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For More Information Circle 13 on Reader Service Card
How to Plan for, Prepare and Deliver High-Value EMS Simulation

Scheduled for June 15, 11:30 a.m. ET

Preparing EMS providers for practice is complicated. Shrinking access to clinical sites, opportunity to practice high-stakes interventions and teamwork skills are just a few challenges where simulation is positively impactful. In this webinar, join John Todaro, president of the National Association of EMS Educators and one of the nation’s authorities on simulation education, for tips on planning, facilitating and evaluating simulated patient engagements. Emphasis will be placed on identifying critical gaps in fulfilling curriculum goals, aligning simulation objectives to national standards and developing learners’ competence, all while operating in a low-resource environment.

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FEATURES

Stuck in Reverse >> EMSWorld.com/12205052
What if EMS were all volunteer? Mike Rubin highlights advantages of such an outcome in June’s Life Support.

Moulage of the Month >> EMSWorld.com/12205020
Bobbie Merica continues her guide to simulating injuries and illnesses through effective use of moulage. This month: industrial injury, snakebite.

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FROM THE PUBLISHER

By Scott Cravens, EMT

Crisis Management
Rethinking our response to the mentally ill

With Memorial Day just passed, it seems appropriate to shine a spotlight on a department that has gone out of its way to help our veterans.

In January 2012, a 25-year-old former recon Marine sergeant, who had served two tours in Iraq, was shot dead after what was seemingly an unprovoked evening of pool playing (for details of the incident see http://bit.ly/1NphBgU). That event struck a chord at the Phoenix Fire Department, where medical director Dr. John Gallagher (pictured) recognized many of the agency’s psych patient calls were for veterans. They, like any psych patients, are taken to the ED and admitted for three or more days of observation well after the episode that landed them there in the first place. Not anymore. Phoenix’s Crisis Response Network (CRN) program (crisisnetwork.org) provides care of the seriously mentally ill. The PFD has partnered with the CRN so that when a call comes in that is psychiatric in nature without a medical problem, the PFD calls in CRN’s two-person counseling unit, which works with the patient. “Previously we would take the patient to the ED, now we call this unit,” Gallagher told me when I visited PFD earlier this year. “They transport them to the urgent psychiatry center or just send them to outpatient treatment.”

And there’s an added benefit, Gallagher says: “We didn’t get into the project with the idea of making money, but the AHCCCS (Arizona Health Care Cost Containment System) insurers said, ‘We think we can cover this.’ In the near future, Medicaid/AHCCCS will pay PFD $150–$250 for a non-transport, saving the healthcare system over $4,000 by avoiding an ambulance transport plus hospital stay.” The hope is to keep adding more districts to the project until it is statewide. For more on the AHCCCS program, see http://1.usa.gov/1ZAPH2f. For more on my visit to PFD, see EMSWorld.com/12206438.

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For More Information Circle 17 on Reader Service Card
Dallas MIH-CP Program Reduces Enrolled Patients’ Calls by 82%

Since Dallas Fire-Rescue began a proactive pilot program in March 2014 involving firefighter-paramedics making house calls, the frequency of 9-1-1 calls by patients in its Mobile Community Healthcare Program has plummeted by 82%. The drastic reduction has saved the city significant sums via fewer emergency runs, and hospitals by fewer emergency room visits for patients, many uninsured. The eighth-largest city in the United States, Dallas covers some 380 square miles and 1.18 million residents.

“We’ve seen a run reduction among those enrolled in this program from 2,870 calls in the year before enrollment to 510. That’s monumental,” says Norman Seals, assistant chief of the Emergency Medical Services Bureau for the Dallas Fire-Rescue Department.

The Mobile Community Healthcare Program employs Dallas Fire-Rescue community paramedics to focus on chronically ill patients and those recently discharged from a local hospital. Paramedics evaluate medical needs, teach enrolled patients ways to better manage their health and provide them with referrals to necessary services.

“In the ‘proof of concept’ phase in the first few months of the program, we looked at what was being done in other places with similar programs and designed our own in a fire department-based system,” says Marshal Isaacs, MD, medical director of Dallas Fire-Rescue. “Was it safe? Was it beneficial to patients? Was it good for the healthcare system? We proved that it was. And it has been.”

For example, a hospital partner may refer a discharged trauma patient to Dallas Fire-Rescue. Paramedics go into the field to ensure the patient is properly set up for home recovery and is taking medications as prescribed. The hospital partner pays Dallas Fire-Rescue for their services, which costs less than readmission penalties.

Lessons Learned

“Case management has been a challenge,” says Seals. “As firefighters, our case management process generally lasts anywhere from 30 minutes to four hours. In this program, we’re dealing with patients for sometimes 6–8 months before they ‘graduate.’ Dr. Isaacs has been great about bringing hospital case management principles together with ours.”

Over the course of the pilot program’s first two years, Isaacs has been surprised by “how little medical intervention these patients need acutely, especially high-frequency patients.”

What they found instead was that the vast majority of work the community paramedics are doing with patients falls under the auspices of education; medication reconciliation; inventory and management; and healthcare system navigation.

“Hospital patients often have little to no social support,” explains Seals. “Perhaps they lack transportation. Sometimes they lack food. We’ve been able to form really good relationships with 50 or 60 community-based partners that cover these services. That’s been absolutely critical to the success of the program.”

Since the program’s onset, only 22 of 297 referred patients, or 7.4%, have refused service. “We’re not sure if it’s a privacy issue, for good or bad reasons, but we know the subset of patients we can only take so far in the program, if at all,” Isaacs says. “Those patients tend to have severe mental illness or recalcitrant alcohol and substance abuse disorders and are unwilling to accept treatment.”

What’s Next?

The pilot program has grown from four to seven paramedics. Hospital partners have grown from one—Parkland Health & Hospital—to three health systems for contracts totaling $700,000. “For the most part, the program is still city-funded,” says Seals, adding that Dallas Fire-Rescue was the first metropolitan fire-based EMS agency in the United States to develop a program of its kind. “The end goal is to be at least budget-neutral for the city, which we plan to do with more hospital partners and through grants.”

A custom data management system is being developed that, once fully implemented, will propel the Mobile Community Healthcare Program.

“There are so many areas of need,” says Seals, adding that hospital and mental health patients would benefit from the program to reduce revocation. “We aren’t trying to replace existing programs or services. Our role is to fill some gaps.”

—Pepper Jeter, Associate Editor

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Free ESO ThinkPaper: Deciphering EMS Data—and Making It Work for You esosolutions.com/decipheryourdata
The FirstNet Experience: Ohio Video Game Virtually Demonstrates Network’s Potential

The OhioFirstNet program has developed a unique way for people to experience the potential of the FirstNet network—a video game that allows users to virtually see the increased situational awareness the nationwide public safety broadband network will provide to first responders.

The PC-based video game applies a real-world scenario—a rescue during a structural fire—in two scenes. In the first scene, the player uses current technology to complete the rescue. In the second scene, the player completes the rescue with enhanced situational awareness tools that will be made possible through FirstNet’s public safety broadband.

The game takes pieces of traditional information, like maps and building blueprints, and adds them to the heads-up display of the video game. For more, see EMSWorld.com/1220720.

U.S. Stroke Hospitalizations Drop Overall, But Increase for Young People and African-Americans

Nationwide, fewer people overall are being hospitalized for ischemic strokes, which are caused by artery blockages, but among young people and African-Americans, stroke hospitalizations are rising, according to new observational research in the Journal of the American Heart Association, the open-access journal of the American Heart Association/American Stroke Association.

Between 2000–2010, the number of adults admitted to U.S. hospitals with ischemic stroke fell 18.4%, according to researchers who analyzed a national database that collects information on about 8 million hospital stays each year. Ischemic strokes are the most common type of stroke.

“Overall, the hospitalization rate is down, with the greatest drop in people aged 65 and older. We can’t say from this study design what factors have led to this decline, but it may be that preventive efforts, such as better blood pressure and blood sugar control, are having the effect we want in this age group,” said Lucas Ramirez, MD, neurology resident at the Keck School of Medicine at the University of Southern California in Los Angeles.

However, while the hospitalization rates fell 28% in people aged 65–84 and 22.1% in those 85 and older, there was an increase in younger adults—up 43.8% in people aged 25–44 and up 4.7% in those aged 45–64.

Age-adjusted hospitalizations for ischemic stroke declined in both whites (down 12.4%) and Hispanics (down 21.7%) between 2000 and 2010, but they increased 13.7% in African-Americans.

“African-Americans already had the highest rate of stroke hospitalizations, and it has unfortunately increased. This reinforces that we need to make sure our efforts for stroke prevention and education reach all groups,” Ramirez said.

As expected, based on previous studies the 2000 to 2010 data showed that women have lower age-adjusted rates of stroke hospitalization and experienced a steeper decline during the decade (down 22.1%) than men (down 17.8%).

—American Heart Association

Virginia Agency Wins Mission: Lifeline Gold STEMI Award

The Richmond Ambulance Authority (RAA) received an American Heart Association Mission: Lifeline Gold Award last month.

Every year more than 250,000 people experience a STEMI, or ST-elevation myocardial infarction, a type of heart attack caused by a complete blockage of blood flow to the heart that requires timely treatment. BMTs and paramedics play a vital part in the system of care for those experiencing heart attacks. Since they often are the first medical point of contact, precious minutes of lifesaving treatment time can be saved by calling a STEMI alert and triggering an early response from the participating STEMI centers. Mission: Lifeline strives to equip first responders with resources and tools to help improve the quality of care for patients and help build systems of care in communities across the U.S.

“The Richmond Ambulance Authority has always been dedicated to making our organization among the best in the country. The American Heart Association’s Mission: Lifeline program is improving STEMI systems of care with the goal of improving the quality of care for all STEMI patients,” says Wayne Harbour, RAA chief clinical officer. “We are pleased to be recognized for our dedication and achievements in emergency medical care for STEMI patients.”

“To qualify for a Mission: Lifeline Gold Award, RAA had to ensure it achieved a number of measures, including ensuring that a minimum of 75% of its STEMI patients arrived at hospital and received definitive treatment such as a percutaneous coronary intervention (PCI) within 90 minutes of the 9-1-1 call for service.

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Ischemic strokes are the most common type of stroke.

