

# EMS: PS-10

THE TEN PATIENT SAFETY TOPICS THAT WILL MOVE EMS FORWARD IN 2016

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FROM THE PATIENT SAFETY EXPERTS AT



**EMERGENCY MEDICAL SERVICES IS A SPECIAL  
AND UNIQUE PROFESSION WITH MANY  
DEDICATED MEN AND WOMEN.**

**THESE PROFESSIONALS BRING COMPASSION,  
ENTHUSIASM AND DEPENDABILITY IN OFTEN  
VERY CHALLENGING ENVIRONMENTS.**



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## INTRODUCTION

**THIS REPORT HIGHLIGHTS TEN TOPICS IN EMS THAT ARE PROVIDER AND PATIENT SAFETY VULNERABILITIES AS IDENTIFIED BY THE CENTER FOR PATIENT SAFETY (CPS). THIS REPORT IS INTENDED TO PROMOTE AWARENESS, GENERATE DIALOGUE, AND INITIATE ACTION IN THE EMS COMMUNITY TO IMPROVE SAFETY FOR PROVIDERS AND PATIENTS.**

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**Second Victim Intervention**

**Transition of Care**

Emergency Medical Services (EMS) is a special and unique profession with many dedicated men and women. These professionals bring compassion, enthusiasm and dependability in often very challenging environments. CPS is here to support EMS professionals and offer resources as well as tools to improve safety.

CPS envisions a healthcare environment safe for all patients and healthcare providers, in all processes, all the time. We strive to lead the industry in providing timely solutions and resources to improve patient safety and the quality of healthcare delivery.

CPS serves as a hub and coordinator for healthcare providers, government agencies, the public and others with an interest in improving patient safety. CPS recognizes that collaboration and sharing leads to a better understanding of how to improve the safety and quality of healthcare delivery.

At CPS, our focus is on learning what medical errors occur, why they occur and how to prevent patient harm. We emphasize the importance of a culture that promotes safe systems and safe individualized care, as well as strong teamwork and communication.

This report is consistent with our mission and focus as we support and promote safety in EMS.

Thank you for reading this report. Together, we will help move **#EMSForward**. We invite you to engage in the conversation further on social media and watch for additional content to support the **#EMSForward** campaign!

**—THE CPS TEAM**

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## WHY THIS REPORT?

**“THERE IS AN ILLUSION THAT EMS IS SO SAFE NOW - [WE] HAVE FORGOTTEN HOW INHERENTLY DANGEROUS IT IS.”**

### **CPS developed this report to raise awareness of patient safety concerns in EMS.**

The ten areas in this report are reflective of topics most often identified as risks to patient and provider safety as well as topics forecasted to be of greater concern in EMS in 2016.

This report is not an all-inclusive list of the patient safety concerns in EMS, but our hope is that it will complement your current patient safety and quality programs and provide resources to take proactive steps to reduce new concerns.

We encourage leaders to focus on one or two areas to implement change and monitor improvement. It would be difficult for any single organization to effectively and efficiently address all ten topics in a 12-month period, but many of the topics overlap. Improvement efforts in one area will result in secondary benefits in another area.

The topics in this report were selected following a review by CPS experts and a review of leading EMS industry publications and journals. CPS also utilized the PSO's database of actual event information from EMS providers nationwide.

As one EMS leader pointed out: “There is an illusion that EMS is so safe now - [we] have forgotten how inherently dangerous it is”.

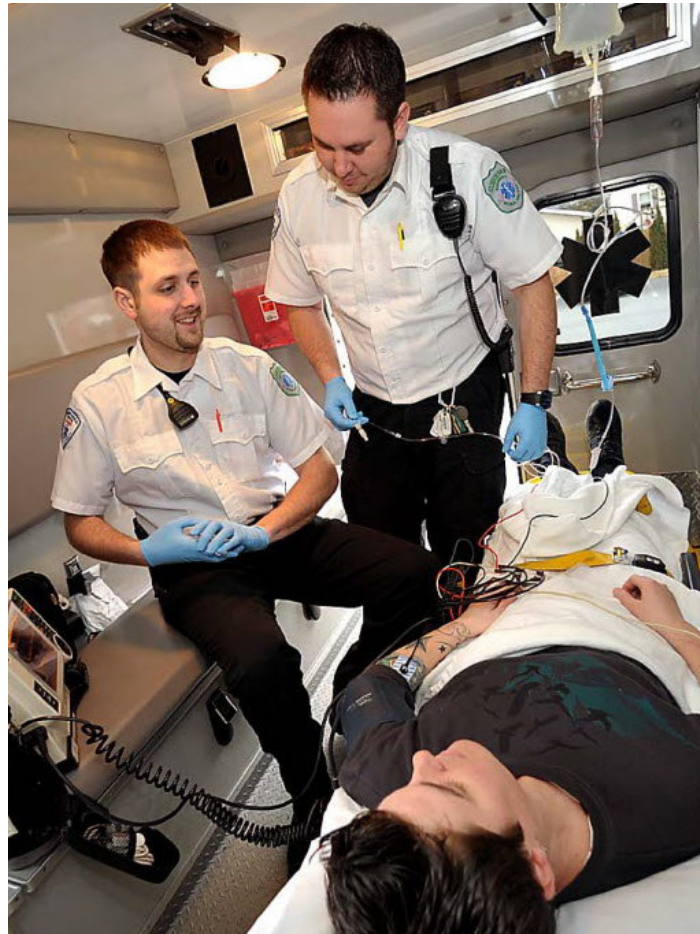
This PS-10 should be shared with frontline providers, middle managers, and executive leaders. **#EMSFORWARD**



## SIMPLE WAYS TO BEGIN THE CULTURE SHIFT

Leaders can create an environment in which the daily aspects of the job keep safety in the forefront with simple, but important, cultural shifts, such as:

- Discuss patient safety with new job candidates.
- Conduct daily leadership “walk arounds”.
- Incorporate patient safety in the performance review process
- Display visible safety posters
- Start every meeting with a safety story or discussion.
- Recognize, celebrate, and learn from “great catches” that could have resulted in harm.
- Measure your culture with a validated tool, benchmark against others and use results to determine priority areas for improvement.



### **Many experts identify leadership as one of the most important elements in reducing patient harm.**

EMS leaders, like the Chief or Medical Director, often drive the culture of an organization. The culture, in turn, often impacts patient outcomes in either a positive or negative way. This report discusses cultural components, such as Just Culture and the Second Victim Intervention program, that, when implemented correctly, can improve culture and produce better outcomes.

EMS leaders are often responsible for the implementation of provider and patient safety programs and, therefore, it is important for them to support the cultural components that can magnify and strengthen their efforts.

Leaders should use this report, and complementary resources, to move **#EMSforward** at their organization by implementing culture changes to support improved patient outcomes.

