

# 2025 National EMS Medical Directors Course and Practicum®

## Student Case Study Booklet



**2025**  
ANNUAL  
MEETING

Specialty  
Workshops,  
Scientific  
Assembly &  
Trade Show

**January 6-11, 2025**  
Manchester Grand Hyatt San Diego  
San Diego, CA



This booklet is for use of faculty and students of the 2025 National EMS Medical Directors Course and Practicum® and shall not be used for unauthorized purposes or reproduction.

## NAEMSP® National EMS Medical Directors Course and Practicum® Case Studies in EMS Problem Solving

The following case studies form the heart of the NAEMSP® Medical Director's Course and are designed to stimulate discussion among participants with the support of course faculty. **Please review these in advance of each day's breakout sessions.**

You are asked to review and manage the cases as an EMS medical director. We will allocate approximately 15 minutes for discussion of each case. The cases reflect common problems faced by EMS medical directors. The diverse background, knowledge, and experience you bring as participants will provide for varied perspectives. The group discussion is meant to enhance your insight into these challenges and increase your problem solving strategies. Active participation will increase the value of these sessions and the course overall.

We appreciate any feedback you have on the cases and suggestions you have to improve them. These are real cases and we welcome case submission from you after this course, to be discussed in this forum at a future year's course.

We have also included some resources that provide more detail on the topics addressed in the cases for your reference either during or after the course.

We hope you find these case discussions educational and stimulating.

## Table of Contents

[Case Study 1](#)

[Case Study 2](#)

[Case Study 3](#)

[Case Study 4](#)

[Case Study 5](#)

[Case Study 6](#)

[Case Study 7](#)

[Case Study 8](#)

[Case Study 9](#)

[Case Study 10](#)

[Case Study 11](#)

[Case Study 12](#)

[Case Study 13](#)

[Case Study 14](#)

[Case Study 15](#)

[Case Study 16](#)

[Case Study 17](#)

[Case Study 18](#)

[Case Study 19](#)

[Case Study 20](#)

[Case Study 21](#)

[Case Study 22](#)

[Case Study 23](#)

[Case Study 24](#)

[Finance Case Study](#)

[QI Case Study](#)

## Case Study #1

### Case Presentation

You are asked by the Chief of Trauma at a local trauma center to investigate a case of a potential misplaced endotracheal tube. The physician states that one of your ALS units brought in a 21-year-old male with a gunshot wound to the chest. The patient was found pulseless by EMS, CPR was started, transport was initiated, and interventions en route included a peripheral IV and endotracheal intubation. **[ePCR, cardiac waveform]**

Upon arrival at the trauma center, an emergency medicine resident looked in the airway with a video laryngoscope and stated that the ET tube was in place. However, when the trauma team performed a thoracotomy, they noted that neither lung was inflating with ventilation and a more careful look with video laryngoscopy showed the ET tube in the esophagus. The patient was re-intubated and placement was confirmed by observing both lungs inflating with ventilation.

No reversible cause was identified upon inspection of the heart and surrounding structures. The patient failed additional resuscitation efforts in the trauma bay and the patient was pronounced.

### Learning Objectives

- The gold standard for endotracheal tube confirmation is sustained waveform capnography end tidal CO<sub>2</sub> measurement.
- QA/QI plans for endotracheal intubation should include review of the ETCO<sub>2</sub> data, video files from video laryngoscopy (when available), and EMS patient care report.

### Resources

Katz SH, Falk JL. Misplaced endotracheal tubes by paramedics in an urban emergency medical services system. *Ann Emerg Med.* 2001 Jan;37(1):32-7. [10.1067/mem.2001.112098](https://doi.org/10.1067/mem.2001.112098)