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Results of a recent study suggest that advanced automatic crash notification (AACN) technology, which sends telemetry data in the event of a motor vehicle accident, can be used to accurately predict the injury severity of vehicle occupants. The research by Stewart Wang, MD, PhD, director of the Program for Injury Research and Education at the University of Michigan and a trauma surgeon, analyzed data from 836 vehicles with OnStar AACN capabilities that were involved in crashes involving 924 occupants between January 2008 and August 2011. Wang used an algorithm to analyze three types of data from each accident: crash factors, vehicle factors and occupant factors. Results of the algorithm were then used to predict whether each vehicle occupant met the 20% or higher risk of having an Injury Severity Score (ISS) of 15+, which is the threshold set by the National Expert Panel on Field Triage for urgent transport to a trauma center.

**Accuracy of AACN Data**

The Wang et al. study showed that when the gender and age of the vehicle occupants were known, the algorithm could use

How AACN technology can accurately predict injury severity and better manage resources on scene

**By Susanna J. Smith**

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A new course teaches EMS providers and medical directors about the biomechanics of crash injuries and how this data can be used to predict injury severity. "In the past, EMS did not usually receive AACN data or if they did, they were appropriately skeptical because it was a prediction that wasn’t proven. But with this new trial, we know we should be taking AACN very seriously. If the vehicle is reporting that there is a high risk of severe injury, you should see that report as at least as accurate or more accurate than your best colleague.’"

**Data Collected by AACN**

A panel of experts on AACN technology and patient triage have made recommendations on what information a vehicle should transmit in the event of a crash, which include:

- Whether the crash included multiple impacts,
- The vehicle’s change in velocity,
- The principle direction of force,
- Whether or not seat belts were in use, and
- The type of vehicle.

Right now, when an AACN-enabled car is in an accident, the vehicle automatically routes essential telematics information to a vendor-operated call center. The call center then processes the information and calls the nearest public safety answering point (PSAP).

"With next-generation 9-1-1 technologies, however, there is the potential for the data to flow directly to the PSAP," says Crystal McDuffie, communications center and 9-1-1 services manager at APCO International. "The PSAP can then pass this information to the responders, although current call centers would remain a vital link as the first contact."

But not all of vehicle telemetry data needs to be relayed to first responders.

"EMS crews are busy taking care of things on the scene. They don’t need to be inundated with a bunch of complicated information, what they need is a simple indication of whether a patient is at high risk of severe injury," says Wang, which was his aim in developing the injury severity prediction algorithm.

Wang goes on to say that a trauma center, however, might need other information: "The medical team at the trauma center will be very interested in the details of the crash because this information can help us narrow down the types of injuries we worry about the most."

**AACN Helping EMS**

To help EMS, 9-1-1 and emergency medicine professionals learn more about AACN technology and the implications of AACN crash data, a new, one-hour online training program will be available this summer at www.aacnems.com. This course teaches EMS providers and medical directors about the biomechanics of crash injuries, the research that supports the validity of AACN predictions, how data can be used to predict injury severity and how to integrate this data into local EMS systems.

The online training program is supported by the American College of Emergency Physicians (ACEP) and the National Association of EMS Physicians (NAEMSP), with funding from the National Highway Traffic Safety Administration (NHTSA).

Scott Sassier, MD, associate director for International Programs for the Center for Injury Control at Emory University and the principal investigator on the ACEP/NAEMSP training course, says, "EMS professionals, medical directors and 9-1-1 center directors need to learn about this new technology that is out there and growing in prevalence. We need to know how the information supplied by the vehicle can not only help identify injury patterns but can also help with everything from resource allocation to destination decision-making."

Sassier, who is also an emergency room physician, points out that an AACN data offers EMS and 9-1-1 personnel three main advantages when responding to a crash. AACN provides faster notification of the crash, the exact location information for the crash, and telemetry data, which can be used to predict injury severity and even injury patterns.

**AACN Course Overview**

To help EMS, 9-1-1 and other medical professionals learn more about AACN technology and the implications of AACN crash data, a new one-hour online training program will be available this summer at www.aacnems.com. This course offers medical directors, EMS personnel and 9-1-1 directors an introduction to vehicle telemetry crash data and an understanding of what happens in a crash. The course reviews the science behind the AACN injury severity predictive algorithms, how AACN fits into the CDC’s Field Trauma Triage Guidelines and how this technology is being implemented in local systems.

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The Advanced Automatic Collision Notification project is a partnership between the American College of Emergency Physicians and the National Association of EMS Physicians and is funded by the National Highway Traffic Safety Administration.

Other stakeholders in the project are: American Academy of Pediatrics, American College of Surgeons/Committee on Trauma, Association of Public Safety Communications Officials, International Association of Fire Chiefs, National Academy of Emergency Medical Dispatch, National Association of EMS Educators, National Association of EMS Physicians, National Association of Emergency Medical Technicians, National Association of State EMS Officials, National Emergency Number Association, AACN vendor and automakers, including Onstar, Ford, SiriusXM and other major automakers, listed at aacnems.com.

We will always need the expertise of the professionals in the field to interpret the data, get people out of the vehicles, safely assess them, and transport and treat them en route,” says Sasser. “But the data we can get from AACN adds important information to the data points we can get in field. This data can help us allocate the appropriate resources to the scene.”

Cory Richter, battalion chief at Indian River County Fire and Rescue in Vero Beach, FL, is a big proponent of the technology and thinks that its use and accuracy will only improve in the future.

“The amazing thing about this information is you can use it before you even get to the scene. You might not have even left the station and it can help change your response,” Richter says. “Where it specifically changes the EMS response is when we prelaunch the helicopter or call in additional units before we get on scene because we already know we need them.

“Sometimes it’s going to tell us it’s a trauma alert and it’s obvious because the patient is unconscious or unresponsive. But where it can really make a difference is if they [the patients] are up walking around or awake and alert but have potential internal injuries because of the mechanism of injury. In those cases, I tell my crews to do a really thorough evaluation and err on the side of transporting them to a trauma center.”

Future Directions of AACN Technology

Beyond the potential for AACN to direct a faster, more informed EMS response, this technology also has the potential to change trauma care, save more lives and help manufacturers build safer vehicles.

“The next step we want to look at is whether AACN can help us lower morbidity and mortality with motor vehicle crashes,” says Sasser.

Wang is particularly interested in how AACN can help with triage and diagnosis in the trauma center. “At a trauma center, we want to know things like if it was a driver involved in a left-sided crash. In that case, there might be high likelihood of a pneumothorax injury or a spleen injury because the spleen is on the left side. Knowing more about a crash can help us narrow down the possible diagnoses, which makes me a far better doctor.”

Wang, who does a lot of crash research, says, “Right now, we spend a lot of time going and looking at the car, trying to examine what is the principle direction of force, direction of the crash, and how severe it was. The sensors in the vehicles are far more precise. With time and enough data, we will definitely be able to use this information make cars safer.”

Widespread Adoption of AACN

Although AACN technology is not yet widespread in the U.S. automotive fleet, Sasser cautioned it is important for EMS, 9-1-1 and emergency medicine professionals to get ahead of this trend and understand the technology.

“The use of this technology in cars is going to be increasingly prevalent,” says Sasser. “As a profession, I would hate to see us get caught five or 10 years down the line and not be adequately prepared for it by developing the education, policies and protocols we need now. I think this technology will be well received by the EMS community because of its potential impact on our patients. We’ve got to keep supporting it, talking about it, getting educated about it and looking at the research on it.”

“I think EMS leadership should really be paying attention to AACN because it’s cutting-edge technology,” says Richter. “The future of EMS, in terms of motor vehicle crashes, is going to be notifications and information coming in from vehicles, sight unseen. We need to embrace this technol-

This technology also has the potential to change trauma care and help manufacturers build safer vehicles.

Summary

New research is showing that advanced automatic crash notification systems can be used to accurately predict the injury severity of vehicle occupants in motor vehicle crashes. These early notifications can help EMS crews know likely injury severity and the number of injured occupants before they get on scene and direct a more informed EMS response.

REFERENCE


ABOUT THE AUTHOR

Susanna J. Smith is a content strategist and freelance writer who focuses on the future of healthcare and how new technologies and care models are reshaping the healthcare industry. She holds a master’s in public health from Columbia University and has worked as a writer, editor and researcher for more than 10 years. Follow her work at @SusannaJSmith and susannajsmith.com.
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Disruptive Technologies in EMS

Innovations will transform both operations and patient care

By Susanna J. Smith

New technologies, including advances in remote monitoring systems, offer the promise of transforming the delivery of EMS, impacting everything from dispatch to treatment and diagnosis in the prehospital setting and moving EMS toward a more predictive, rather than reactive, response model.

Next month, at the Pinnacle EMS Leadership Forum (pinnacle-ems.com) in San Antonio, TX, Scott Somers, PhD, a professor of public safety practice at Arizona State University and a former member of the National EMS Advisory Committee, and Guillermo Fuentes, MBA, a partner with Fitch & Associates, will speak about the potential of both new and existing technologies to radically disrupt EMS as we know it today. In advance of the conference, I spoke with Somers and Fuentes about how they think technology will overhaul EMS.

Wearables and Home Monitoring

Wearable mobile devices such as the Fitbit, Apple Watch, Google Glass and the Under Armour Band have gained widespread traction in the consumer marketplace. Some estimates suggest that as many as 1 in 5 American adults owns a wearable device. Somers points out that real-time analysis of information such as Facebook posts, tweets and Google searches has been used to track the spread of flu across the U.S., for example. Teams at John Hopkins University and Purdue University have developed algorithms for using social listening to visualize and predict the spread of flu.1,2

Accurate predictions of the spread of flu or other infectious diseases could help direct the efficient deployment of EMS and healthcare resources—including public education, flu shots, flu treatment and medical personnel—to areas most at risk of severe outbreaks.

“Social listening technologies can zoom in on the pulse of what is taking place in a community,” says Somers. “They can become a resource for citizen engagement or public health and public disaster management.”

Social media listening technologies offer EMS and other public safety agencies the ability to analyze and interpret public social media conversations in real time, linked to specific geographical areas.

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Somers points to cardiac patients as a great example where continuous monitoring via wearables could be valuable and might generate continuous data streams to cardiologists, who can then monitor patients in real time.

