching, 911 calls and transports among frequent users have plummeted. In January 2015, 20 frequent users were enrolled in the program; their 911 use dropped from a combined 30 calls a month to eight – 75 percent lower.

East Baton Rouge EMS has plans to expand the program to prevent admissions and readmissions among patients with congestive heart failure and pediatric asthma patients.

“A paramedic can be the most articulate person in the world, but there is nothing better than your own personal evaluation and that direct interaction with the patient. By seeing them, you get those non-verbal cues we all look for in every conversation,” said Dr. Dan Godbee, East Baton Rouge EMS medical director. “I can do a more thorough evaluation, make a better diagnosis, provide better care, and better answer the question, ‘What do we need to do for this patient?’”

Mobile Telemedicine FAQs

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Q. Is telemedicine expensive?

Many EMS agencies are finding the new apps very affordable. While many in-hospital telemedicine solutions require the purchase of expensive monitors, cameras and IT equipment, low cost telemedicine apps, such as e-Bridge Mobile Telemedicine made by GD, run on ordinary smartphones, tablets and PCs.

Q. Why can't I just use FaceTime, Skype or my cell phone camera and text features?

Because of patient privacy laws. The Health Insurance Portability and Accountability Act (HIPAA) was enacted in 1996 to streamline electronic health record systems while protecting the security and privacy of health data. The law directed the Department of Health and Human Services to establish national standards for electronic healthcare transactions. Ordinary email, text, image and video sharing and video chats are designed for social consumer purposes and don't have necessary safeguards in place for HIPAA compliance. HIPAA breaches or potential breaches may be subject to costly fines. The software that's the foundation for e-Bridge has been engineered to share and store patient information securely. Steer clear of consumer and social media apps unless you want to end up on the evening news in a negative way, or worse – in court.

Q. How do apps like e-Bridge protect patient privacy?

e-Bridge enables users to share HIPAA-secure text messages, voice, images, video clips or live streaming video. The data is fully protected utilizing Advanced Encryption Standard (AES) technology (both on the device and during transport) and passwords. To further protect patient privacy, texts, images and video clips can only be sent to recipients who are part of the network determined by the user. As an added protection, video clips and images are not available to other apps or contacts on the mobile device and do not become part of the image gallery.

Q. How long does it take to learn how to use e-Bridge?

e-Bridge is very intuitive and easy to use. It is designed for use by EMTs, paramedics and physicians in the highly mobile and emergent setting where taking care of patients, not technology, is priority one. Training takes only minutes and most EMS providers report feeling very comfortable using e-Bridge within a day.

Q. Are there any legal or liability issues I need to consider when deploying mobile telemedicine?

As rules and legalities vary from state to state and system to system, you should check with your agency's legal counsel for specifics. Anecdotally, some doctors report the addition of pictures or videos gives them more confidence in making a diagnosis or giving care instructions remotely, actually helping to mitigate risk.

Q. What if my medical director or the hospital physician is not available at the moment when I am ready for a telemedicine consult?

That's why you want an app that can do both synchronous (live) and asynchronous (off-line or store and forward) video and pictures. With e-Bridge you can take pictures or a video clip and send it to physicians to view when they are available.

Q. What if I'm in a location with poor or slow wireless coverage?

This is another reason you want a mobile telemedicine app that gives you the option of transmitting live or recorded video and pictures. With e-Bridge, you can take pictures or a video clip at the time and point of care, and send it when coverage permits.

Q. Who should my hospital or EMS agency include in discussions about implementing mobile telemedicine?

Community and stakeholder support is very important. We recommend you get buy-in from the outset by engaging all of your local stakeholders. Share how you plan to use telemedicine initially – for example, stroke, trauma or MIH-CP – and communicate the potential benefits to patients and the community. Also consider parallel or ancillary uses such as disaster triage, group coordination, burn assessment or quality improvement that add value to the project.

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About GD

GD, based in Ridgefield, NJ, is the nation's leading medical technology company specializing in innovative telemedicine and communications solutions, for hospitals, mobile integrated healthcare, emergency medical services & public safety agencies. Handling thousands of calls each day, GD innovations combine speed, simplicity and reliability to improve preparedness and provide better patient care through sharing and documenting critical information among medical and public safety teams. Established in 1979, GD has a longstanding reputation for responsive innovation and exemplary customer support. Its innovative spirit continues to challenge the status quo with next generation solutions that are well-designed and simple to use for the benefit of patients, communities and care providers alike.

Product innovations include the CAREpoint™ Workstation used by hospital emergency departments to manage all EMS-hospital communications on a single interoperable, easy-to-use device; and e-Bridge™ Mobile Telemedicine apps, which enable the sharing of real-time, HIPAA-secure voice, texts, photos, videos and streaming video from smartphones, tablets and PCs between EMS, mobile integrated health-community paramedicine, hospitals and public safety entities.

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