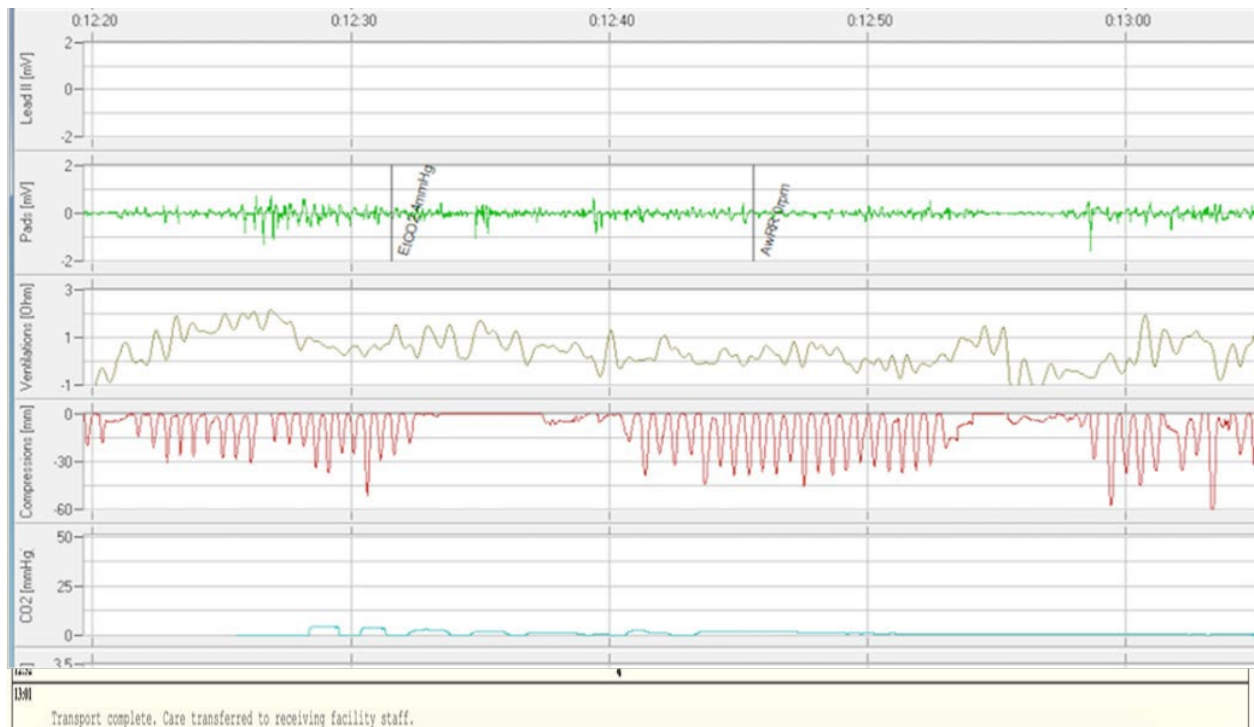
Silvestri et al. The Effectiveness of Out-of-Hospital Use of Continuous End-Tidal Carbon Dioxide Monitoring on the Rate of Unrecognized Misplaced Intubation Within a Regional Emergency Medical Services System. *Ann Emerg Med.* 2005. doi:10.1016/j.annemergmed.2004.09.014

# Case Study #1

## [ePCR]

Chief Complaint (Category: Traumatic Arrest)									
Traumatic Arrest									
ALS Assessment: Completed for Suspected Illness									
History of Present Illness									
Medic 1 dispatched for an unknown age male who had been shot. Upon EMS arrival, the patient was found laying on the sidewalk. The patient was pulseless and apneic. A bullet hole was located in the patient's back. ACLS initiated. An 18G IV was inserted in the patient's left EJ. The patient was intubated with a 7.5 tube. Asystole on the monitor. The patient was transported to UPMC Presbyterian for treatment. Care was transferred to receiving facility staff.									
Time	H.R.	B.P.	RA SpO2	ETCO2	Resp	Rhythm	GCS	ECC Method	
	H.R. Method	Method	LOC		Resp Effort				
Action Comment									
12:39	Arrived on scene.								
12:40	0	0 / 0 Manual Cuff	0 Unresponsive		0 Absent		1/1/1		
Baseline vitals obtained.									
12:41	Cada: CPR performed by [REDACTED]. Successful.								
12:45	Transport to UPMC Presbyterian initiated.								
12:47	Intra IV Peripheral IV initiated by [REDACTED] with 18ga. at Left External Jugular. Attempts: 1, successful.								
12:50	Intra ORotracheal Intubation by [REDACTED] with 7.5, 23cm at lips. Attempts: 1, successful. Placement verified via: Capnography (Waveform), Moisture in Tube, Direct Visualization. Verification by: Another Person on the Same Crew. Secured via Commercial Device.								
12:52	4								
13:01	Transport complete. Care transferred to receiving facility staff.								

## [cardiac waveform]



## Case Study #2

### Case Presentation

You are asked by the local police to investigate two ambulance crashes in your community.

In the first event, a 47 y/o female turned into the path of an ambulance that was responding with lights and sirens to a call. The female was dead at the scene and both EMS employees were seriously injured.

In the second event, six people were injured when an SUV broadsided an ambulance that was driving through a red light in response to an emergency. The SUV was in the far right lane of traffic and cars in the other lanes had stopped to allow the ambulance to proceed. No one involved sustained life-threatening injuries.

### Learning Objectives

- Lights and sirens response and transport are deliberate interventions; they have risks and benefits, and these must be weighed both at the system and on the individual call level.
- Insurance agencies often look for training and policies to be in place to minimize risk for these operations.
- The medical director can and should have direct influence on these policies, impacting safety of the patient, the crew, and the community in general.