A recent example of this is an emergency room doctor in New Jersey who used heart-rate information from a patient’s Fitbit to pinpoint the exact time when atrial fibrillation started, which informed treatment choices.4 Somers envisions EMS responding to notifications from wearables and home monitors and serving as a link between the patient and physician in an integrated healthcare system.

New types of wearables, not yet on the market, are expected soon. For example, AliveCor is developing a medical-grade EKG band for the Apple Watch,5 and a team at the University of California at San Diego is working on a temporary tattoo that can easily monitor blood glucose levels.6

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The continuous data streams from social media platforms, internet searches, home monitoring devices and wearables all generate large pools of data ripe for analysis, which is one of the next big directions for disruptive technologies. Somers points out that big data analytics tools could help EMS move from a reactive, treatment-focused response to a preventive response driven by predictive analytics prior to an incident happening. Somers highlights the work of the New York City fire service in predictive analytics to illustrate his point. “New York City has a great program on smart firefighting called Firecast,” says Somers. “This program takes in and processes data about buildings that New York has found to be highly related to outbreaks of fire.” The program doesn’t just look at traditional data used to predict fires but also collects data from different city departments, including complaints about trash or rodents, crime rates and the existence of nearby abandoned structures, as well as data from sensors on buildings, to predict each building’s likelihood of a fire. This predictive data analysis is then used to rank buildings and schedule fire inspections for those deemed to be at high risk.

The predictive analytics approach could be applied in EMS and public health by using statistical models to predict communities with a high likelihood of accidents, infectious disease, cardiac arrests or drug overdoses. Somers points out that with predictive analytics in place, EMS can then shift its resources from being focused on responsive actions towards aggressive prevention efforts targeted at high-need areas.

Better tools for big data analytics could also help EMS providers process new, big data streams and inform immediate care decisions. For example, in the field of oncology the IBM Watson computer is already being used to help inform cancer treatment decisions. While not currently an application of supercomputers, fast supercomputing data analysis could be used in the future to analyze crash data, for example, as advanced automatic crash notification technology becomes more widespread in cars. Much like IBM Watson is being trained to interpret more and more oncology information, supercomputers could feed more data about car crashes, including type of vehicle; type of crash; speed; and the size, age and position of occupants. They could use this information along with outcomes data to refine their predictions over time and aid in an increasingly informed medical response.

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New technologies are likely to also radically alter EMS operations and dispatch. Fuentes argues that EMS teams that are not jumping to use hosted technologies but are instead sticking with expensive, stand-alone communications centers will find themselves being “the dinosaurs of EMS communications.” “Within the next decade, I think you are going to see communications centers that are fully hosted, which means they could close at 8 p.m. and transfer all their calls to a statewide [communications] center,” says Fuentes. “You could have dispatchers literally working from home, if they wanted to, because there is nothing to stop them from doing it.”

With voice over IP (internet protocol) technologies it becomes easy and affordable to transmit calls anywhere in the world and from any tower to any vehicle or person. Fuentes sees the field moving in the direction of subscription-based, hosted technology solutions rather than agencies fully funding a communications center. Hosted solutions also bring down the cost of back-up communication systems and create redundancies by allowing for the call load and information to easily be spread and transferred among centers. Fuentes predicts that once the cost of communications technology falls, smaller EMS companies will again gain competitive leverage in a market where they are quickly losing a foothold now. Fuentes looks to the example of Square, a mobile payments company, which made it possible for many independent and small businesses to set up affordable, mobile-based credit card payment processing systems and stay in business. He envisions a similar affordable small business solution for call operations to help small ambulance companies compete in the EMS industry.

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Outside Technologies: Security & Driverless Cars

Both Somers and Fuentes suggest that some of the most disruptive technologies will be those developed outside of the EMS industry. Front of mind for Somers are cybersecurity technologies, which are becoming a more pressing need with recent hacks on hospital systems such as Washington, DC’s MedStar Health and Los Angeles’s Hollywood Presbyterian Medical Center. Cybersecurity is going to be a huge technology challenge for EMS agencies in the future,” says Somers. “Consumer confidence is important. If we see massive data breaches in sensitive healthcare information, it will quickly erode consumer confidence and put up roadblocks to the types of digital advances that could improve healthcare.”

Autonomous driving vehicles are another example of a technological advance that could significantly impact the EMS industry by changing both deployment models and call demand. “Think about an autonomous fire truck,” says Somers. “Will we have to have people at the fire station 24 hours a day if the fire truck can drive itself to the incident?”

Somers points out that this simple change in a deployment strategy could free up human resources for other tasks like mobile integrated health work or fire inspections. Fuentes, too, sees autonomous vehicles as a huge opportunity in the future to shift the demand on and use of EMS resources. Motor vehicle accidents represent about 15% of calls for EMS, fire, and police. If autonomous vehicles deliver on the promise to significantly reduce the number and severity of motor vehicle accidents, it will significantly cut down on EMS calls.

“The future is going to be so externally driven and we need to become more educated on what is going to be coming so that we are nimble enough to react,” says Fuentes. “In this case, if car accidents go down significantly, we have to ask ourselves, what are we going to do with that? Are we going to adjust our staffing levels? Are you going to reallocate those resources elsewhere? Are you going to stop buying the heavy apparatus and equipment to cut people out of cars because you won’t need them much anymore?”

Outside Technologies: Security & Driverless Cars

Beaming the Doctor to the Patient

Some industry leaders like Fuentes envision a system in which telemedicine allows doctors to communicate with and evaluate patients in their homes, leading to a physician-centric model where EMS practitioners play an important role, but have less autonomy.

“I envision a dispatch center where all the low-acuity calls are evaluated by a physician in a call center,” says Fuentes. Others see the potential of telemedicine-based, physician-managed collaborations between EMRs, paramedics and other providers that extend the scope of care offered in a prehospital setting, including emergency care for acute problems like strokes. The Cleveland Clinic and the University of Texas Health Science Center at Houston have both piloted and reported successes in reducing time to treatment for stroke patients when using a mobile stroke care team made up of a paramedic, an EMT, a registered nurse and a CT tech supported via video conference by a hospital-based vascular neurologist.

Glenn Leland, with Priority Ambulance in Knoxville, TN, has spoken about the potential for EMS-based telemedicine teams to power virtual hospitals in patients’ homes by setting up “hospital beds” there and connecting patients for home-based monitoring and follow-up. In 2014, the Icahn School of Medicine piloted a program offering mobile acute care in patients’ homes using paramedics supported by physicians through video conferencing and messaging apps. While the program has not yet worked out a sustainable reimbursement model, it has reported a significantly lower cost of care, higher patient satisfaction, and some decrease in hospital readmissions and mortality.

Conclusion

When it comes to the future of technology and EMS systems, the first step is for the EMS profession to fully embrace the reality that change is coming.

“We have to accept that many of the things we have been doing in EMS for years are not going to be what carries this industry into the future,” says Fuentes. Leaders in EMS can look to the broader healthcare community for examples of how new technologies like nanoeengineering, big data supercomputing, vehicle telemetry and healthcare wearables could drive big changes in healthcare that in turn influence the delivery of prehospital care.

References available online at EMSWorld.com/12206689.

ABOUT THE AUTHOR

Susanna J. Smith is a content strategist and freelance writer who focuses on the future of healthcare and how new technologies and care models are reshaping the healthcare industry. She holds a master’s in public health from Columbia University and has worked as a writer, editor and researcher for more than 10 years. Follow her work at @SusannaJSmith and susannajsmith.com.
Harnessing Data for Real Improvements

Three projects demonstrate how to use data to improve patient care in EMS systems

By Senior Editor John Erich

A lot of smart people do a lot of innovative things to advance healthcare and technology these days. Too often their contributions remain unrecognized or underappreciated.

That’s why ImageTrend, a Minnesota-based developer of EMS data management and related software, created its Hooley Awards. First given in 2015, the honors recognize noteworthy users of ImageTrend products in three categories:

- Innovation Awards, for use of products to meet the needs of a service, department, hospital or state in a new or innovative way;
- Service Awards, for using data to improve community safety; and
- New Frontier Awards, for services, departments, hospitals or states that break new ground.

Put the Data In, Get the Data Out

THE PROBLEM: When value-based reimbursement finally comes to EMS, we’ll need to be ready to demonstrate the good job we do. How? By developing quality metrics that define good patient care and then meeting and exceeding them.

Lots of people have developed key performance indicators for EMS, including NHTSA/NAEMSS in 2009, the Metropolitan Medical Directors in 2007, and professional associations in areas like trauma, cardiac and stroke. Today’s EMS Compass Initiative is a federally funded effort to develop performance measures that can help systems gauge and improve the quality of their care.

In Washington they had a similar idea a while ago. The work leaders there have done to develop KPIs and facilitate reporting and benchmarking will put their state’s services ahead of the game once their transition to version 3 of NEMSIS is complete.

THE SOLUTION: The Washington State Prehospital Technical Advisory Committee began work on EMS KPIs as part of a three-year strategic plan in 2011. Work groups toiled for three years before the state’s EMS and Trauma Steering Committee okayed them for use in 2014.

“The importance of having the clinical measures is really why we did it,” says Melissa Belgau, administrator for the Washington EMS Information System (WEMSIS). “We think EMS will be wanting to use their data to improve community safety; and some EMS agencies have embraced them, but the full reporting/benchmarking hasn’t been used on a state level until NEMSIS v3, counties and some EMS agencies have been using them at a local level with their v2 data.”

Agencies face a January 2017 deadline to upgrade to v3. But the state may experiment with some early reporting later this year; its biggest ePCR vendor converts to v3 in September and can start populating data then. “Those initial reports,” Belgau says, “will get people excited about it.”

Seventeen hundred miles to the east, they’re excited already. When value-based reimbursement finally comes to EMS World, the Missouri Time Critical Diagnosis Team; Emory University EMS; and the East Baton Rouge (LA) EMS Community Integrated Health Program. All the finalists submitted worthy efforts, and for this year’s technology issue, we profile three additional outstanding ones.

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THE PROJECT: To improve EMS performance in key areas, we’ve heard, ‘Well, you’re not doing anything with the data.’ But it’s kind of a chicken-and-egg problem: you’re not giving us data that’s meaningful. We’re trying to get the data in there!”