Consider the services offered through participation with a PSO. Participation can help improve safety and provide valuable insight into your organization’s performance. **#EMSFORWARD**

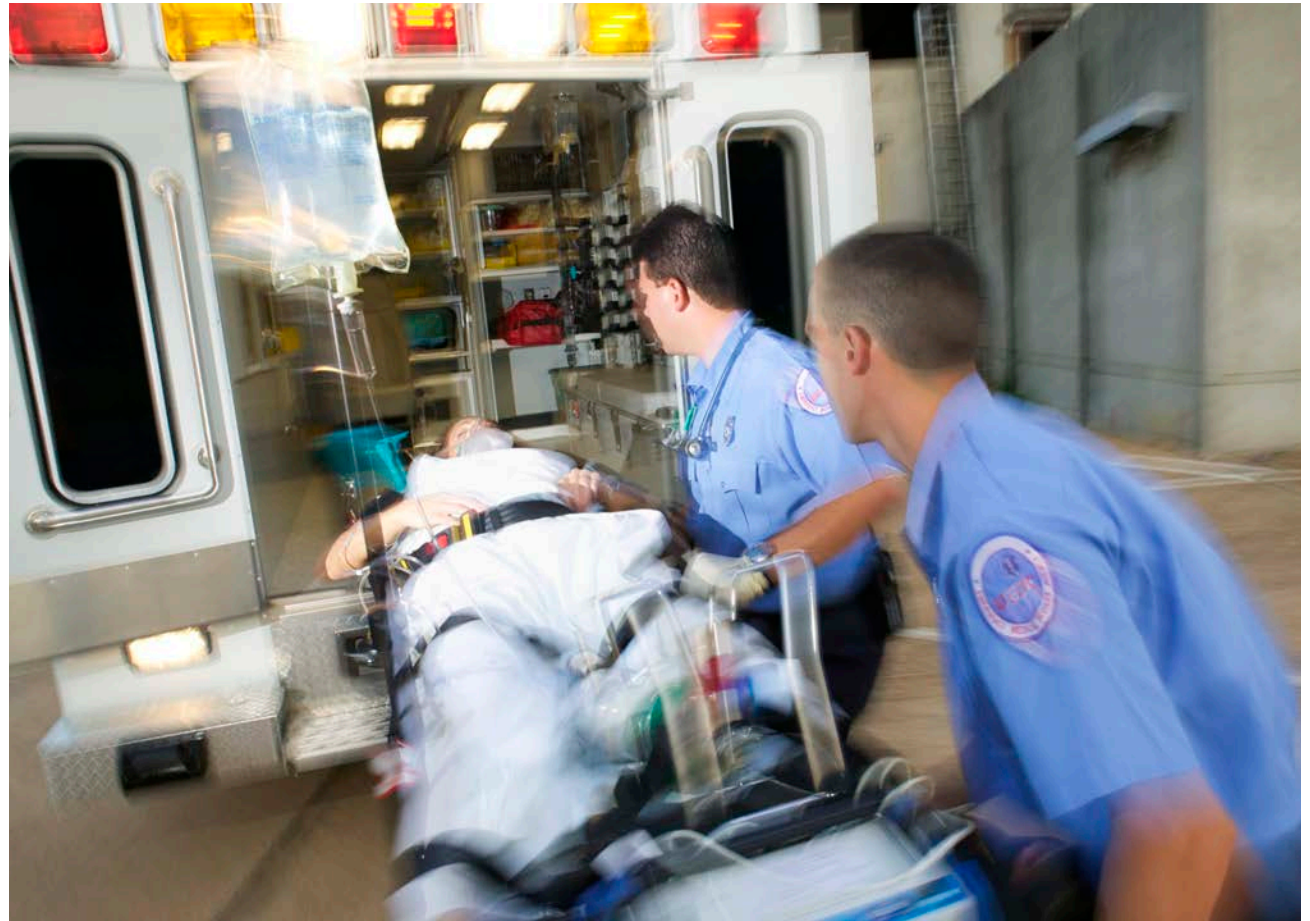
**How do we integrate safety into the many aspects of EMS?**

EMS leaders face competing pressures every day. From budget demands to regulatory and compliance requirements, it's not uncommon for safety to get drowned out. Additionally, the role of the EMS professional in healthcare continues to expand with increasing laws and medical advancements.

One area that is drawing attention across the medical profession is the demand for greater patient safety. In 1999, the landmark report by the Institute of Medicine, "To Err is Human" examined adverse events in hospital settings. It became the cornerstone for quality and safety improvement.

As we fast forward from 1999 to the present day, many changes have taken place in the medical industry, such as the Affordable Care Act which ties reimbursement to patient safety and quality outcomes. Organizations that adopt patient safety concepts now will be better positioned to benefit from payment changes in the future. CPS anticipates these changes will impact EMS in the near future.

Organizations should use this report as a launching pad to implement safety programs now that will support future changes. **#EMSFORWARD**



**If risk is all around us in EMS, how can we manage it?** Looking at other high consequence industries from other professions we can learn how to better manage as well as mitigate risk. From aviation to surgery suites, lessons have been learned that can be translated to improve safety in EMS.

CPS has a diverse background of experience across the healthcare continuum. Working alongside hospitals, long-term care facilities, and EMS/fire agencies, CPS learns about the many casual factors that explain why patient safety related events occur. Lessons learned are available as resources to all healthcare providers to improve the safety of care.

As healthcare continues to expand, CPS recognizes the growing role of EMS across the continuum of care. CPS engages in improvement opportunities with multiple healthcare disciplines and understands specific risks and vulnerabilities that exist.

Consider options to work with other healthcare organizations on improvement projects that address an area within this report.

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## COMMON THEMES OF RISK

**It is not uncommon to hear providers talk about how safe EMS is today compared to twenty years ago.**

This thought creates a safety bias for the patient and the provider. The bias might be a reflection of an organization's culture or it could be part of the provider's perception. Regardless, a greater focus on a culture of safety and an awareness of risk is a necessary step towards prevention.

Common themes of risk include:

- Lack of Teamwork
- Distractions or Inattention
- Lack of Training or Knowledge
- Lack of Standardization
- Complacency
- Fatigue or Tiredness
- Negative Culture of Safety
- Lack of Communications
- Protocol Deviations
- Poor System Design or Process

Great advances have been made, however, it is easy to forget that EMS can still be dangerous.

Providers should refer to this report regularly as a reminder about the potential risks faced every day.

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**The study and understanding of patient safety has been driven by many experts in healthcare, specifically those in hospitals or acute care settings.** Unlike aviation and other high risk occupations where safety is studied as a science, EMS has been slower with such studies. EMS, like aviation, is a high risk industry both for the EMS provider and the patient.

Unfortunately, EMS leaders have discovered that because of the fragmented EMS culture, it is difficult to define “safety”. It is viewed in subjective terms. For example, safety is viewed as a specialty practice or an ethereal concept. The Center for Patient Safety (CPS) believes that patient safety is actually a concrete subject that must be defined in order for EMS to advance alongside with other healthcare practices. This includes shifting EMS safety culture from personal performance and human reliability to improved systems and safety behaviors.

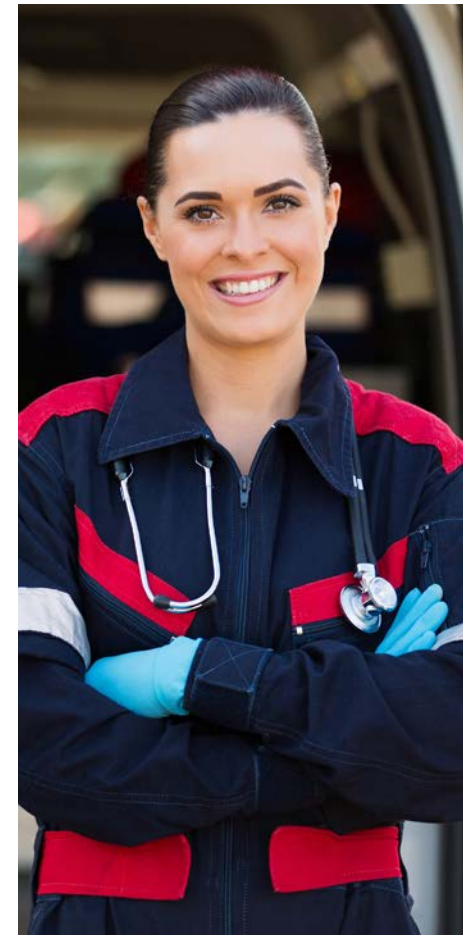
EMS agencies can use science to guide and drive the work of patient and provider safety. Throughout healthcare, greater expectations have been placed around quality and value-based purchasing which is linked to reimbursement. These changes will affect EMS in the near future. The question becomes, “Is the EMS industry ready for these changes; and if not, how can leaders prepare their organization for these changes?”