### Resources

Kahn, CA., Pirrallo, RG. and Kuhn, EM. (2001) "Characteristics of Fatal Ambulance Crashes in the United States: an 11-year Retrospective Analysis". *Prehospital Emergency Care*, 5:3, 261 – 269. DOI: <https://doi.org/10.1080/10903120190939751>

Kupas DF, Zavadsky M, Burton B, et al. Joint Statement on Lights & Siren Vehicle Operations on Emergency Medical Services Responses. *Prehosp Emerg Care* . 2022 May-Jun; 26(3): 459-461. <https://doi.org/10.1080/10903127.2022.2044417>

"Lights and Sirens Use by EMS", a NHTSA work product, May 2017.

## Case Study #3

### **Case Presentation**

An ALS unit is on scene with two pediatric patients involved in a motor scooter crash. Paramedics report that the father of the children is on scene and is refusing to allow them to be evaluated for treatment and transfer. He indicates that he is a physician on staff at your hospital and he has checked them out and they are fine. Paramedics are concerned for the welfare of the children and contact online medical direction for assistance.

**[Supplemental Material: Paramedic report Audio File 1; Medical Control discussion with parent Audio File 2]**

### **Learning Objectives**

- Medical directors and other physicians who provide online medical direction play a key role in ensuring safety for their patients, especially the most vulnerable among our population.
- Physicians on scene can cause various problems for EMS; having a plan in advance for how to handle the general physician-on-scene scenarios is key.

### **Resources**

“Out of Hospital Medical Direction and the Intervener Physician”. ACEP Policy Statement, June 2024. <https://www.acep.org/patient-care/policy-statements/out-of-hospital-medical-direction-and-the-intervener-physician>

## Case Study #4

### Case Presentation

A 53-year-old male was found down at 9:20 PM by a resident of a community who had gone out to his car to retrieve an item. The bystander activated 9-1-1 and emergency responders were dispatched to the scene for a “man down.” The initial assessment was performed by a fire first response unit and did not detect any serious injury. The patient’s mentation was altered, he was not able to speak, and his GCS was 6. The patient had also vomited and a presumptive diagnosis of alcohol intoxication was made by the EMS crew. The patient was evaluated and transported by a second unit with lights and sirens to a busy receiving hospital that served as the local trauma center but was not the closest appropriate facility as per protocol. A subsequent allegation is that the patient was taken to that institution because it was closer to one of the responders’ homes.

Earlier that evening, the receiving hospital requested that it be allowed to divert because it was at capacity; this request was denied by the local health department. The patient was triaged to a hallway as non-emergent by the nursing staff for more than an hour. Upon evaluation by the ED providers, he was diagnosed with a critical brain injury for which he was taken to the OR.

The medical director for that agency was working in the same ED that night. The crew were placed out of service and asked to write an incident report.

Later that evening, the EMS medical director receives a call from the mayor asking about what happened with this patient, the former editor of a high-profile newspaper.

The patient subsequently went to the OR and died 4 days later.

### [Supplemental Materials: EMS Station Log (see below)]

### Learning Objectives

- High profile cases often shine a light on complicated cultural issues within an organization.
- EMS Physicians should understand and be engaged in decision-making around hospital diversion policies and practices within their community and EMS system.
- Handling press inquiries is a difficult facet of EMS medical direction. First steps include referring inquiries to agency experts and working with those experts to develop a crisis communication plan once facts are known.

### Resources

Willoughby CJ. Summary of Special Report: Emergency Response to the Assault on David E. Rosenbaum. Willoughby CJ. Summary of Special Report: Emergency Response to the Assault on David E. Rosenbaum. <http://www.dwatch.com/govern/ig0606.html>

[Herman P. Audit Finds DC Fire Officials Failed to Implement Overhauls after 2006 Death.](#) Washington Post. June 18, 2015.



[EMS Station Log]

\* Saturday [redacted] 4, 2005

i, ai! t. A: - - - - -

[redacted] (S" CIBa) <e-1S - - - - - W 15:1 e:f

Dil. - - - - -

1302 65408	1324	N/T	[redacted] Ave S. Gas in eye 35 yk,
1313 65418	1357	N/T	[redacted] St. SE !! .9.5.4>" Syncope. PT worked.
1439 65247	1534	T-13	[redacted] SE 63 y/o ♀ TROUBLE Breathing
1606 65210	1731	T-2	[redacted] PL 1<1<-10 # Regulation of pills
2023 65609	2032	N/T	[redacted] SE 90 y/o ♀ PDDA
2148 65168	2210	T-5	[redacted] SE 53 y/o ♂ Dunk & stupid
<del>2220</del> 65172	0100	T-1	[redacted] SE 41 y/o ♂ locked jaw