Indeed, per numbers presented at last year’s Connect Conference, just 45% of all the agencies in Washington had ever reported data to WEMSIS, and just 23% in the preceding six months. Most state systems are using ePCR; they’re just not taking that extra step to send the data to the state. And with a dozen different vendors sharing the market, that’s meaningful! We’re trying to get the data in there!”

How it was implemented: Reports were distributed to every agency and service in New Hampshire. An accompanying video offered additional help with documenting aspirin, and information was included with rollout videos when protocols were updated, but it didn’t take much more than that. We know you’re treating the patients well; you’re just not putting it down, so it’s not obvious.”

How it’s worked: Ultimately this should all help measure, compare and improve EMS performance in key areas. But on a more basic level, it will provide a fuller and more thorough picture of what and how EMS in the state is doing.

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Quantifying STEMI Delays

THE PROBLEM: “National progress has been achieved in the timeliness of treatment of patients with ST-segment-elevation myocardial infarction who undergo primary percutaneous coronary intervention.”

That was the happy conclusion of a 2011 review in Circulation. It cited a decrease in median door-to-balloon times from 96 minutes in the year ending December 31, 2005, to 64 minutes in the three quarters ending September 30, 2010. The percentages of patients with D2B times less than 75 minutes and less than 90 minutes both soared during the interval. And data within the piece showed the significant improvement from 64 in the year ending December 31, 2005, to 64 minutes in the three quarters ending September 30, 2010.

THE SOLUTION: The problem was, back in the days before widespread use of the database system, it was easy to prove the point. To convince the doubters, Rice conducted a grassroots survey of Nebraska’s 65 critical-access hospitals, which was eventually published as the RAMIS study. AHA reps maintained those hospitals all had thrombolytic policies, an acceptable alternative at the time for STEMI patients seen at facilities not capable of PCI, and standing transfer agreements with PCI-capable hospitals. The RAMIS survey found:

- While 98% of critical-access hospitals had thrombolytic policies, 23% said they had providers who were “trended” toward not administering thrombolytics. Just 60% could definitively say they didn’t.
- Just 45% said they had standing transfer agreements with regional STEMI centers.

Paramedics in the state echoed the claim that getting STEMI patients to cath labs could take hours, so Rice also crunched some state data. The math was pretty straightforward. He took one well-reputed hospital, then looked at all the patients taken there for cardiac issues. Subtracting their arrival time from their departure time revealed how long they were staying.

“The average for a heart attack patient,” Rice says, “was 4½ hours. Now you understand why this was so important.”

HOW IT WAS IMPLEMENTED: At the hospital they were shocked and abashed. They didn’t know the delays were happening or that it could have done something more. They saw it as a wake-up call to get some protocols in place.

In Lincoln, “all three hospitals have fewer than 300 beds. So in this urban environment, all of those would be considered small hospitals.” Lumping very small hospitals in with hospitals like those, he contended, skewed the results and masked poor performance at those very small ones.

The third, rural hospitals accounted for just 6.8% of the almost 900 hospitals the study looked at. But in Nebraska, they account for roughly a third of all hospital beds. And fourth, in supplemental material for the study released later, it was revealed that more than 50,000 STEMI cases were excluded from analysis for reasons like missing initial EKG interpretations or other key data elements.

“If you have a heart attack patient and limited staff, your time is best spent to get the patient out as quickly as possible,” Rice says. “So a lot of times rural docs will send an EKG. But maybe they didn’t have a chance to look at the copy machine to quickly sign the EKG. And if you didn’t see that, it didn’t get included in this study.”

“My point is that many of the things that happen in a rural environment are also the very things that make you get excluded from the American Heart Association data. If you look at the reasons why they kicked people out, it would disproportionately affect rural hospitals. So what I’m seeing is a large skewing of data.”

The AHA’s data told of overall D2B improvements, but if you looked closely, there were some catches. First, the way it counted improvements, it defined small hospitals as having up to 100 beds.

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The application is an invaluable tool and has become mission-critical in our operation.

What is it?
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How do I use it?
When a language barrier is present between provider and patient, the provider can use the 1st Minute mobile app to help communicate. After downloading the app, providers can give the device to the patient to select a language. Once the language is selected, the patient answers questions in that language including what symptoms they are experiencing, selecting pain location and entering essential medical information.

Once that information has been provided, the app translates it back into the language of the provider.

What are the benefits?
The app allows for quick and easy assessment even when a language barrier is present. Because the app has a pre-populated language database, no internet connection is required for use. The goal of the app is to facilitate the entire conversation in less than 60 seconds, so patient care isn’t compromised by clunky conversation. The combination of mobile technology and patient care is forward thinking for the future of EMS.

Where can I learn more?
To learn more about the 1st minute mobile app, visit 1stminuteapp.com or find the app in the App Store or on Google Play.

Digital EMS Technology Delivering Protocols on Demand

Software Resolves Internal Audit Issues for WA Agency

When Skamania County (WA) EMS hired a firm to conduct an audit they discovered they could resolve many issues by implementing Aladtec, an online employee scheduling and workforce management software system.

“The audit resulted in 57 areas of improvement. By using Aladtec, I’m sating multiple areas, including staff scheduling, fleet maintenance, accident reports, training logs, consumable medical supply tracking, shift logs...the list goes on and on,” says Skamania County EMS Chief Patrick Nicholson.

For example, Nicholson created a vehicle repair form. When it’s submitted, the vehicle maintenance captain receives a text and an e-mail notification there’s a repair request. Information fields on the form request specific data that can be exported to Excel, separated by vehicle and a report generated to see how much each vehicle in the fleet is costing in repairs and preventative maintenance.

Technology has not only enabled medical advances, but it continues to change the way we communicate.

Digital EMS Technology: Delivering Protocols on Demand

Evolving technologies are changing the way we communicate.
Online Databases Aim to Improve Resource Access

Aggregation of resources is a concept we all learn and practice to a certain degree, but it is rarely done on a large scale. The internet has brought us to the point where we feel we can find whatever we need whenever we want. The problem is much of this data is difficult to locate or inaccurate. So where do agencies turn when they need equipment, personnel or resources they are unable to source locally or are unsure how to find? The National Emergency Resource Group is creating a series of online databases to allow emergency services to find such resources for both day-to-day operations, as well as mass casualty events.

See emergencyresponse.com and nemedemergencyresourcegroup.com.

Searchable Helispot Database Improves Safety

Safety is paramount in the EMS industry, especially when air ambulances are involved. To help improve and aid safe operations, Protean created the LZControl database. LZControl is a free database that allows for greater communication and safety in the air ambulance community. The program includes a searchable helispot database with contact information, coordinates and PHI information.

The database’s maps have satellite images of air ambulance destinations and provide full zoom control and the ability to upload your own images. LZControl also provides weather reports from nearby stations and, if necessary, gives users alternate landing sites, precision approach information and more.

The information in the archive is crowd-sourced through users and cross-referenced to ensure accuracy. Registered users, once verified by the company, can provide updates to existing landing zones or create new entries. Crowdsourcing the information for the landing zones also allows users to see updates in real time. Users can also submit photos to supplement the satellite map and provide more context for pilots to use as they approach the landing zone.

Site-specific contact information is provided for users as well, so air ambulance crews can easily find and utilize phone numbers or radio frequencies if necessary. The main beneficiary of this program is air ambulance crews who need to find a place to land.

“Landing in a location that no one has ever landed a helicopter in before, especially at night, is one of the most challenging things you can do,” says Mark Bohn, one of LZControl’s three developers, in a 2014 interview with ROTOR Magazine. “We rely on a lot of resources and years of experience to make sure the scene remains as safe as possible.”

The database also includes possible hazards at each landing site so air ambulance pilots know what to look for when landing their craft, again putting an emphasis on the safety of the pilot and crew.

LZControl was launched in 2013, and has since amassed more than 4,000 entries in the landing zone archive and was given the Airbus Helicopters Vision Zero Aviation Safety Award in 2014. The award helps promote safety in the air medical industry and recognizes companies that have demonstrated a commitment to aviation safety. LZControl is available to users across the United States. In the future, LZControl plans to expand to include landing zones outside the United States. For more, see LZControl.com.
Hybrid Devices Offer Flexibility

In order to improve efficiency and patient care, many agencies have transitioned from pen and paper systems to mobile solutions. Mobile devices allow EMS providers to capture lifesaving information and easily communicate with other healthcare professionals. It is critical for agencies to select reliable technology that can operate in a range of extreme environments.

Today’s marketplace is filled with “ruggedized” mobile device options. Laptops built to withstand the bumps and vibrations of an ambulance ride can be mounted in-vehicle or lightweight rugged tablets can be easily carried during a full shift.

However, there is no “one size fits all” when it comes to mobile devices. While tablets have become popular, many still require some of the functionality provided by laptops that tablets don’t always offer, and vice versa. For example, EMS providers may prefer tablets for easy portability as they move in and out of vehicles while evaluating patients, but the convenience of a keyboard is clear when it comes to entering lengthy patient treatment notes.

Why EMS Must Be Part of Health Information Exchanges

The Affordable Care Act (ACA) highlighted a few glaring deficiencies in the U.S. healthcare system, namely around data exchange and information sharing. Following the ACA’s passage, hospitals, doctors, labs, clinics and other traditional healthcare providers scrambled to figure out how the provisions requiring data sharing would be implemented.

Fast-forward to the present. Health information exchanges (HIEs) are all over the country, each trying to stay ahead of the regulations that many are just now beginning to understand. Hospitals are starting to share more information with each other, labs and clinics are participating, and doctors are beginning to have better information with which to treat patients. Despite these efforts, there is a huge piece that is missing from the equation that many people still fail to recognize—ambulance data.

What’s perplexing is that, according to the National EMS Information System (NEMSIS), more than 75% of U.S. states already have an electronic storage system that houses this data—a system conceptualized over 15 years ago. These systems vary across entities, with differing levels of complexity.

Data is derived from local EMS providers contributing information to their respective state healthcare registries (generally managed by Health and Human Services in some form), ultimately to be used for analysis to improve care provided by paramedics and emergency medical technicians on the street. However, despite the maturity of the model and its contribution to better patient outcomes through research and analysis over the long term, short-term issues persist.