CPS believes the answer lies in creating a framework of quality improvement that relies on the use of science, philosophy and leadership. There must be strong leadership at the local, state and national levels to promote the study and analysis of patient and provider safety. This will lead

to a change in the cultural philosophy from isolationism to knowledge sharing. The creation of a just culture rather than a blaming culture will contribute to improved patient safety within EMS organizations. The science of safety takes into consideration human factors which are an integral part of forming a solid framework for the teaching and practice of patient safety within EMS.

The study of human factors is a focused specialty that has roots in several domains including psychology, ergonomics, aviation and manufacturing. The Agency for Healthcare Research and Quality describes human factor engineering as, “...the discipline that takes into account human strengths and limitations in the design of interactive systems that involve people, tools and technology, and work environments to ensure safety, effectiveness, and ease of use.” By utilizing knowledge about human factors, healthcare experts have developed processes that assist with root cause analysis of an adverse event or unexpected outcome. The use of human factor study can be coupled with other philosophies and tools available to EMS to develop a comprehensive patient and provider safety education plan. The tools needed for successful implementation of patient and provider safety protocols are varied. Some tools may be organization specific but most are generally applicable to organizations across the EMS spectrum. The reason for the ability to generalize is that many of the protocols are rooted in quality assurance. Quality assurance has been greatly standardized through the adoption of best practices within the medical profession.

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## CONCLUSION

The advancement of EMS safety must be a focal point of EMS leadership across the nation. EMS as a profession is called to change in light of new laws and a changing healthcare system. Patient and provider safety will be linked to reimbursement. The evolving healthcare landscape necessitates that EMS organizations change along with it. Provider and patient safety are part of this new medical landscape. However, in order to achieve those goals, EMS must make safety a priority.

Patient and provider safety should be on the top of mind for all EMS leaders. The Center for Patient Safety helps to improve safety and provide leaders with valuable insight into their organization's performance and new ways to find improvements.

The components needed to create successful EMS patient safety programs are wide ranging. They include:

- Patient safety quality assurance measures within the EMS organizational framework such as an understanding of the science of safety.
- Data collection and analysis.
- Strong leadership that is committed on a national, state and organizational level.
- The philosophical rationale of creating a just culture within EMS organizations.

By building safety programs based on these components, EMS will be relevant in the 21st century. EMS will be recognized for having strong frameworks which support communities in times of medical crisis - the core mission of EMS.

The 2016 PS-10 offers EMS a summary and overview of safety. The goal is to drive dialogue, discussion and action towards the prevention of future safety related events.

Planning is underway for the 2017 PS-10 and a deeper dive into focused areas of safety. If you have an interest in supporting, collaborating or working on the 2017 PS-10 report please contact any member of the CPS Team. **#EMSFORWARD**



## THE TEN PATIENT SAFETY TOPICS

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# AIRWAY MANAGEMENT

**“EVERY PATIENT IS DIFFERENT, THEREFORE, MANAGING AN AIRWAY REQUIRES MANY SKILLS AND A STRONG DEGREE OF EXPERIENCE. THIS IS EVEN MORE IMPORTANT AS EMS ENCOUNTERS PATIENTS OFTEN IN THE LEAST DESIRABLE SURROUNDINGS OR SITUATIONS.”**

Your agency is dispatched to a cardiac arrest. First responders have started CPR and defibrillated the patient. Upon EMS arrival the patient is still unconscious, unresponsive with agonal respirations, and poor oxygenation. The crew decides to intubate the patient in hopes of improving oxygenation and managing the airway. The paramedic places the endotracheal (ET) tube and confirms placement with auscultation of equal breath sounds, fogging of the tube, and visualization of the chest rising and falling. The patient is then moved from the home to the ambulance for transport. While in the back of the ambulance the crew notices an expanding abdomen, no breath sounds, and poor oxygenation. The endotracheal tube has become dislodged. The decision is made to extubate the patient and reintubate.

EMS providers manage difficult and often complex airways every day. As pointed out in this example esophageal intubations can occur and ET tubes can become displaced during the packaging and moving of a patient. This is one reason why capnography should be used to confirm and monitor placement of the endotracheal tube.

The Center for Patient Safety’s (CPS) PSO receives regular reports of airway related events. Some of these events reflect the complicated range of patients that EMS encounters, from trauma patients that require surgical airways, to respiratory distress patients requiring endotracheal intubation. Regardless, EMS must often act quickly as patients frequently present in acute distress. To take immediate action the provider must have the skills and experience to manage many types of airways. Because of the wide range of risks and airway complications, such as esophageal intubation, ET tube dislodgement, aspiration and failed attempt, CPS is including airway management as part of this report.

Lee Varner, BSEMS, EMT-P, Project Manager for the Center for Patient Safety’s EMS services states, “Provider experience and critical thinking skills are an important part in developing the best plan for airway management. These skills are often developed over time in the clinical setting. Experience will help the provider to know when

to take action or monitor a suspicious airway. Every patient is different, therefore, managing an airway requires many skills and a strong degree of experience. This is even more important as EMS encounters patients often in the least desirable surroundings or situations.”

CPS issued a Safety Watch “Cricothyrotomy, are you ready?” as analysis from PSO data raised concerns about this low frequency, high risk procedure. The Safety Watch was a reminder that having multiple types of cricothyrotomy kits can lead to confusion during an airway emergency. Specifically, this means know your equipment so the procedure can be performed with whatever kit your agency stocks. Utilize only one type of kit and remove older or other freelanced kits. It was also recommended that a regular skills refresher for this critical procedure occur on a frequent basis. Furthermore, it was recommended that this training be performed with the equipment you would use on a daily basis. Your EMS medical director should have oversight of selecting the equipment as various kits are widely available from vendors. Your agency may also prepare a specialty cricothyrotomy kit under direct supervision of your medical director.

From complex ventilators to long distance transfers, medical transport teams are frequently dispatched to handle patients with some of the most difficult airways that require advanced airway management. These can be inter- facility transports or scene calls. Whatever the scenario, there is always risk. This creates the need for the best system design or processes as well as safety behaviors..

Discuss endotracheal intubation with your EMS medical director and explore options, alternatives, and backup plans for airway management. One alternative is a supraglottic airway. It can be used as either a backup rescue device or a primary means for airway management. Implementing a review of the skill, simulation training, and clinical time with actual patient placement will help improve proficiency.

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## BEHAVIORAL HEALTH

### **“NURSING HOME RESIDENTS ARE AT PARTICULAR RISK OF BEHAVIOR CHANGES DUE TO ACUTE ONSET OF ILLNESS. UNDERSTANDING THE UNDERLYING CAUSE OF BEHAVIORAL CHANGES IS NECESSARY TO ASSURE ACCURATE TREATMENT IS INITIATED.”**

Your crew responds to a 25-year-old behavior health patient who has voiced a desire to hurt himself. Upon patient contact, he is awake, alert, and cooperative, so law enforcement is disregarded. The crew has no indication the patient will be violent so he is placed supine on the stretcher with three belts in preparation for transport to the hospital. While in the ambulance, the patient becomes agitated. He quickly removes the belts and tries to get off the stretcher, stating “I want out...now!” The situation escalates rapidly and the crew feels threatened. The patient gets off the stretcher and starts yelling obscenities while the driver attempts to slow down, merging out of traffic to safely stop the ambulance. The patient then punches the attendant in the chest, knocking him back into the captain’s chair. The EMT is incapacitated after the blow to the chest. The patient jumps from the back of ambulance while it is still rolling to a stop. With the ambulance door now open, your crew watches him run off into the darkness.