SUNDAY [redacted] 5, 2005

11! - - - - - f - - - - -

#/K [redacted] AND F/K [redacted]  
RFD ON AIV Keck 2 radios, All equipment checked  
AND OK

1350 65913	1600	T-5	[redacted] ST Ne 37 yof sickel Cell Attack
1530 65953	1600	N/T	[redacted] No Se No Patient Found
1717 65983	1800	N/T	[redacted] N' v-t... oJ-J>< Jfil

## Case Study #5

### Case Presentation

You have received a request from a supervisor of a large regional 9-1-1 center to evaluate the performance of a telecommunicator in the management of a difficult 9-1-1 call. This request was emailed to you and includes a recording of the call in which a telecommunicator provides pre-arrival CPR instruction to the caller who witnessed a cardiac arrest. The patient survived to hospital discharge and has done well.

The unedited recording of the call was 8 minutes and 42 seconds.

The presented recordings were edited to remove confirmation of location and address (prior to recording 1), a section on moving patient (between 1 and 2) and CPR instruction (after recording 2).

### [Supplemental Material: Dispatch audio]

Recording 1 Time Stamp 1:10-2:04

Recording 2 Time Stamp 3:20-5:20

### Learning Objectives

- Physician involvement at dispatch centers is a key component in a high functioning system of care.
- The more we learn about cardiac arrest systems of care that are high performing, the more we appreciate the vital role that telecommunicators play in these systems. Telecommunicator CPR can be one of the biggest factors in a high functioning system of care for OHCA.
- QI/QA programs including call review, debrief, and feedback with patient outcomes are excellent interventions that are thought to yield improved performance and patient survival.

### Resources

Kurz MC, Bobrow BJ, Buckingham J, et al. "Telecommunicator Cardiopulmonary Resuscitation: A Policy Statement from the American Heart Association". *Circulation*. 2020, 141:e686-700. <https://doi.org/10.1161/CIR.0000000000000744>

Bobrow BJ, Panczyk M, and Subido C. "Dispatch-Assisted Cardiopulmonary Resuscitation: The Anchor Link in the Chain of Survival". *Current Opinions in Critical Care*, 2012, 18:228-233. <http://dx.doi.org/10.1097/MCC.0b013e328351736b>

## Case Study #6

### Case Presentation

The medical director is asked to review a recent case where a BLS crew was asked to evaluate an unresponsive patient for possible DOA status. The EMT's Patient Care Report, the CAD notes, EMT written statements, and the state Termination of Resuscitation protocol are attached for review.

Scene Information
<p><b>Description:</b> Ems found a male lying face down on the floor wedged between a nightstand and a mattress. Male had a coat on and was naked from the waist down. The apartment was cold and Poor living conditions.</p> <p><b>First Agency Unit on Scene?:</b> Yes</p>
History of Present Illness
<p>Ems called for a male that was found doa. Update from dispatch was this was an expected death and another comment said life status was questionable. Upon arrival ems Was directed to the rear apartment. Ems found a male lying face down on the floor wedged between a nightstand and a mattress. Male had a coat on and was naked from the waist down. No obvious signs of life. The apartment was cold and poor living conditions. Ems was working with flashlights to see. Male had what appeared to be scratches on his lower back and the back of his legs. Pt. Also appeared to have blood pooling in the back of his legs from the waist down. Upon touching the male/feeling for a pulse male was extremely cold and no palpable pulses were found via carotid or radial. Ems originally called for a doa time.</p> <p>Police officer on scene saw something move around the male and thought the male was breathing. EMS attempted to move the male onto his back when he became responsive. ems and police were able to get the male onto the bed. Male was unsure how long he was on the floor or what happened to him. Male had swelling around his right eye and what appeared to be blood pulling from the knees down to his feet. Male also had an abrasion to the forehead. A47 was unable to get vitals. Upon arrival of ALS Care was transferred to ALS. BLS crew assisted with extrication.</p>

Case Study #6

16:45:08est	CREATE	Location: xxx TypeDesc: DEATH QUESTIONABLE - COLD/STIFF IN RD Priority:E1
16:48:33	ENTRY	Comment: Medical ProQA recommends dispatch at this time
16:48:33	PROQA	Case09D2A Comment:65-YEAR-OLD, MALE, CONSCIOUSNESS UNKNOWN, BREATHING STATUS UNKNOWN. CC TEXT: EXPECTED DEATH CALLER STATEMENT: 65 YOM EXPECTED DEATH CAD RESPONSE: DELTA DISPATCH CODE: 09D02
16:48:57	DISP	BLS Unit, ALS Unit, Rescue Truck
16:50:10	INFO	Comment: S/C LANDLORDS DAUGHTER / STATES MALE WAS SUPPOSED TO BE OUT OF THE HOME AND SHE JUST WENT IN AND FOUND THE MALE FACE FIRST ON THE FLOOR