EMS agencies must build on this effort and become a more formalized part of the exchange of patient data, not just in the reporting and collection of data. This exchange occurs between emergency departments, physicians and EMS providers in only a few parts of the world (e.g., United Kingdom), but severely lags in most other mature markets, such as the U.S., Australia and Canada, among others. Every local government provides EMS service, whether public, private or volunteer. It’s a core community service that we all depend on when we are at our most vulnerable. As such, every local government is effectively a healthcare provider, similar to a hospital or clinic. So why are EMS providers continually overlooked in the HIE equation? Perhaps it’s because they are the smallest “cost” in the healthcare chain, or maybe because they don’t have the “voice” of hospitals and health insurers?

Considering the positive implications of collaboration throughout the continuum of care, the current state of information sharing is problematic. Data information exchange platforms, like ones used by hospitals across the globe, are not exclusively for hospitals, physicians, labs and clinics. These tools provide an avenue for local governments to connect to HIEs, providing them instant operational and strategic value. Combined with the data that is already being collected, using these tools, EMS providers can:

» Give paramedics real-time access to critical patient information including allergies and serious health conditions before they arrive on scene.

» Equip the new breed of paramedics, sometimes referred to as advanced paramedics or community paramedics, with detailed patient information as they conduct home visits following a patient discharge from the hospital.

» Enable data sharing between EMS agencies during mass casualty events, ensuring patients are provided optimal care during difficult disaster situations.

Ultimately, EMS is healthcare, and EMS agencies can provide tremendous value to the HIE equation because they are often the conduit between spokes in the giant healthcare wheel.

Kurt A. Stewart, PhD, is vice president at Infor.
In this article the authors interview Andrew Bowman, MSN, RN, ACNP-BC, an acute care nurse practitioner and paramedic in Indiana. Andrew recently faced a difficult intubation situation with a patient with CHF complicated by severe kyphosis secondary to ankylosing spondylitis. Patients with ankylosing spondylitis present extremely difficult intubation challenges. Andrew discusses his approach and how he was able to successfully intubate this patient.

**Gene:** Jason, what is ankylosing spondylitis and what are the difficulties faced when you have to intubate a patient with this condition?

**Jason:** Ankylosing spondylitis (AS) is one of a group of disorders that are related to rheumatoid arthritis. We have discovered genes that give you a predisposition to it, but it’s not a truly hereditary disease—it seems to be more of a body’s overreaction to an infection.

AS chronically inflames the tendons and joints of the axial skeleton. For whatever reason, it likes to go after the sacroiliac joint first and the spine second. Like other rheumatoid diseases, patients can get flare-ups of AS, and have a greater or lesser degree of symptoms in between flares. Having AS also puts patients at increased risk for stroke.

As the tendons get inflamed, they develop bony growths that make the AS patient’s spine very stiff and painful, making airway positioning difficult. The bones can become weakened and develop compression fractures, to the point where the patients will develop a severe kyphosis, as we will see with Andrew’s patient. The bones are so weak that if this happens even a neck manipulation as innocuous as putting a cervical collar on these patients can be quite dangerous. There is actually a case report of a 59-year-old man’s spine being fractured by applica-
tion of a rigid cervical collar, which led to his spinal cord injury and his eventual death. In other words, you have to intubate these patients with their necks in the position you find, not the position you want.

**Gene:** Andrew, please describe the patient who presented to you.

**Andrew:** This was a mid-40s male who lives with his parents and brother at home. I had admitted him to the hospital two weeks prior with pneumonia. He required BiPAP treatment during that hospitalization for hypercapnea (CO₂ retention) secondary to severe restrictive lung disease from his kyphosis secondary to his ankylosing spondylitis. He also had a history of hypertension, diabetes, GERD and necrotizing fasciitis.

On this presentation he was awake and complaining of “feeling sick.” He seemed fatigued, would not keep his eyes open and would not elaborate further on his symptoms. His family reported noticed fever at home and some labored breathing. He was also reportedly hypoxic at home, where he was on supplemental oxygen at 5 lpm via nasal cannula and he reportedly desaturated to 36%, although in ER he was hovering around 90%–91% with his supplemental O₂.

On arrival he was afebrile, with a heart rate of 110, respiratory rate of 22 and slightly labored breathing, and was hypoxic at home, where he was on supplemental oxygen at 5 lpm via nasal cannula and he reportedly desaturated to 36%, although in ER he was hovering around 90%–91% with his supplemental O₂.

**Kelly:** That’s some pretty pronounced kyphosis! Andrew, what immediate challenges were you faced with when you first saw this patient?

**Andrew:** My initial differentials included CHF, recurrent pneumonia, other infectious causes, recurrent hypercapnia, acute intracranial event (blood or CVA) and metabolic disorders. I had concerns that if he needed an airway intervention, his anatomy would make this a challenge.

**Gene:** Andrew, what immediate challenges were you faced with when you first saw this patient?

**Andrew:** My head CT was unremarkable. His chest x-ray was concerning for low lung volumes, CHF and bilateral pleural effusions. He had an elevated proNP (a marker for CHF) and an elevated troponin, but his EKG did not show any evidence of ischemia/STEMI, so I was concerned that his hypertensive CHF was causing a troponin leak.

He remained hypertensive and dyspneic, so we drew an arterial blood gas (ABG) and then started BiPAP and nitroglycerin infusion for my working diagnosis of hypertensive CHF. His ABG showed severe hypercapnic respiratory failure with a pH of 6.98, PaCO₂ of 202 mmHg and PaO₂ of 56 mmHg. I had a discussion with his mother and other family members present about the possible need for intubation and his mother indicated that at his most recent prior hospitalization, the patient had talked about intubation and mechanical ventilation with his pulmonologist and had decided that he did not want this done. However, I could not find that information in the medical record.

I then approached the mother and family again, indicating that it was my concern that if we did not intervene with more aggressive airway and ventilation management, the patient would likely die from his hypercapnic respiratory failure. After 45 minutes, a repeat ABG showed worsening respiratory failure with a pH of 6.96 and PaCO₂ of 214 mmHg, but PaO₂ was better at 90 mmHg. It was at this point that the mother requested I proceed with intubation.

My plan was not to chemically paralyze this patient. I wanted to try and preserve his respiratory drive as much as possible since we could not lay him flat to do bag-mask ventilation. My plan was to use ketamine for sedation, with BiPAP continued for ongoing oxygenation, and to add high-flow nasal cannula oxygen using Dr. Richard Levitan’s NO DESAT (nasal oxygen during efforts securing a tube) approach to maintaining oxygenation during the intubation attempt after BiPAP was removed. I was going to use the GlideScope video laryngoscope as again, I would not be able to extend his head and neck to use direct laryngoscopy. In addition, I thought I might try to approach from the front, as he could not lay back, and insert the GlideScope like a tomahawk.

Unfortunately, every effort was fruitless. Even though I had a great view of the vocal cords using this approach and his oxygen saturation was well maintained, I could not navigate the tube through the vocal cords.

**Jason:** What were your thought processes as you formulated the next steps to try to intubate this patient?

**Andrew:** At this point I had a patient who was sedated and with hypercapnic respiratory failure who clearly needed an airway. As noted earlier, his anatomy would have made any approach such as cricothyrotomy or retrograde intubation difficult. We reapplied the BiPAP and continued his high-flow nasal cannula oxygen as I formulated my back-up plan.

**Kelly:** Had you ever had to deal with a patient like this before?

**Andrew:** I have intubated the patient with moderate kyphosis from ankylosing spondylitis before, but not to the degree that this patient was exhibiting.

**Gene:** Can you describe your GlideScope technique and how it differs from “normal” approaches to intubating?

**Andrew:** The GlideScope allows us to “see around corners” so that we do not need to have that perfect alignment of multiple airway axes to pass an endotracheal tube. I do follow the recommended approach where I look into the mouth as I advance the GlideScope. I then transfer my attention to the video screen until the glottis appears and then bring the endotracheal tube into the right side of the mouth with the tube pointing at the 3 o’clock position. I then rotate the tube as I advance it, so that it is now at the 12 o’clock position, and it is typically perfectly aligned with the glottic opening at this point. It is then just a matter of advancing the tube and removing the stylette.

**Jason:** How did you position the patient for your next try and why you did that?

**Andrew:** As you can see from Figure 2, reoriented using one of the excellent emergency medicine courses, I have the pleasure of working with, we elevated the entire bed so that the head could be dropped into a Trendelenburg position, while keeping the head of the patient’s bed actually elevated to help support the tube where it needed to be.
While we maintained supplemental oxygen using BiPAP and high-flow nasal cannula oxygen, I positioned myself at the head of the bed and stood on a step stool so that I was above and behind the patient to better visualize placing the GlideScope and tube into the mouth.

Using a hyperangulated GlideScope blade I was able to easily place the GlideScope in the mouth, and as I advanced it, I was afforded a perfect view of the glottic opening.

Since this is typically fairly close to the position I would use for regular intubation, it was just a matter of advancing the tube and it went in very easily. In retrospect, I should have started with this technique and approach.

Gene: Did you consider using a bougie, and why or why not?

Andrew: The typical bougie does not work very well with the GlideScope. However, I did have it available in case a standard approach did not work.

Gene: If you had not been able to get the tube in with the GlideScope, what other measures could you have considered?

Andrew: If we had not been successful, we did have a crottyhoryntomy tray and a retrograde intubation kit, as well as a supraglottic airway available to facilitate airway management.

Jason: Obviously this is a rarely occurring presentation. What advice do you have for medics who have never seen this but want to be prepared in case it ever presents to them?

Andrew: Understand that with someone with severe kyphosis from any cause, using a standard direct laryngoscopy approach would be very difficult if not nearly impossible. This is a classic scenario where video laryngoscopy is superior to direct laryngoscopy for airway management.

**Conclusion**

The key to being ready for a patient like this is to practice ahead of time. Set up a manikin with its neck hyperflexed and practice different approaches and techniques. The time to think about these cases is before you are presented with them. At least, if you have practiced a few times and repeat practice at decent intervals, you won’t be taken completely by surprise when it happens to you.

**REFERENCE**


**ABOUT THE AUTHORS**

William L. ‘Gene’ Sandy, JD, has been a paramedic and EMS educator for over 30 years. He has implemented and maintains your associate degree paramedic program at a community college, served as both a volunteer and paid paramedic, and practiced in both rural and urban settings and in the offshore oil industry. He lives in Turner, OK.