The Center for Patient Safety (CPS) began collecting data around behavioral health encounters in early 2015 when EMS leaders expressed an interest in learning the frequency and dynamics of certain high risk events. The events include provider and patient safety concerns, such as the story above, involving patient elopement from an ambulance. Since the collection of these types of events began, more than 100 have been reported to the CPS PSO. The data provides a small glimpse of what is occurring on a national scale in pre-hospital contact and during inter-facility transfers. The events also highlight the community struggle with behavioral health resources. Inpatient treatment is often difficult to locate for behavioral health patients. Once a bed is found, the patient may require transportation of many miles to

the closest receiving facility.

“Nursing home residents are at particular risk of behavior changes due to acute onset of illness. Understanding the underlying cause of behavioral changes is necessary to assure accurate treatment is initiated. Many times, these behavior changes are a sign of serious illness, that if left untreated, could become life threatening.” Amy Vogelsmeier, PhD, RN, FAAN, Associate Professor, University of Missouri Sinclair School of Nursing, Consultant to CPS.

Behavioral health encounters present opportunities for risk not only for the patient but also the provider. Encounters that appear benign can rapidly escalate, placing the provider and patient at risk. Many communities have made great strides in building relationships with law enforcement officials to clarify roles and support for one another during these encounters, however, there are still frequent situations where law enforcement is not available or is not involved. These situations require EMS to handle the situation alone. Even with the best laid plans and protocols these encounters can prove to be dangerous for all involved.

No encounter is the same and every patient’s needs are different, therefore, experience, skills and training are critical for EMS providers. A variety of education and training ensures the provider can protect themselves and their patient from harm. Ask a provider who has been assaulted or had a situation deteriorate and it was often because the provider was not prepared or aware of their surroundings. The situation becomes dangerous, therefore, keep a keen eye on situational awareness and constant vigilance to protect yourself and patient. **#EMSFORWARD**



RESOURCES, P25

## CRASHES: GROUND AMBULANCES AND HELICOPTERS

**“IT’S EASY TO TAKE SAFETY FOR GRANTED OR BECOME COMPLACENT UNTIL WE HEAR ABOUT A CRASH... EVERY CRASH IS DIFFERENT AND EACH HAS ITS OWN CAUSAL FACTORS BUT WE SHOULD ALL LOOK AT OUR SYSTEM DESIGN AND SAFETY BEHAVIORS AS A PLACE TO START.”**



Ask an EMS leader what keeps them up at night, and the common answer might be an ambulance or air medical crash. There are different factors for why ambulance or air medical crashes occur, however, there is universal agreement that crashes often lead to tragic consequences.

We are all at risk for crashes in EMS, whether in a ground ambulance or a helicopter; and when a crash occurs, there are multiple victims, including the crew, the patient, and the organization. Currently, there are determined efforts underway to reduce the occurrence of crashes and to make these events more survivable.

The Center for Patient Safety (CPS) receives a variety of reports related to ambulance and air medical crashes and near misses.

Air medical crashes are just as concerning. One study of EMS helicopter crashes, called “EMS helicopter crashes: What influences fatal outcomes” referenced various factors. A review of crashes resulting in at least one fatality were most often linked to postcrash fires, darkness, bad weather and other hazardous conditions.

Lee Varner, BSEMS, EMT-P, Project Manager for CPS EMS services states, “Ground and air services log countless hours transporting patients in our communities. It’s easy to take safety for granted or become complacent until we hear about a crash. It’s easy to develop a bias and think it won’t happen until it happens to you or someone you know. Every crash is different and each has its own causal factors but we should all look at our system design and safety

behaviors as a place to start.” Factors vary widely for every crash; however, lessons learned from other high consequence industries might present learning opportunities for greater patient and provider safety in EMS.

Great strides in crash reduction have been made in helicopter operations with the implementation of new technology, safety culture and education. These successful efforts have been driven by leaders, associations and other stakeholders. Today we are starting to see some these efforts pay off, however, there is still more work to be done. **#EMSFORWARD**

### RECOMMENDATIONS

To reduce harm to providers and patients involved in a ground ambulance crash, the CDC recommends EMS employers encourage the following:

- **Providers should use patient compartment vehicle occupant restraints whenever possible.**
- **Drivers and front-seat passengers of EMS vehicles should use the occupant restraints provided.**
- **Insure all belts are appropriately used on the stretcher including the shoulder restraints.**
- **Implement an annual vehicle operations and safety review class or program.**

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## DEVICE FAILURES

**“HEALTHCARE HAS SEEN AN INFLUX OF NEW TECHNOLOGY AND NEW DEVICES, AS WELL AS IMPROVEMENTS TO CURRENT DEVICES... BUT AS WITH ANY TOOL, THESE DEVICES MAY HAVE WEAK POINTS OR MAY NOT BE IMPLEMENTED INTO THE SYSTEM AS EXPECTED.”**

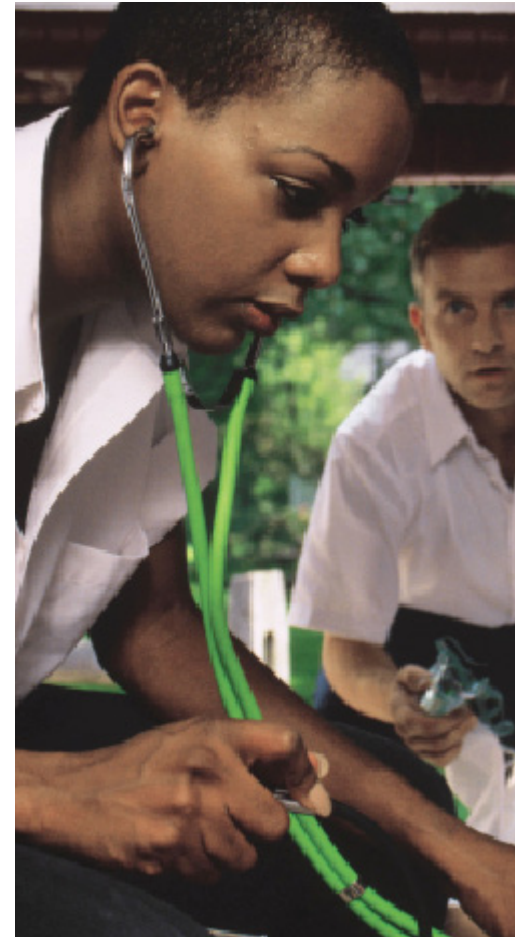
EMS crew is transporting a 28-year-old pregnant patient to a high risk labor and delivery unit. She will be a direct admission with a diagnosis of premature labor. She has an IV pump running with Normal Saline and Mag. During the transport the IV pump’s alarm continues to sound with multiple error messages. The attending paramedic attempts to trouble shoot the problem without success. Finally, the attendant shuts off the pump and the IV is maintained at a keep open (TKO) rate. The patient’s labor intensifies and upon arrival at the hospital the crew is questioned by the receiving staff about shutting off the pump. The attending physician believes the device failure and subsequent decisions directly affected the patient’s labor.

Alex Christgen, Project Manager at the Center for Patient Safety (CPS), states “healthcare has seen an influx of new technology and new devices, as well as improvements to current devices. Many of these innovations have improved the quality and safety for the patient and eased the workload for the provider, but as with any tool, these devices may have weak points or may not be implemented into the system as expected.”

The CPS PSO receives regular reports of device failures. These range from operational error to the actual device failing during operation. These failures can be linked to a variety of factors. Some of the most common factors include improper usage or stressing a device beyond its recommendations. Other reports include battery or power failure which is critical for many devices to function.