16:50:49	INFO	Comment: CALLER RAN OUT OF THE HOME AND STATED THE MALE WAS DEATH BUT COULD NOT CONFIRM / CALLER WOULD NOT CHECK FOR BREATHING /
16:51:12	INFO	Comment: CALLER STATED SHE THOUGHT THE MALE WAS BEYOND HELP BUT DID NOT CONFIRM
16:54:25	*ONSCN	BLS Unit On Scene
16:56:35	MISCA	Comment: ****TIME 1656****
16:57:33	MISCA	EMTs PRONOUNCED AT 1656
17:00:01	MISCA	Comment: FROM Police unit 337 NOT A DOA, MALE STARTING TO MOVE SCRATCH THE DOA, MALE IS MOVING
17:00:53	-ASSOC	BLS Unit going back into residence
17:19:54		ALS Unit on scene
17:24:44	TRANSP	ALS Transporting patient to hospital Not a cardiac arrest

EMT Statements

EMT 1

*I was carrying equipment down the steps and met my partner coming up the steps. He said the patient was DOA so we returned to the truck. The police officer on scene radioed for us to come back to the basement because the patient was moving.*

EMT 2

*We were dispatched to a suspected DOA. I arrived on scene and said to the police officer, "I think the patient is dead." He agreed. The patient was prone, it was in a dark and cramped area. The patient was cold to the touch. I could not feel pulses and the patient had blood pooling in the back of his legs. I thought he was DOA and did not want to disturb the scene. I returned to my vehicle but then the police officer radioed that the patient moved. I returned to the basement*

## Case Study #6

*and rolled the patient over and he began to mumble. We initiated BLS care and told the ALS unit to continue.*

### State Protocol at time of call

**DEAD ON ARRIVAL (DOA)  
STATEWIDE BLS PROTOCOL**

**Criteria:**

- A.** Patient presenting with the following
  1. Decomposition
  2. Rigor mortis (Caution: do not confuse with stiffness due to cold environment)
  3. Dependent lividity
  4. Decapitation
  5. Unwitnessed cardiac arrest of traumatic cause
  6. Traumatic cardiac arrest in entrapped patient with severe injury that is not compatible with life.
  7. Incineration
  8. Submersion greater than 1 hour
- B.** In cases of mass casualty incidents where the number of seriously injured patients exceeds the providers and resources to care for them, any patient who is apneic and pulseless may be triaged as DOA. <sup>1</sup>

**Exclusion Criteria:**

- A.** Obviously pregnant patient with cardiac arrest after trauma, if cardiac arrest was witnessed by EMS practitioners. These patients should receive resuscitation and immediate transport to the closest receiving facility. See Trauma Patient Destination Protocol # 180.
- B.** Hypothermia. These patients may be apneic, pulseless, and stiff. Resuscitation should be attempted in hypothermia cases unless body temperature is the same as the surrounding temperature and other signs of death are present (decomposition, lividity, etc...). See hypothermia protocol #681.

**Treatment:**

- A. All patients:**
  1. Initial Patient Contact – see Protocol # 201.
  2. Verify pulseless and apneic.
  3. Verify patient meets DOA criteria listed above.
    - a. **If any doubt exists, initiate resuscitation and follow Cardiac Arrest Protocol # 331 and consider medical command contact.**
    - b. If patient meets DOA criteria listed above, ALS should be cancelled.
  4. If the scene is a suspected crime scene, see Crime Scene Preservation Guidelines #919.
  5. In all cases where death has been determined, notify the Coroner or Medical Examiner's office or investigating agency. Follow the direction of the Coroner or Medical Examiner's office/investigating agency regarding custody of the body.

### Hospital Follow Up

In the ED, the patient was awake but confused. His core temperature was 32<sup>0</sup> C. He was COVID positive and had significant rhabdomyolysis. He survived to hospital discharge.

## Case Study #6

### Learning Objectives

- In many systems, Paramedics and even EMTs are empowered to declare death in the field. Some systems require medical direction consultation. Usually there is a systematized approach to these decisions to improve accuracy and reduce bias.