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Javen Kobet, NEL, EMT-P, has been an EMT for more than 15 years. He has received EMS textbooks and the DVD from EMS Medical Director Todd Darby, and has attended several EMS conferences regularly. He currently works as an emergency physician and associate EMS medical director at hospitals near Pittsburgh, PA.

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not all of us in EMS spend our careers working in ambulances. Nontraditional positions offer EMTs and paramedics experience away from the 9-1-1 world. If lights and sirens aren’t essential ingredients of your ideal job, you might thrive in industries where patient care is ancillary to the primary business.

Last month we reviewed EMS opportunities in the entertainment and hospitality fields. The emphasis on maturity and people skills is echoed this month by colleagues serving in international, industrial, hospital and laboratory settings.

International
Have you ever needed a change of scenery? Paramedic Mark Mosier of Kelso, WA, did, so he moved. To Iraq.

“After I took early retirement from the fire department,” Mosier says, “a buddy of mine told me about a London company, Frontier Medical, that places paramedics and nurses in underdeveloped locations all over the world. That sounded pretty cool, so I e-mailed them my résumé. Twenty minutes later I had a three-month contract and reservations for a flight the next day.”

After a 13-hour trip to Istanbul and a stop-over in Dubai, Mark landed in Basra, Iraq.

“I had no idea what to expect, but I could tell right away I wasn’t in ‘Kansas’ anymore. Iraq has abject poverty. There’s sand everywhere, nobody speaks English, and people are very cautious around you. My biggest fear had nothing to do with violence; I just wasn’t sure I was the right person for the job.”

Mosier soon discovered there were plenty of expats from the U.S. and U.K. who could help him adjust to Iraqi culture and customs.

“You have to be careful; you don’t want to cause an international incident by saying or doing the wrong thing. You need to constantly be aware of your situation—where you are and whom you’re around. It sounds nerve-wracking, but it’s also exciting.”

After Mark was introduced to his work environment—an oil-drilling compound with about 100 prospective patients—he began to realize he’d be operating much more independently than most stateside medics.

“It’s not really a job for novices,” he says. “You’re the only medic miles away from your own bed and nobody speaks your language. You worry you bit off more than you can chew. I think you should have at least 10 years in EMS with a variety of calls in diverse communities before working abroad. You have to be very comfortable with your clinical skills. There are protocols but no real back-up. The closest hospitals for foreigners were in Jordan and Dubai, so I was expected to treat as much as I could on site.

“Very few people came in with critical illnesses or injuries. The first patients I saw were complaining of chronic headaches, nausea, knee pain—things like that. It was more like running a clinic than doing true EMS.

“You wear different hats—you’re a counselor, a friend. You’re dealing with a pretty fragile community where people see doctors for cut fingers and headaches. I had to dial back the urgency I’d gotten used to when I was treating really sick people in a 9-1-1 system.”

Despite the cultural differences, Mosier feels the pros of working internationally outweigh the cons.

“The travel is exciting; you’re going to places you’d normally never have a chance to see. You’re making good friends with unique people from all over the world. It gives you a bit of hope for humanity.

“The pay was great—anywhere from $300 to $500 a day for a seven-day work week. That could be $15,000 a month! They just send it to your bank. I stayed on and before I knew it, my three-month contract had turned into three years.”

Hospital
You’re no stranger to hospitals if you work 9-1-1. There’s a difference, though, between delivering patients to emergency departments and receiving them there. Kentucky paramedic Kevin Hurley has done both.

“I started at Crittenden County (KY) Hospital 15 years ago, right after I became a medic,” he says. “I stayed until they eliminated my position in 2012. Now I’m back on an ambulance full time.”

According to Kevin, the biggest difference between hospital and prehospital environments is the patient backlog.

“Nonemergent cases clog the ED as much as they do EMS. Sometimes that means hospital paramedics have little or no supervision.

“Just a month or so ago, the ED physician was handling a code on another floor when a second code came in,” Hurley says.
“I got to work that arrest just as I would have in the field, except I had a couple of extra people helping me.

“In the ED, I could do whatever I did in the field including some procedures, like chest decompressions, the nurses couldn’t do. There were also things like hanging antibiotics that I was allowed in the hospital but not in the field.”

Hurley recommends at least a year of 9-1-1 experience before transitioning to an emergency department. He says job satisfaction depends as much on attitude as it does in the field. “You can’t go into the ED with a God complex. It might be hard to get used to nurses signing for what you do, but you have to look at it as a learning experience and not get adversarial. Adjusting to hospital work isn’t so bad; maybe go back and study pharmacology a bit more because giving meds is such a big part of the job.”

Medic wages at ERs vary, but they’re usually close to 9-1-1 rates. Benefits for full-timers can be much more robust than at private ambulance services.

**Industrial**
When you’re half of a two-person medical team in a 1.3-million-square-foot facility, looking after employees’ mostly nonemergency needs often requires more business experience than therapeutics.

“It’s quite an adjustment from 9-1-1,” says paramedic Alan Keith, onsite medical representative at Amazon.com’s spacious Lebanon, TN, warehouse. “We have a clinic with basic first-aid stuff and OTC meds only. If we get anything serious we call 9-1-1.”

Keith was on the receiving end of those calls for 14 years. Moving to industrial medicine has been quite an adjustment for him.

“You have to change your whole mindset,” he says. “It’s a lot less aggressive, a lot less stressful here, but you can’t ever lose sight of the fact that the company’s primary business is to get products out the door as quickly and efficiently as possible.

“Mostly, my department looks for ways to improve employee safety. We also handle worker’s comp, which requires lots of administrative time. Still, medical experience is important because you’re dealing with day-to-day injuries and treatment.”

Not being able to offer advanced care can be frustrating for long-time paramedics.

“I don’t think this is a position for somebody new to EMS,” Keith says. “Ideally, you want someone with field experience who’s already gotten 9-1-1 out of their system. You’re dealing more with chronic conditions than emergent cases.”

Salaries are comparable to other EMS jobs but big-company benefits, like tuition assistance and retirement plans, can make the corporate world seem awfully attractive.

“One of the girls I work with just completed paramedic school with financial assistance from Amazon,” Keith adds.

**Laboratory**
Attention EMS providers: An international blood-products processing firm has openings for paramedics. The problem? I can’t mention the company’s name. I had to agree to that condition in order to interview their staff, but that doesn’t mean you can’t Google “plasma donation.” That’s the principal business where Brittiney Krahn works as training development coordinator.

**Salaries are comparable to other EMS jobs but big-company benefits, like tuition assistance and retirement plans, can make the corporate world seem awfully attractive.**

“We hire paramedics and nurses to screen prospective donors, collect their blood and process it through pheresis machines,” says Krahn, 29. “It’s a booming business. We have over 100 locations in the U.S. alone.”

Krahn says she prefers to hire paramedics because of their sense of urgency.

“Medics are quicker to respond, quicker to catch problems when they’re evaluating donors. They’re not just going through the motions; they’re communicating with prospective customers and understanding their stories.”

Rob DeMeo, who worked for Krahn for a year between traditional EMS jobs, says the plasma donation industry was a completely different experience for him.

“You’re not dealing with patients—not in the conventional sense. They’re customers,” the 37-year-old paramedic says. “They come through the door because they’ve heard they can make money donating their blood, but they’re still apprehensive about getting stuck with 17-gauge needles.

“You have to be prepared for ‘donor reactions’: people vagaling down, even seizing due to pre-existing conditions. I never had anything life-threatening, but I did call 9-1-1 a few times.”

DeMeo liked being able to keep a regular schedule. Working in a climate-controlled facility wasn’t bad, either.

“It’s a stable environment,” he says. “You’re out of the weather and you don’t have to worry about getting hit by a car at a wreck on the side of the road. You even get to finish lunch.”

DeMeo admits he missed having a partner, but felt fairly comfortable a few weeks after starting. His compensation was similar to 9-1-1 with even better long-term prospects.

“I became a supervisor within four months, then was offered a traveling position training company employees in 48 states. How many EMS jobs can match that?”

**Looking Back**

The occupations we’ve examined in our two-part series are representative of paramedic and EMT opportunities in nontraditional environments. Experiences with individual employers vary, just as they do in 9-1-1. However, after serving in five of the seven profiled industries, I’d say a common, significant advantage those jobs have over conventional EMS is the lower stress—mental and physical—of mostly nonemergency responsibilities.

If the prospect of high-energy critical care is what gets you out of bed for another shift, stick with 9-1-1. But if you’re personable, mature, customer-oriented and well-versed in well care, you might find “alternative EMS” a nice way to broaden and extend your career.

**ABOUT THE AUTHOR**

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**prodigy.net**
What EMS Leaders Can Learn From Admiral Rickover

Seven principles guided this longest-serving naval officer to success

Admiral Hyman Rickover is known as the “Father of the Nuclear Navy.” He began his Navy career in 1918 and was forced into retirement in 1982. With 63 years of service, he was the longest-serving U.S. naval officer. His main achievement was becoming the first admiral to oversee the implementation of nuclear propulsion in the U.S. Navy for submarines, cruisers and aircraft carriers. His team designed, engineered and built the U.S. Navy’s first nuclear submarine in three short years. He oversaw this program for 30 years.

Admiral Rickover had many successes during his career in the Navy. The U.S. Navy has a tremendous safety record when it comes to nuclear propulsion on its ships. There has never been a major accident involving a nuclear-powered ship because of the reactor. Two nuclear-powered submarines have sunk in the Atlantic, but not because of a nuclear accident. This safety record is no fluke. When you think about your high-risk EMS system, there are many similarities.

Admiral Rickover had seven principles that guided him to success. EMS managers can use many of these principles to lead their systems effectively.

First, Admiral Rickover believed employees should exceed the minimum standard. He did not believe in the status quo. If you’re just meeting standards, you cannot be outstanding. He believed employees and organizations should always look to improve.

Another principle he followed was that employees who operate in complex systems should be highly capable. This certainly applies to EMS systems, where life-and-death decisions are made by your employees daily. Unfortunately, we all know or have worked with a provider whom we feared would treat us if we were in an accident. Conversely, we have all worked with or know providers whom you would want to look up and see if you were seriously ill or injured.

Another Rickover principle was that managers should accept bad news when it comes and deal with it head on. He believed that the success or failure of systems was because of the manager or supervisor leading them. If something failed, he felt it was the supervisor or manager who was not capable of managing their area. Bad news should be handled directly with the removal or demotion of the manager or supervisor. Do you as the EMS manager currently have supervisors or managers working for you who are keeping your EMS organization from reaching its full potential?