Another common scenario that can happen anywhere: A crew reports placing a patient on the stretcher with three belts and shoulder straps and then moving the stretcher to the ambulance. The paramedic asks other providers at the scene to help load the patient and operate the stretcher. The other providers agree to assist; one takes position at the head and another at the foot of the stretcher. The paramedic goes ahead of them to the front door of the home to open and hold the screen door. The other providers have not been fully trained on the stretcher including how to use the motorized lift, so they raise it to the “high load” position. While navigating the doorway they encounter an uneven surface area on the front porch. The stretcher becomes “top heavy” and overturns. They try to quickly recover and slow the fall; however, the patient is injured in the fall.

Moving and lifting patients has inherent risks to the patient and provider. This includes stretcher related events where either a patient or provider is injured. Reports of stretchers “tipping over” and failing during the loading or unloading from the ambulance are not uncommon. The causes for these events vary, however, common factors include inattention, over stressing the stretcher and lack of training. Due to the often extreme conditions and often unpredictable environment that EMS operates in, stretchers may be placed in situations where they can injure a provider and patient due to a failure. **#EMSFORWARD**





## MEDICATION ERRORS

**“MAINTAINING AN ACCURATE LIST AND ASSURING HEALTHCARE PROFESSIONALS INCLUDING PHYSICIANS, NURSES, PHARMACISTS, AND EMS PERSONNEL HAVE ACCESS TO THE LIST CAN PREVENT SERIOUS MEDICATION ERRORS AND ADVERSE EVENTS FROM OCCURRING WHEN ENTERING THE HEALTHCARE SYSTEMS.”**

EMS providers operate in a fast-paced environment where decisions are often made quickly with little information and under less than ideal conditions. Include the human factor element and it becomes the perfect setting for a medication error to occur. While many providers may not bring up the topic, most have either witnessed, or been involved with, a medication error.

According to the Center for Drug Evaluation and Research (CDER), the Division of Medication Error Prevention and Analysis (DMEPA) a medication error is “any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer. Such events may be related to professional practice, health care products, procedures, and systems, including prescribing; order communication; product labeling, packaging, and nomenclature; compounding; dispensing; distribution; administration; education; monitoring; and use.”

Who is at risk for making a medication error? The simple answer is: Everyone. We are all human and prone to error. In addition, when analyzing medication errors, many errors can be linked to either a poor system design and/or a lack of safety behaviors. Historically, EMS providers were expected to not only have drug dosages and protocols memorized, but they also were expected to be able to perform mental calculations for the appropriate patient dose. This expectation was further emphasized by certification programs that required rote memorization of formulas/protocols. In today’s healthcare, research has shown that memorization/mental calculation of dosing can actually increase the risk of committing a medication error. Because of this risk, it is becoming more common to see providers use checklists and other cognitive aids.

The CPS PSO database contains many medication error events with varying causal factors. One trend recently observed involved Morphine and Midazolam and indicated the two medications were being confused and wrongly administered. While causal factors vary, many times it is the system in place that increases the likelihood of a medication error.

Examples of medication errors include:

- Similar names of medication
- Similar packaging or container
- Similar route of delivery
- Medications locked together
- No cross check process in place or time out taken before administration

There are no simple solutions for the prevention of medication errors, however, instituting the best systems and safety behaviors are important steps. There are processes that can assist with decreasing the risk, beginning with ensuring that the five rights are followed:

- Right Dose
- Right Patient
- Right Route
- Right Time
- Right Drug

Other processes recommended include:

- Cross checking prior to medication administration
- Develop a culture of patient safety
- Encourage providers to contact medical control with questions rather than rely on memory
- Report adverse events, near misses and unsafe conditions to identify system flaws and allow for learning.

“Patients should be encouraged to maintain an accurate written medication list with them at all times and include not only what they are taking, but why. Maintaining an accurate list and assuring healthcare professionals including physicians, nurses, pharmacists, and EMS personnel have access to the list can prevent serious medication errors and adverse events from occurring when entering the healthcare systems.” Amy Vogelsmeier, PhD, RN , FAAN, Associate Professor, University of Missouri Sinclair School of Nursing, Consultant to the Center for Patient Safety.

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 RESOURCES, P26

### **“AS REIMBURSEMENT FOR ALL PROVIDERS DRIVES THIS TRANSITION, EMS MUST EVALUATE OUTCOMES OF CARE AND AVOID THE INJURIES AND UNRELIABILITY THAT ACCOMPANY WEAK SAFETY SYSTEMS.”**

Mobile Integrated Healthcare (MIH) also known as “Community Paramedicine” is an evolving specialty of Emergency Medical Services. MIH began in order to fill the gaps and niches in a communities health needs by EMS providers. The MIH programs developing today vary widely. However, there are some common denominators such as population health management, readmission avoidance and transportation to alternative destinations. These programs ultimately seek to bring about better management of specific patient populations that occur across the healthcare continuum. In addition, there is an emphasis in MIH regarding how EMS providers can partner with organizations to find savings in healthcare dollars.

According to the National Association of EMTs - the goal is to lower costs, improve the lives of patients and enable EMS practitioners—including EMTs, Paramedics and Community Paramedics—to use their skills and resources to help solve the problems facing healthcare systems and communities. Examples of MIH programs already implemented include:

- Community Paramedicine programs, which send paramedics with additional training and education into patients’ homes or into the community to do patient education and extend primary care in areas that have a shortage of primary care and other basic health resources.
- Nurse triage to provide non-urgent 911 callers with advice, or assistance getting connected with alternative healthcare resources such as primary care, urgent care or mental health services.
- Post-hospital discharge follow-up by EMTs, Paramedics or Community Paramedics to ensure patients with conditions such as congestive heart failure, COPD and diabetes have the tools and information they need to manage their condition at home and avoid preventable readmissions.
- Transporting patients to alternative destinations—such as primary care offices, urgent care, and mental health or detox facilities— instead of the emergency department.

The Center for Patient Safety (CPS) intends to work in partnership with MIH programs for greater safety as well as serve as a resource to minimize risk. One of the benefits of participating with a PSO is the ability to share adverse events, near misses and unsafe conditions. This sharing enables learning that benefits all providers. There are many lessons we can learn from available, seasoned MIH programs. Over the past ten years, CPS has supported patient safety across the healthcare continuum, including hospitals, physician offices and other providers. Some of this experience and data allows for many lessons learned about falls, infections, wound complications and medication reconciliation just to name a few.

According to the fact sheet from the California Emergency Medical Services Authority “Community Paramedics are not independent practitioners; they work under clear medical control of a physician, receiving direction and supervision to ensure patient safety. The Community Paramedic training program builds upon the training and skill sets of experienced paramedics. Additional training in patient assessment, clinical skills and familiarity with the other healthcare providers and social services available in a local community will all be a part of the required training, and will lead to a more integrated approach to health care delivery”.

Kathy Wire, JD, MBA, CPHRM, Project Manager for CPS states, “Historically, EMS providers stabilized a patient for transport and moved them to a hospital, where Emergency Department staff took over the patient’s care. Even in that limited role, EMS services have struggled to get information about the quality and safety of their care—they didn’t have any knowledge of what happened after the transfer. With the growth of Mobile Integrated Healthcare, they will be working as parts of teams, managing patients without transport in a physician or APN-managed framework or working with the patient’s broader medical support system to determine the right destination for care. Now, they need to address the safety of their own care and also function as part of a safe team. As reimbursement for all providers drives this transition, EMS must evaluate outcomes of care and avoid the injuries and unreliability that accompany weak safety systems.” **#EMSFORWARD**

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## PEDIATRIC ERRORS

**“CHILDREN CAN GET CRITICALLY ILL EXTREMELY FAST AND MANY TIMES IT IS THE KNOWLEDGE AND SKILL LEVEL OF THE PROVIDER TEAM THAT PREVENTS THE CHILD FROM REACHING A CRITICAL POINT.”**

It's a warm summer afternoon and no different from any other day in your community. A 911 call comes into the communications center for a 1 year old female not breathing. Professionals at the call center dispatch the appropriate resources while they support the baby sitter in starting CPR. EMS arrives on the scene, rapidly assesses the patient and successfully resuscitates the child before transporting to the hospital. A few days later the child is discharged with no neurological deficits.