### Resources

Verbeek PR, Vermeulen MJ, Ali FH, et al. "Derivation of a Termination-of-resuscitation Guideline for Emergency Medical Technicians using Automated External Defibrillators". Academic Emergency Medicine. July 2002, 9:7, 671-8. <https://doi.org/10.1197/aemj.9.7.671>

Morrison LJ, Verbeek PR, Chan C, et al. "Validation of a Universal Prehospital Termination of Resuscitation Clinical Prediction Rule for Advanced and Basic Life Support Providers". Resuscitation. March 2009, 80:3, 324-8. <https://doi.org/10.1016/j.resuscitation.2008.11.014>

## Case Study #7

### Case Presentation

A 28 y/o female G2P1 at 26 weeks walks into a small community hospital, which lacks OB services (Hospital A). She complains of diarrhea and crampy lower abdominal pain. The emergency physician examines the patient and determines that she is in labor. She had spontaneous rupture of membranes and her cervical os is dilated to 1 cm. The physician calls the hospital 1 hour away that has inpatient OB services (Hospital B). They refuse the transfer, stating that they cannot care for premature deliveries <900 grams. The physician then calls a tertiary care facility 1.5 hours away by ground, who accepts the transfer (Hospital C).

The local EMS agency is called for transportation. En route to Hospital C, the patient's pain increases. The paramedic identifies that delivery is imminent. The driver reroutes the patient to a closer hospital along the route, which does have OB but no dedicated NICU services (Hospital D). The delivery occurs en route to hospital D, resuscitation is initiated by the paramedic, and the child arrives gray and cyanotic but with a pulse. The child is resuscitated by hospital D, is transferred via air to hospital C, and has a predictably stormy course.

Hospitals, A, B, and C are named in the suit, as is the ambulance company and the EMS medical director for the agency – for transporting a patient outside of their scope of practice, not having sufficient equipment to handle a 26-week gestation infant, and not having appropriate policies in place to prevent paramedics from accepting patients outside of their scope of practice. The EMS agency lost the case and went bankrupt. The hospitals A and B settled for an undisclosed amount.

### Learning Objectives

- While the transferring physician is responsible for determining patient stability and level of transport, the EMS agency and Medical Director also have responsibility to ensure policies regarding accepting transfers, necessary equipment, and scope of practice to care for patients.
- Policies should provide a mechanism for EMS clinicians to refuse transfers if they are outside their scope of practice.
- One should consider alternative resources, including air medical transport, CCT, and/or additional staff when the clinical presentation exceeds capabilities of routine ground EMS clinicians.
- Unplanned delivery out-of-hospital puts the infant and mother at greater risk than delivery at a hospital with ED and/or basic OB services with subsequent transfer.
- As perinatal services and other specialty services decrease, the need for transfer is likely to increase. Advanced planning and coordination with hospitals can help to reduce risk.

### Resources

Flanagan et al. Is unplanned out-of-hospital birth managed by paramedics 'infrequent', 'normal' and 'uncomplicated'? BMC Pregnancy and Childbirth. 2017. DOI: [10.1186/s12884-017-1617-9](https://doi.org/10.1186/s12884-017-1617-9)

## Case Study #8

### Case Presentation

You are the EMS medical director for a small, tribal-run EMS agency that serves a remote Native American reservation 60 miles from the nearest trauma center. You receive a phone consult from one of the EMT-Intermediates requesting medical advice. He is a member of the tribe and is part of the EMS crew providing standby EMS coverage at a tribal ceremony that is closed to non-tribal members. During the ceremony, the crew was summoned to treat an 11-year-old boy who jumped off a low retaining wall (approximately two feet high) and immediately felt a pop and pain in his left knee. He suffered no other injury but is now in significant pain with swelling and deformity of the left knee. The EMT-Intermediate reports that the patient's left patella appears dislocated laterally. Vital signs are BP 125/85, HR 115, RR 20, SpO<sub>2</sub> 97%. Dorsalis pedis pulse on the left foot is strong and regular.

The EMT-Intermediate is now approximately 100 yards away from the patient in the only area that has cell phone signal. He left the patient in care of his EMT-B partner and a Traditional Healer (Medicine Woman). Both the EMT-Intermediate and the Medicine Woman think the patient has a left patella dislocation. The EMT-Intermediate indicates that the Medicine Woman wishes to reduce the dislocation, and asks your thoughts on whether he should provide fentanyl for pain relief before she attempts the reduction. The EMT-Intermediate suspects the patient's parents will decline transport to the hospital should the patella be successfully reduced.

### Background

- EMT-Intermediates are allowed to administer fentanyl per EMS scope of practice.
- No EMS clinicians are allowed to perform joint reductions per EMS scope of practice.
- Traditional Healers are not recognized or licensed as EMS clinicians in the state.
- Tribal members experiencing medical or traumatic emergencies at such ceremonies are often reticent to leave the ceremony, even for emergent medical care.