Admiral Rickover also believed you should not dismiss the risks and dangers associated with any job. This is especially true in EMS, where inherent dangers are everywhere, including harm to our employees from accidents, assaults by patients and infectious diseases to name a few. But there are also risks including theft, lawsuits and reputation damage to the EMS organization through negative publicity.

Admiral Rickover was a major proponent of constant training. In EMS, training should happen every day—even if just to review a medical protocol or drug. As I like to say, professional athletes practice and train every day and they know when game time is and what the field will look like. On every EMS call, you do not know the game time or what the field is going to look like. As an EMS manager you should ensure your employees have training constantly available to them, but not the kind where they just sit in a classroom enduring death by PowerPoint to get CEUs for relicensure like I have seen in several EMS organizations.

Another principle of Admiral Rickover’s was that organizations should learn from their mistakes. He would say, “Success teaches us nothing; only failure teaches.” As an EMS manager you should continually look at data and see where failures in your organization are occurring. Many EMS managers see mistakes as embarrassing or somehow a failure of their leadership. If there is something that goes wrong, you should embrace that mistake and learn what can be done to prevent it from happening again.

One final principle of Admiral Rickover was that systems should be in place to continually assess your employees’ and your system’s functionality. In EMS, we call this quality assurance and quality improvement. Audit processes should be part of any EMS system to ensure high performance and reliability on any call.

I strongly encourage you to research Admiral Rickover including his speech to the U.S. Naval Postgraduate School in 1954. Because of his responsibilities of managing and leading a high-risk system, much can be learned from this man who enjoyed many successes in his career.

About the Author
Gary Ludwig, MS, EMT-P, is chief of the Champaign (IL) Fire Department. He is a well-known author and lecturer who has managed award-winning metropolitan fire-based EMS systems in St. Louis and Memphis. He has a total of 37 years of fire and EMS experience and has been a paramedic for over 35 years. Contact him at garyludwig.com.
AN EMS GUIDE TO DEPRESSION AND BIPOLAR DISORDER

By Robert J. Sullivan, BA, NREMT-P, and Shauna Sullivan, LCSW, LLC

OBJECTIVES
- Discuss the anatomy and physiology of depression and bipolar disorders
- Review assessment of symptoms associated with mood disorders
- Discuss treatment options for these patients

Introduction
Depression and bipolar disorder are categorized as mood disorders and are frequently associated with calls for EMS. People with depression experience profound sadness, guilt and loss of interest in activities, while people with bipolar disorder experience these symptoms along with periods of high energy, euphoria and irritability. Paramedics may be called for a primary complaint involving a mood disorder, or it may be a comorbid factor in another medical condition. Mood disorders may also present with physical symptoms that may be difficult to differentiate from a medical problem. A thorough understanding of depression and bipolar disorder is necessary for paramedics to differentiate medical from psychiatric causes of presenting symptoms, to use therapeutic communication techniques for crisis intervention and to determine whether a patient is competent to decide on their care. Some EMS services have gone further by implementing programs to improve crisis mitigation and to determine whether a mental health facility is the most appropriate destination for the presenting complaint, or it may be a medical problem.

Anatomy and Physiology
Control of mood is believed to take place in a circuit within the cerebral cortex, hippocampus and amygdala, which are normal and mild. PPD, which is more severe, is not normal. It is a form of clinical depression that typically occurs within four weeks after birth. It may last up to a year.

Pathophysiology
Depression has been linked to low levels of the neurotransmitters norepinephrine and serotonin. One theory is that the neurotransmitter reuptake mechanism may be too active, and these neurotransmitters are removed from the synapse before they can stimulate another neuron. Another theory states that these symptoms are caused by disruptions in the circuit between the prefrontal cortex, hippocampus and amygdala, which are lined with serotonin receptors. Scans show lower levels of activity in these areas for people with depression. Yet another theory involves glutamatergic dysregulation. The cause of bipolar disorder is less understood. It has a strong genetic component. This is demonstrated through identical twins, who have a 40% chance of developing bipolar disorder when one twin is diagnosed, compared to 5%–10% of first-degree relatives and 1%–2.5% of the general population. One theory is that although depression is still caused by low levels of serotonin and norepinephrine, the manic episodes are caused by spikes in norepinephrine. Another theory is that irregularities in the impulse transmission within neurons cause them to fire too rapidly, which results in mania, or too slowly, which results in depression. If this is misdiagnosed as depression, some prescribed medications may trigger a manic episode by increasing levels of serotonin and norepinephrine. Although a genetic predisposition may be important in providing the biological com-
The first few moments of a patient encounter often determine how smoothly an interaction will go. When possible, keep bystanders or family members a safe distance from an agitated patient, and position yourself between the patient and the escape route. Even if law enforcement is present, it is important to remember that safe situations can escalate into dangerous ones. Although few people with a mood disorder become violent, EMT providers need to be aware of the following red flag behaviors:

» Increasing agitation;
» Loud speech;
» Threats to harm oneself or someone else;
» Clenched fists;
» Pacing and pacing;

The safety assessment begins with the initial dispatch—for EMS providers, the patient’s safety assessment should be sent along with EMS if any threat of violence is detected during the 9-1-1 call, and should enter the scene before EMT. Even if law enforcement is present, the patient’s anger is concerning their capacity. One consideration, however, is whether the patient’s anger is directed at caregivers. Yelling at the patient’s anger is concerning their capacity. One consideration, however, is whether the patient’s anger is directed at caregivers. Yelling or using drugs.

The American Psychiatric Association publishes a classification of mental disorders in the Diagnostic and Statistical Manual. Its fifth edition was published in 2013, and is referred to as the DSM-V. Diagnoses are based on an objective list of symptoms after evaluation by a mental health professional.

The DSM-V has a major depressive disorder as five or more symptoms during a two-week period that cause significant distress or impairment. The following are those symptoms:

» Daily depressed mood most of the day;
» Daily diminished interest or pleasure in almost all activities for most of the day;
» Significant weight loss or weight gain or daily increase or decrease in appetite;
» Daily insomnia or hypersomnia;
» Daily psychomotor agitation or retardation;
» Daily fatigue;
» Daily feelings of worthlessness or hopelessness;
» Recurrent thoughts of death or suicide;
» A suicide attempt or plan for death by suicide;
» No history of a manic or hypomanic episode.1

Note: Visit the American Association of Suicidology’s Recommendations of Reporting on Suicide for more information on the discussion of preferred terminology regarding suicide, including the following terms used in this article: “death by suicide” and “suicide completion.”

The DSM-V uses the following diagnosis of bipolar disorder in its definition of a manic episode:

A period of at least one week of abnormally and persistently elevated, expansive or irritable mood, and persistently increased activity or energy, for most of the day, nearly every day, causing significant problems. Presence of at least one of the following symptoms: inflated self-esteem or grandiosity; increased talkativeness; pressure to keep talking; decreased need for sleep; flight of ideas or racing thoughts; distractibility; increase in goal-directed activity or psychomotor agitation; and excessive involvement in activities that have a high potential for painful consequences, such as over- spending, overeating or promiscuity.1

The DSM-V contains two types of bipolar disorder. Bipolar I disorder includes a history of a manic episode and symptoms of major depression. Bipolar II disorder also has a history of major depression, but with hypomanic episodes. Hypomania includes the same symptoms as mania, but the distinction is that they are less severe and do not cause significant impairment to daily function. Cyclothymic disorder, another diagnosis in the DSM-V, is one in which a person experiences numerous hypomanic symptoms and mild depressive symptoms.

Epidemiology

The DSM-V defines a major depressive disorder as five or more symptoms during a two-week period that cause significant distress or impairment. The following are those symptoms:

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The first few moments of a patient encounter often determine how smoothly the call will go, and it is essential to establish a rapport with the patient. Form a general impression about the patient’s appearance, general health, cleanliness and living conditions. If possible, position yourself at the patient’s eye level at a 45-degree angle, without encroaching on their personal space. Your
EM practitioners at all levels receive less training in managing psychological complaints than other medical problems, such as cardiac and respiratory problems. Many EMS practitioners may feel uncomfortable caring for patients with suspicion of a mood disorder. Additional educational resources are available, such as local chapters of National Alliance of Mental Illness. Give patients as many choices as possible, but do not offer one that is not available. There has been determined that the patient has to go to the hospital for a safety reason, do not ask if they would like to go. However, if there is a choice of hospitals available, ask which they would prefer to go to. The same principle applies to making promises. Do not make a promise that cannot be kept, as this patient may have just been admitted while encouraging them to be transported. Promises like taking good care of the patient, keeping them safe, and helping them feel comfortable can be kept and should be delivered.

Some helpful comments might include stating why you are with them.

» I’m here to help you as much as I can.

» I’m here to listen.

» I’m here to see how we can help you feel better.

Other tips on how to communicate with a patient with a suspected mood disorder include never telling the patient that you know how they feel, ever. Practitioners who may have experienced symptoms of a mood disorder do not know exactly how another person feels at any given time. Also, do not tell a patient you can keep their information confidential from other responders because you will likely need to consult with law enforcement, mobile crisis or a receiving facility. During an assessment, ask questions preceded by a statement that can soften some of the direct questions about their safety, such as: “I am sure this is very stressful, but you talk to me.”

Additionally, telling a patient “everyone will be OK” is counterproductive because you do not know this to be true. If you need the feel to reassure some of the following statements would be better.

» I will do everything in my power to help you.

» Please let me know if I can answer any questions for you.

After ruling out a medical cause of the symptoms, the MISE provides objective information for caregivers to determine the most appropriate plan of action and to document the assessment. This includes determining whether the patient has the mental capacity to consent to care or refuse to be transported to the hospital. Objective MISE findings are another way patients are discussed with online medical control and law enforcement to help make this decision.