EMS answers the call to a wide range of emergencies every day, but perhaps the most challenging, professionally and emotionally, is the pediatric patient. Tina Hilmas, RN, BSN, Project Manager at CPS and former NICU nurse acknowledges, “Taking care of the pediatric patient can be the most rewarding patient encounter but also extremely challenging.” This is not a patient population that is attended to on a daily basis. It is also a

population which varies greatly depending upon the age/size of the child. This lack of experience, coupled with the age specific dosing requirement of treatments, can greatly increase the stress level of the EMS provider. Add to this a panicked family and these factors can challenge even the most experienced provider. Hilmas states, “Children can get critically ill extremely fast and many times it is the knowledge and skill level of the provider team that prevents the child from reaching a critical point. Attention to detail, involving the family so the provider is aware of subtle deviances from normal behavior, and having a team to provide support and knowledge is vital to providing safe, professional and effective care of the pediatric patient.”

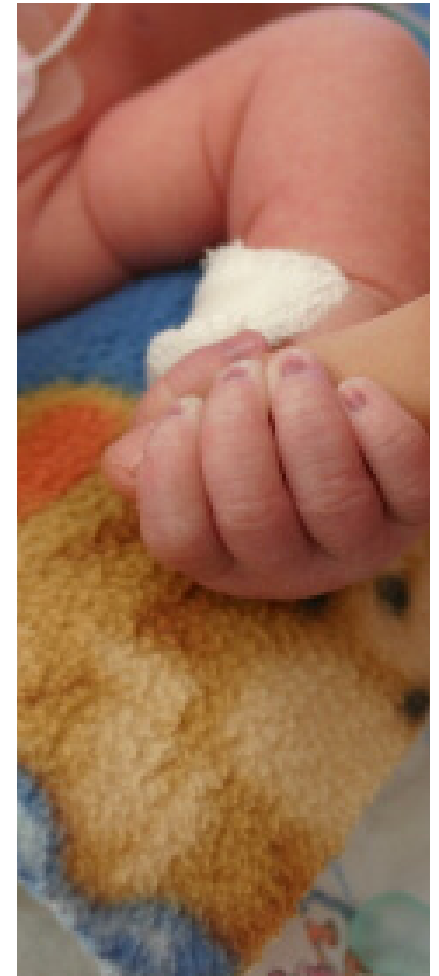
While CPS only has fragmented data regarding events involving pediatrics, CPS is adding pediatrics to this report to raise awareness about the risk associated with this patient population. This is a diverse patient population comprised of newborns to adolescents; each with their own special needs.

What is the best strategy to manage a pediatric patient? CPS recommends developing a system based approach that supports each and every patient regardless of age or size. In addition, a team strategy devised to assign providers to manage the patient as well as somebody who can support the family would help alleviate the stress associated with this patient population. Having a systematic and well-orchestrated approach with built in safety checks to account for human factors is a first step in providing safer care and improved outcomes.

Finally, greater reporting of adverse events, near misses and unsafe conditions is strongly encouraged since many errors may be overlooked, unknown or omitted as the event is not identified. **#EMSFORWARD**

### AREAS OF RISK & CONCERN

- Lack of training and education specific to pediatrics as well as infrequent “hands on experience”
- Severely injured/critically ill children are “high stress” events which could lead to a provider wanting to “scoop and run” rather than “stay and treat”.
- System design, especially in regards to medication administration, can lead to errors as this patient population has specific requirements that are different than adults
- Inappropriate equipment to safely secure and transport a child in an ambulance.



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## SAFETY CULTURE

**“DEVELOPING A STRONG PATIENT SAFETY CULTURE HAS THE GREATEST IMPACT ON INCIDENT REDUCTION. IT IS THE MOST IMPORTANT FACTOR IN LAYING THE FOUNDATION FOR A SAFE ENVIRONMENT FOR PATIENTS AND EMPLOYEES.”**

Healthcare organizations, EMS included, gradually develop their own unique culture, heritage, and values which are passed on to new employees. The culture is, ultimately, driven by the leadership. Many EMS organizations find their culture is somewhere between a retributive style and an authoritarian type of culture with policies and procedures enforced by punitive measures. This has led to a tradition of not admitting that a mistake was made, since the typical result is the termination of the individual who committed the error. But are errors truly the result of an individual intentionally wanting to cause harm? Research has shown that many errors in healthcare are not so much the result of an individual, but rather a compilation of human factors and systems design.

**“Medical errors most often result from a complex interplay of multiple factors. Only rarely are they due to the carelessness or misconduct of single individuals,”**  
**Lucien L. Leape, MD, Harvard School of Public Health.**

EMS operates at a fast pace and is extremely dependent on reliable systems. When a system/process fails, the outcome is not usually the fault of the provider. However, unless a provider feels safe to come forward and report a process failure it will remain flawed leaving the organization at risk for a patient event. An organization must develop a patient safety culture in which a healthcare provider feels safe to point out a process that has, or could, fail.

Just Culture, a philosophy which looks at the balance between human and system accountability, is a hot topic in safety and in the reduction of errors in today's medical industry. Implementing this philosophy can make an impact by creating a culture within an organization that encourages open dialog. This allows for mistakes, near misses and adverse events to be openly analyzed without the fear of blame.

Eunice Halverson, MA, Center for Patient Safety (CPS) Patient Specialist states, “Culture is the ‘atmosphere’ created by beliefs and attitudes which shape employee behavior. Developing a strong patient safety culture has the greatest impact on in-

cident reduction. It is the most important factor in laying the foundation for a safe environment for patients and employees.”

CPS fully supports the implementation of “Just Culture” in healthcare organizations across the continuum of care. The reporting of events is important and necessary to learn how to prevent errors from occurring. Organizations with cultures that support the open communication of errors while in a non-punitive environment (a “just” culture) are more likely to see high levels of improvement in patient safety. Just Culture reshapes our understanding of accountability, the role of the system, and the role of human behavior. It creates a consistent way to promote a safe environment by managing the system and the behavior.

Medicine, aviation and a growing number of other fields have made significant moves toward Just Culture in recent years. This is noteworthy not only because of the successes that have been achieved, but as a dramatic example of cultural shift, because Just Culture contrasts with the traditional culture in healthcare and other high-risk disciplines, which often held individuals accountable for all errors or mishaps. Although Just Culture does not hold individuals accountable for system failings over which they have no control, it is not a blame-free model. It acknowledges that humans inevitably make mistakes, and that systems should be designed to reduce the chance of harm in the event of such mistakes (Strategy for a National EMS Culture of Safety 38).

Halverson acknowledges an organization can begin to improve its culture when leaders are completely dedicated to improving patient safety and when actions emulate what they speak. “If top managers are not on board, patient safety competes with core business operations, such as productivity and profitability – and, unfortunately, patient safety almost always loses.” Halverson issues this reminder to senior leaders, “You are accountable - keep patient safety a priority!” **#EMSFORWARD**

## SECOND VICTIM INTERVENTION

**“EMS PROVIDERS ARE THE BACKBONE OF THE HEALTHCARE SYSTEM... THESE INDIVIDUALS FACE STRESS AND TRAGEDY THAT FEW OUTSIDE THEIR WORLD CAN IMAGINE. IF THE INDUSTRY IGNORES THE MENTAL HEALTH OF INDIVIDUAL PROVIDERS, IT WILL LOSE THE BEST RESOURCES.”**

It's not uncommon to read an EMS journal and learn about a provider who has taken their own life. Perhaps the suicide, or attempted suicide, of a co-worker has impacted you during your career. Unfortunately, depression and suicide among healthcare professionals traumatized by adverse events occur too often and touch many lives and organizations.