### Learning Objectives

- Many cultures hold medical beliefs that are different from the Western medical beliefs upon which most EMS treatments are based. Additionally, individual members of such cultures may have variable adherence to their cultural beliefs and may simultaneously value their own cultural medical beliefs and Western medical beliefs. It is important for EMS clinicians and EMS physicians to realize when this is the case in their community, and, when such situations present on an EMS scene, strive to provide the best care possible while also respecting a patient's medical beliefs.
- EMS laws and regulations vary significantly between states. Tribal/sovereign and federal EMS agencies are not necessarily covered by state EMS laws and regulations. However, in absence of applicable federal or tribal laws, such agencies may be wise to voluntarily follow state EMS regulations. EMS physicians working with tribal/sovereign and federal EMS agencies must understand the laws and regulations governing their EMS agencies and provide appropriate guidance.
- EMS licensure levels and scopes of practice vary across the United States and internationally. EMS physicians should be aware of the licensure levels and scopes of practice of EMS clinicians in their state and agency.



## Case Study #8

- Non-EMS medical providers can cause confusion and even harm and liability on EMS scenes. EMS agencies and medical directors must have clear policies on how to handle these providers in such situations.

### Resources

[National EMS Scope of Practice Model](#). National Highway Traffic Safety Administration. 2021.  
Example EMT-I Scope of Practice. [New Mexico Administrative Code 7.27.11 Emergency Medical Services Supplemental Licensing Provisions](#).

## Case Study #9

### Case Presentation

You are called by an irate father questioning the triage protocols and air medical use decisions in your EMS system. You learn that his 12-year-old daughter was at summer camp and was found by other campers in the bathroom holding her head and crying after an unwitnessed fall. The child's counselor called the camp nurse who moved the child to the medical office and called 9-1-1. Local EMS and fire personnel responded to the camp and assessed the child. The paramedic documented that the child was A&Ox4 and able to respond to questions, but also documented a GCS of 4 and noted the child had been found "unresponsive" by camp personnel.

Ground EMS called for air medical transport to the pediatric trauma center due to concern for a possible occult intracranial injury, bypassing the closest hospital with 24-hour emergency department and the closest trauma center. Documentation by air medical EMS services identified the patient as A&Ox4 with GCS of 15. Vital signs were stable throughout the transport. The patient arrived at the pediatric trauma center 1 hour 26 minutes after the event with stable vitals and GCS of 15. The child was discharged back to the camp less than 2 hours after arrival with no identified injury. The parents were not notified of the event and were not told their child was being transported via helicopter.

### [Supplemental Materials: Event Timeline, Patient Care Record (see below)]

Per the timeline, the child would have arrived at the closest ED via ground transport at least 30 minutes prior to arrival at TC. In addition to being concerned that his child was transported by a medical helicopter, which he considers "dangerous," the father explains that the insurance company will only allow reimbursement for ground transport to the closest ED; the air medical service charge for the lift off and 31-mile flight is \$28,000 and a \$11,000 Emergency Department bill. The family's health plan has a \$5000 deductible, and while the No Surprises Act (NSA) prohibits balanced billing, the family is responsible for the deductible and in some cases copays and coinsurance. The father received a bill for \$5,000 representing a significant financial hardship for the family. He believes this is an EMS system failure and requests your intervention with the EMS services since they have not responded favorably to his prior communications.

### Learning Objectives

- EMS agencies should have specific criteria for air medical use and a process for quality assurance.
- Documentation is important in these cases to clearly indicate the rationale for air medical use.
- Parental consent should be attempted and obtained prior to treatment and transport of minors whenever feasible.