Components of the MISE include assessing the level of consciousness, activity, speech, thought, memory, affect and mood, and perception. It can be remembered using the mnemonic COASTMAP, which stands for consciousness, orientation, activity, speech, thought, memory, affect, mood, and perception. Use open-ended questions while performing this exam, such as asking patients how they feel or why they think they feel bad. To assess consciousness, determine whether the patient is alert, confused, requires tactile stimulation for arousal or is unresponsive to pain. Note the patient’s level of consciousness and the time they were last known to be lucid. Observe whether they are easily distracted or can focus on a conversation. For orientation, ask the year, month and current day. You can also ask questions about large quantities or familiar events, but also how long it takes to answer. Activity is an examination of the patient’s behavior. Are they able to do what you ask, such as sit still in a chair? Do they pace around the room, or are they sitting still without moving at all? For speech, note the rate, volume and articulation. Is it fast and rambling or slow and slurred? To assess thought, listen to the content of the patient’s speech. Does it make sense in the context of the situation, or is there a flight of ideas or delusion? To assess memory, ask the patient your name when you first introduce yourself, ask if they remember it later. Asking when and what they last ate or drank. For orientation, observe accuracy and how long it takes the patient to answer.

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by inhibiting dopamine receptors. One rare, but potential side effect of these medica-
tions is that they may lengthen the QT interval and cause a ventricular dysrhyth-
mia. Therefore, the patient should be placed on the cardiac monitor and have a 12-lead ECG obtained as soon as practical, and be monitored through the duration of contact. One of the more difficult situations paramedics face is when a patient with a behavioral condition refuses to go to the hospital. Unless a patient is unable to make decisions believed to be in their own best interest, they have the right to refuse care. If, based on objective assessment findings, the patient is believed to be in imminent danger to themselves or others, it is best to get early involvement of law enforcement.

A suicide assessment should be done on any patient who complains of feeling depressed. This is best done when the patient is away from family members or bystanders.

Antidepressants aim to block the reuptake process in the synapses, enabling nore-
epinephrine or serotonin to stay in synapse longer and bind to a postsynaptic neuron. The most common medications used today are the selective serotonin reuptake inhibi-
tors (SSRIs), including fluoxetine (Prozac), citalopram (Celexa), sertraline (Zoloft) and escitalopram (Lexapro). These medications are popular because they have fewer side effects than other medications and make overdose difficult. Velafaxine (Effexor), desvenlafaxine (Pristiq) and duloxetine (Cymbalta) selectively block the reuptake of serotonin and norepinephrine. Wellbutrin (bupropion) acts on serotonin, norepinephr-
ine and dopamine receptors.

Treatment of bipolar disorder includes a class of medications known as mood stabi-
zers. The most common mood stabilizer and first-line treatment is lithium. Other mood stabilizing medications are anticonvul-
svants, which are the same medications used for seizures. These include carbam-
azepine (Tegretol), valproate (Depakote)

with a patient’s physical concerns, such as diet, exercise and maintaining a healthy lifestyle. They may monitor vital signs or order blood work to ensure their patients are physically metabolizing medications as expected.

Active listening is helpful, but providing advice about managing their symptoms can cause harm. For long-term care, a patient might seek treatment from one of several different cli-
nicians. A psychiatrist is a medical doc-
tor who has also specialized training in mental health disorders and the neu-
rophysiology of the brain. Psychiatrists typically see individuals for medication evaluation and management and do not do therapy. Appointments are of a shorter variety and focus on finding the appropri-
ate psychotropic medication to treat the symptoms of the disorder. Since there is no permanent cure for mental illness, physicians must focus on finding the best medication with the fewest side effects to help the patient effectively live with their disease. In addition to medication man-
gement, psychiatrists are also concerned with a patient’s physical concerns, such as diet, exercise and maintaining a healthy lifestyle. They may monitor vital signs or order blood work to ensure their patients are physically metabolizing medications as expected.

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svants, which are the same medications used for seizures. These include carbam-
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and lamotrigine (Lamictal). The exact mechanism of action of these medications is unclear. One theory is that they work on impulse transition within the neuron by stimulating neuroprotective protein, and may also affect the sodium/potassium ion transmission within the neuron.1,5,15

Another class of medications used to treat bipolar disorder is atypical antipsychotics. These were initially developed as a newer class of medications to treat schizophrenia, and include olanzapine (Zyprexa), quetiapine (Seroquel) and aripiprazole (Abilify). These medications work on certain dopamine and serotonin receptors.1

Patients may see a psychiatrist alone or in conjunction with a therapist for more involved treatment regarding their mood disorder. Often, patients will seek out therapy at the recommendation of their psychiatrist, or may search independently for a therapist. Therapists can come from a variety of backgrounds and education levels, and are typically divided into two primary groups: a doctorate-level and master’s-level. Doctorate-level therapists are psychologists, who hold a PhD or a PsyD in clinical psychology. There are a number of master’s-level therapists with different educational approaches, including clinical social workers, professional counselors of mental health and pastoral counselors. Typical suffixes for master’s degree therapists may be “LCSW” for licensed clinical social workers, “LPCMH” for licensed professional counselors of mental health or “MA” for Master of Arts. These clinicians do not prescribe medications, but often communicate with a patient’s psychiatrist to coordinate treatment goals.

In addition to long-term care, mobile crisis units are available in many communities for life-threatening mental health incidents. In cases of someone feeling suicidal or homicidal, mobile crisis units are dispatched either by an individual, police department or paramedics to assess a patient for safety. Units are comprised of trained mental health workers who are familiar with treatment options in their area and how to assess a patient’s safety. In certain cases, mental health workers may seem less intimidating to a patient than police officers or EMS providers, and they can work in conjunction with officers to determine the next treatment option. Depending on services available in a given area, workers may recommend involuntary inpatient treatment, voluntary inpatient treatment or follow-up with such outpatient providers as a therapist, psychiatrist or partial hospitalization programs.

Some law enforcement and EMS agencies have adopted mental health crisis intervention training. The National Alliance on Mental Illness (NAMI) Crisis Intervention Team program is a 40-hour course that includes identifying specific mental illnesses, learning de-escalation techniques and getting clinical time with mobile crisis units. It was originally developed for law enforcement to better respond to people in mental health crisis and reduce incarceration rates, and has been used by EMS services to better manage these situations.16

After you report what the patient told you to the ED staff, wish her well and document her statements in your PCR, your partner tells you he does not understand why an ambulance had to be tied up for that patient. You reply that the patient felt comfortable telling you things she did not feel comfortable telling anyone else, and that her outcome may have been much different had you not been called. You also tell him people call 9-1-1 when they don’t know what to do, that pain from mental illness is a real as pain from other medical conditions, and it was in the patient’s best interest to be evaluated in the emergency department.

You go on to explain that behavioral emergencies may be an area for paramedics to specialize in. With some additional educational and clinical rotations, perhaps paramedics could medically screen patients with psychiatric complaints and direct them to resources that are more appropriate to care for them than an emergency department.

Conclusion
Depression and bipolar disorder are classified as mood disorders, which have biological causes that may be exacerbated by environmental changes. Together, they are a frequent reason for calls to EMS, both as a mental health crisis and as a contributing factor in medical complaints. EMS care focuses on assessing safety, determining the patient’s decision-making capacity and providing therapeutic communication. A thorough understanding of mood disorders is needed to effectively perform these tasks and to direct patients to the most appropriate facility.

REFERENCES


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**Your Mileage May Vary**

Beware of judging ability by age

I am not 50 years old, but I can see it from here. Despite my aching joints and the ridiculous amount of silver in my hair, I am not ashamed of my years and get a kick when my age and/or experience takes someone by surprise. Including all of my experience I have been in EMS for 30 years, most of that in a high-volume system in Newark, NJ. I have a round, relatively unlined Irish face and a talented colorist on retainer. In my off time I avoid all things uniform and can blend into the crowd at retail outlets or flea markets, depending on if I'm wearing the dressy yoga pants or not. It is easy to assume I am nobody of significance or experience. That is not fine with me.

EMS, like many other physical jobs, is considered a young person’s field. It is a tiring job that is physically and emotionally exhausting. Providers enter the field in far better shape than they leave it. Years of shift work, too little sleep, too much garbage food and spikes in adrenaline are a damaging combination. It is possible to counteract that by keeping in shape, but age is the great equalizer. We all erode, just at different rates.

People get into this field for a number of reasons. People get into this field for a number of reasons. What happens when someone chooses EMS as a second career, or comes to it later in life? The same thing that happens to younger people—they go through the same training, frustrations and successes anyone else does. They may be starting their day with Motrin instead of orange juice, but they still get out the door. By the time they get to work they look just like you do, only older.

Age comes wisdom, right? Not quite. With age comes arthritis, but it does not offer a natural increase in critical thinking skills or the ability to perform prehospital medicine in a high-pressure environment.

Unfortunately because we often attribute experience to age, it is easy to overestimate the abilities of older providers and their patient contact time. We believe them to be stronger or more capable practitioners and expect them to perform at a standard above that of a novice provider. We assume they know more or have done more than they have, so we do not pressure them to learn or practice more.

Age makes a good force field. Generally the older you are, the easier it is to deflect assessments of your abilities. I had a terrible time getting evaluated back East. I had a terrible time getting evaluated back East. I was told I would not be able to get into a program or even a junior-year class. The reason? “We need somebody younger.”

Although I had the mixed blessing of the fact that Alaska is a lot like Madagascar, it is isolated and cut off from the lower 48 so my background meant nothing.

In uniform I am no longer camouflaged. The song of silver in my hair and the lines around my eyes say that maybe I’ve been around awhile. It means I have age; it does not mean I have experience. The fact that you’ve been doing this job for 20 years means you can read a schedule, not an EKG. A good clinician should be able to date and always refining their process. I learn so much from the younger medics every day. The curriculum today challenges me to revisit concepts and strategies that once provided the foundation of my practice.

I spend a fair amount of time secretly Googling things they show me, peering down at the screen through my bifocals and hoping I can keep up with them.

The older provider brings maturity. They have a frame of reference and perspective that can be invaluable in facilitating the care of people in a broader generational range. We get their jokes, and can support a valuable argument when it comes to deciding just what qualifies as “classic rock.” What we need from younger providers is recognition that we have a lot to learn about this field too and not to assume that because we creak when we get out of the truck we know the answers to all questions. (Unless that question is about classic rock.)

People are surprised by my experience because I do not look my age. I can be equally surprised by your lack of experience; do not let me assume something when you need my help. Communication is the way to make sure everyone, including the patient, gets the most benefit out of our combined years of experience, EMS or otherwise.

**ABOUT THE AUTHOR**

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