Kathy Wire, JD, MHA, CPHRM, Project Manager for the Center Patient Safety (CPS) states, “Individual EMS providers are the backbone of the healthcare system. Their ability to respond by bringing their best to work every day is critical to effective care. Yet these individuals face stress and tragedy that few outside their world can imagine. If the industry ignores the mental health of individual providers, it will lose the best resources. Conversely, efforts to acknowledge the potential fragility and humanity of providers protect them and their patients.”

How do we care for frontline EMS provider's emotional well-being? Most EMS organizations have access to Employee Assistance Programs (EAP) and Critical Stress Debriefing Programs that are designed to assist employees during their most critical hour of need. However, gaps are apparent immediately following the adverse event, when intervention/peer support could begin the healing process before the employee reaches a crisis level.

Historically, EMS leaders have worked hard to en-

courage injury prevention and promote the benefits of a balanced diet and regular exercise, but incidents which challenge a providers' emotional resiliency after an unexpected outcome are usually not discussed as openly. Much of this has to do with a culture of EMS providers not wanting to appear weak or vulnerable. However, EMS providers rely on emotional resilience to help get them through the day. Accumulated stress or unanticipated events can take a toll on this emotional resiliency, leaving a provider susceptible to depression and self-doubt as an EMS professional. When this happens to a provider, they become a second victim of the event.

CPS understands that healthcare is not just physically demanding, but also emotionally demanding. This places EMS providers at risk for becoming 'second victims'. Therefore, CPS is including The Second Victim intervention in this report as an industry call to action.

What is the Second Victim? In today's healthcare settings, clinicians face a multitude of demands requiring personal resiliency that relies on emotional defenses to carry them through the workday. Sometimes an unexpected patient outcome intensifies the emotional aftershock making it impossible for the clinician to focus on the task at hand. If not addressed, the emotional suffering may be prolonged, resulting in self-doubt regarding their future as a healthcare professional. This emotional response has been described as the second

victim phenomenon.

The Second Victim program was designed by healthcare providers for healthcare providers. It supports the provider at the unit level with a program that can be tailor-made for each organization. And lastly, it fills a gap in healthcare, that of proactive support for the provider, before they leave the profession or worse, make a decision to take their life.

When patients suffer an unexpected clinical event, healthcare clinicians involved in the care may also be impacted and are at risk of suffering as a “second victim”. Understanding this experience and recognizing the need for supportive interventions is critically important. **#EMSFORWARD**

### TOP 6 RISK FACTORS

Top six factors that put a provider at risk to become a “second victim”:

- Pediatric cases
- Multiple patients with bad outcomes
- Unexpected patient demise
- Young adult healthy patient
- Patient known to the staff
- First death on “their watch.”

## TRANSITION OF CARE

### **“PATIENT HAND-OFFS FROM PRE-HOSPITAL PROVIDERS TO THE HOSPITAL PROVIDERS IS ONE OF THE MOST IMPORTANT ELEMENTS OF SUCCESSFUL CARE FOR PATIENTS WITH SERIOUS INJURIES OR ILLNESSES.”**

A 67 year old male patient, whose chief complaint is a fever, hypotension, and weakness, is left at the emergency department by EMS. A verbal report is given by EMS to the nursing staff. After the EMS team leaves, there are questions regarding the patients' history, allergies, medications, and the events leading up to the illness as septic shock is suspected. The electronic EMS chart is not available, nor is there a copy of the verbal report from EMS. The ED staff must track down the EMS crew for more information. This leads to wasted time and resources during a potentially critical situation.

Knowledge/Information is said to be power, but for patient safety it is vital. Every day patient hand offs occur where valuable information is lost or not shared. This has become even more of an issue as many healthcare organizations, EMS included, have transitioned from paper charts to electronic health records (EHRs) and there is a lack of interoperability. Therefore, the Center for Patient Safety (CPS) is adding transitions of care to this report due to the potential for data/information to be lost or missing.

Patient hand offs can be thought of as an intersection where critical information is shared about patients between providers. These transitions occur in a variety of settings and many times the actual handoff/report is not viewed as a critical step. However, as illustrated above, this is a vital piece of the patients' care and can help determine the next steps. Anytime a transition of care takes place, EMS providers need to ensure all the information is shared in a succinct, standardized manner.

One such approach taken from TeamSTEPPS and endorsed by the Agency for Health Research and Quality is the SBAR approach:

**Situation – What is going on with the patient?**

**Background – What is the clinical background/context?**

**Assessment – What do I think the problem is?**

**Recommendation – What would I recommend?**

The SBAR approach provides a framework for team members to effectively communicate information to one another. It is an easy to remember and easy to use tool for framing any conversation requiring a clinician's immediate attention and action in any setting. Standardizing the transition of care helps to ensure the patients care is smooth, no data/information is lost and improves patient safety.

Eunice Halverson, MA, CPS Patient Safety Specialist, states, "Patient hand-offs from pre-hospital providers to the hospital providers is one of the most important elements of successful care for patients with serious injuries or illnesses. Use of a standardized communication structure is key to a successful hand-off. Effective and complete communication enhances patient safety!" As shared in the Journal of Emergency Services, E-STAT is an example of a tool that can be used:

**E = Events** (explain why you were called to pick up the patient);

**S = Subjective Findings** (what have you learned about the patient during your short time with them);

**T = Triage/Timing** (what was the patient priority and timeline of symptoms);

**A = Allergies/assessment** (any allergies you identified or other information about past medical history) and

**T = Treatment** (what care did you provide during transport).

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## RESOURCES

### 1. AIRWAY MANAGEMENT

Advances in prehospital airway management

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3982372/>

Out-of-hospital airway management in the United States

<http://www.nemsis.org/referenceMaterials/documents/ResuscitationArticle-NEM-SIS-Out-of-HospitalAirwaymanagementintheUnitedStates.pdf>

Tips for Teaching Advanced Airway Management

<http://www.jems.com/articles/print/volume-38/issue-8/training/tips-teaching-advanced-airway-management.html>

### 2. BEHAVIOR HEALTH ENCOUNTERS

JEMS.COM - Training EMS for Violent Encounters

<http://www.jems.com/articles/2009/07/training-ems-violent-encounter.html>

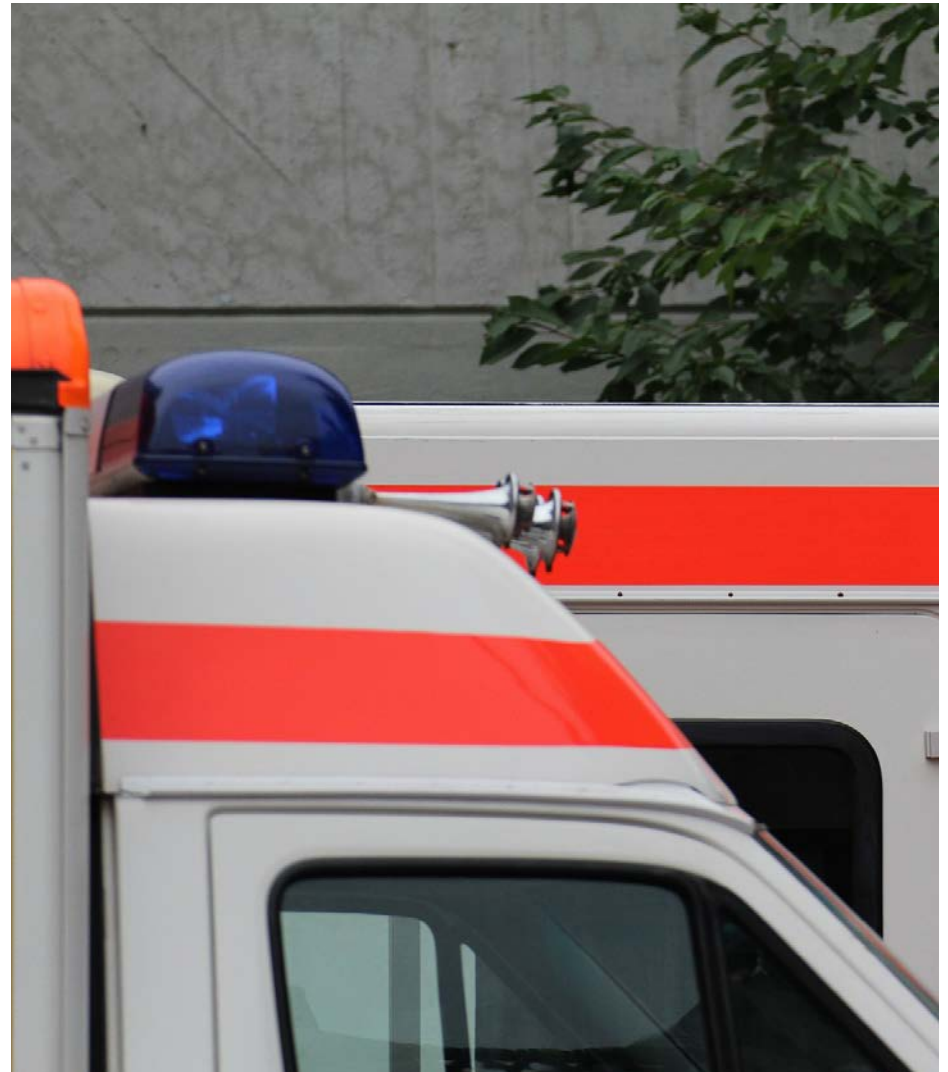
EMS World - Beyond the Basics: Behavioral Emergencies

<http://www.emsworld.com/article/10322372/beyond-the-basics-behavioral-emergencies>

Primary Psychiatry - Treatment of Psychiatric Patients in Emergency Settings

<http://primarypsychiatry.com/treatment-of-psychiatric-patients-in-emergency-settings/>

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### 3. CRASHES: AMBULANCE AND HELICOPTER EMS

NHTSA Ground Ambulance Crash Presentation

<http://www.ems.gov/pdf/GroundAmbulanceCrashesPresentation.pdf>

Ambulance Crash Characteristics in the US Defined by the Popular Press: A Retrospective Analysis

<http://www.hindawi.com/journals/emi/2010/525979/>

EMS Helicopter Crashes: What Influences Fatal Outcome?

[https://www.researchgate.net/publication/7231559\\_EMS\\_Helicopter\\_Crashes\\_What\\_Influences\\_Fatal\\_Outcome](https://www.researchgate.net/publication/7231559_EMS_Helicopter_Crashes_What_Influences_Fatal_Outcome)

Federal Aviation Fact Sheet – FAA Initiatives to Improve Helicopter Air Ambulance Safety

[http://www.faa.gov/news/fact\\_sheets/news\\_story.cfm?newsId=15794](http://www.faa.gov/news/fact_sheets/news_story.cfm?newsId=15794)

Air Ambulance Safety - A Closer Look

<http://www.flyingmag.com/aircraft/helicopters/air-ambulance-safety-closer-look>

### 4. DEVICE FAILURES

EMS1.com - How to Report EMS Medical Equipment Failures

<http://www.ems1.com/ems-products/EMS-Equipment/articles/1616972-How-to-report-EMS-medical-equipment-failures/>

fd.gov - Medical Devices

<http://www.fda.gov/MedicalDevices/default.htm>

JEMS.com - Pro Bono: How Equipment Failures Can Impact EMS Agency Liability

<http://www.jems.com/articles/print/volume-38/issue-11/administration-and-leadership/pro-bono-how-equipment-failures-can-imp.html>

### 5. MEDICATION ERRORS

EMS1.com - Quick Take: Strategies to Reduce Medication Errors

Medication administration cross check is a simple and easy to implement process to reduce medication errors

<https://www.ems1.com/patient-handling/articles/2115934-Quick-Take-Strategies-to-reduce-medication-errors/>

NCBI-Medication dosing errors in pediatric patients treated by emergency medical services.

<http://www.ncbi.nlm.nih.gov/pubmed/21999707>

JEMS.COM - Bad Medicine: Preventing Drug Errors in the Prehospital Setting

<http://www.jems.com/articles/print/volume-33/issue-10/patient-care/bad-medicine-preventing-drug-e.html>

### 6. MOBILE INTEGRATED HEALTH SAFETY

NAEMT-What is MIH-CP

<http://www.naemt.org/Files/CommunityParamedicineGrid/MIHVision022814.pdf>

NCSL - Beyond 911: State and Community Strategies for Expanding the Primary Care Role of First Responders

<http://www.ncsl.org/research/health/expanding-the-primary-care-role-of-first-responder.aspx>

ACEP - Medical Direction of Mobile Integrated Healthcare and Community Paramedicine Programs

<http://www.acep.org/Physician-Resources/Policies/Policy-statements/EMS/Medical-Direction-of-Mobile-Integrated-Healthcare-and-Community-Paramedicine-Programs/>

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## 7. PEDIATRICS

EMS for Children National Resource Center

<http://emscnrc.org/>

Pediatric Patient Safety in Emergency Medical Services

[http://www.stlouischildrens.org/sites/default/files/health\\_professionals/EMS\\_Connections/PediatricPatientSafetyArticle.pdf](http://www.stlouischildrens.org/sites/default/files/health_professionals/EMS_Connections/PediatricPatientSafetyArticle.pdf)

Principles of Patient Safety in Pediatrics

National Initiative for Children's Health Care Quality Project Advisory Committee

<http://pediatrics.aappublications.org/content/107/6/1473.full>

## 8. SAFETY CULTURE

Strategy for a National EMS Culture of Safety

<http://www.emscultureofsafety.org/wp-content/uploads/2013/10/Strategy-for-a-National-EMS-Culture-of-Safety-10-03-13.pdf>

Institute for Healthcare Improvement - Develop a Culture of Safety

<http://www.ihl.org/resources/Pages/Changes/DevelopaCultureofSafety.aspx>

Center for Patient Safety - Just Culture in EMS

<http://www.centerforpatientsafety.org/just-culture-in-ems/>

## 9. SECOND VICTIM INTERVENTION

NAEMT

<http://www.naemt.org/emshealthsafety/ems-mental-health>

Second Victim

<http://www.muhealth.org/about/qualityofcare/office-of-clinical-effectiveness/for-you-team/caring-for-caregivers/>

## 10. TRANSITION OF CARE

AHRQ - SBAR Technique for Communication: A Situational Briefing Model

<https://innovations.ahrq.gov/qualitytools/sbar-technique-communication-situational-briefing-model>

AHRQ - Handoffs and Transitions

<https://psnet.ahrq.gov/perspectives/perspective/170>

Transfer of Patient Care Between EMS Providers and Receiving Facilities

<http://www.conovers.org/ftp/ACEP-2014-Transfer-of-Care-Position-Statement.pdf>



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