## Case Study #9

### **Resources**

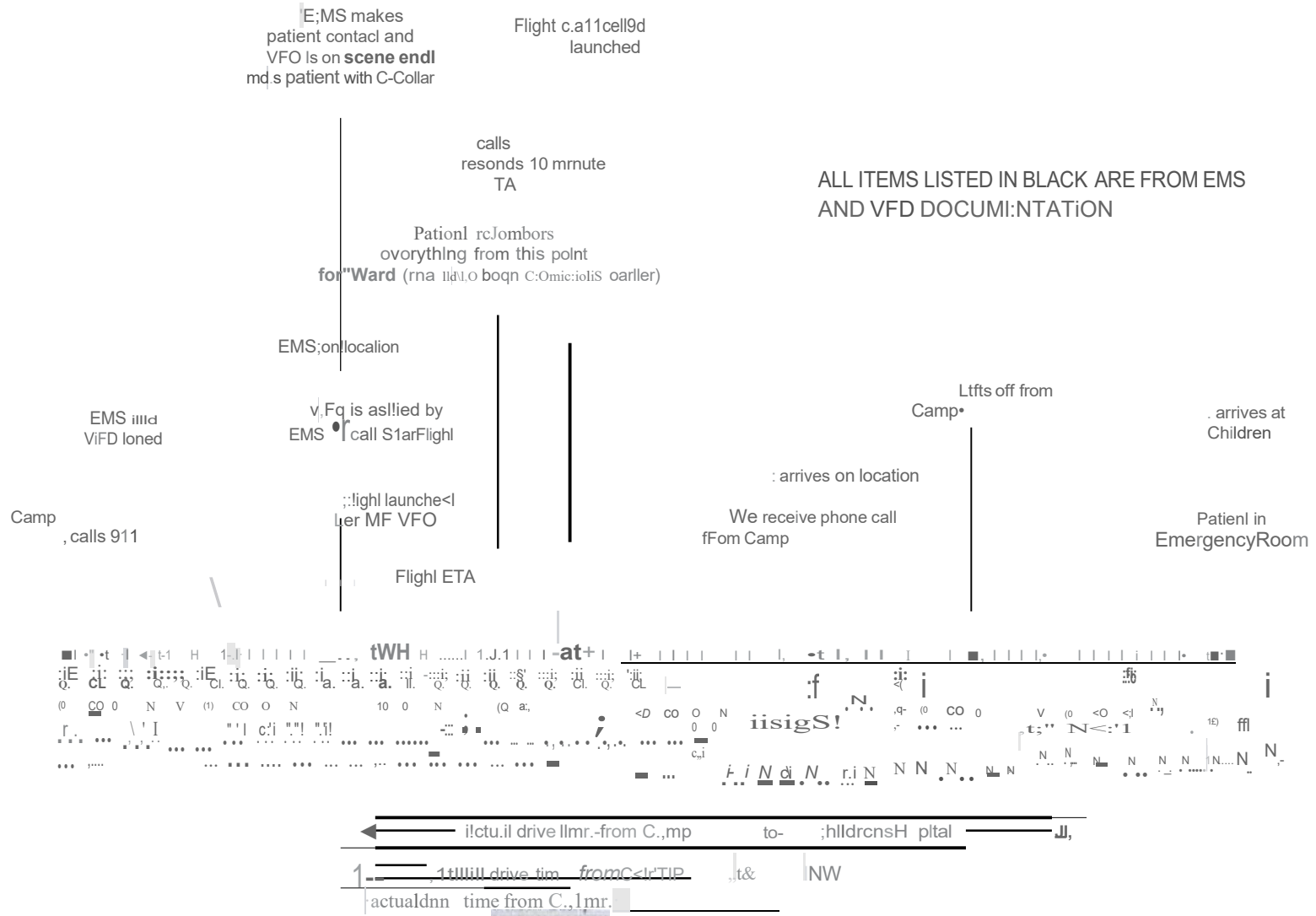
Floccare et al. Appropriate and Safe Utilization of Helicopter Emergency Medical Services A Joint Position Statement with Resource Document. PEC. 2013.

<https://doi.org/10.3109/10903127.2013.804139>

Air Ambulance: Available Data Show Privately Insured Patients are at Financial Risk. US Government Accountability Office Report to Congressional Committees.

<https://www.gao.gov/assets/700/698332.pdf>

[Event Timeline]



- 1] Patient had an unobserved accident before 11:16pm.
- 2] Counselor who first found patient said ... was not fully conscious but was crying and holding her head.
- 3] Staff moved patient from cabin to infirmary. Nurse had limited communication with patient and used term "unresponsive".
- 4] Documentation from ... showed AA0x4, Total G(S;4, and some verbal communications. Specific timing unclear.
- 5] July 27 discussion with I ... was told that Natalie was unconscious for 3-4 minutes after they arrived.
- 6] Sept. 3 discussions with ... I was told that the AA0x4 entry was in error. Fire fighters stated that patient was unconscious till helicopter arrival.
- 7] Interesting to note that silence of unconsciousness played such a big part of decision for air transport, that 110 one documented time of conscious.

Case Study #9

[Patient Care Record]

		AMBULANCE RECORD	
		...age .s or ti	
Sequence Chart			
Date	Time	Event	Notes
	00:03	Vitals	BP 137/96, Pulse 92. Respirations 10 taken by
	23:19	Received	
	23:40	Dispatched	
	23:40	Enroute	
	23:34	On Location	
	23:35	Patient Contact	
	23:36	Helicopter Called	VFD called for flight ETA 35 minutes
	23:43	Other Event	Blood Glucose monitorin was performed by
	23:40	Blood Sugar Level	and found to be 18 mg/dL.
	23:45	IV/IO	As, 20a IV as attempted in the Antecubital-Lefby without success. Blood was not drawn
	23:46	Helicopter Called	VFD called for
	23:50	Other Event	flight cancelled, accepted enroute scene with 10 minute ETA
	23:52	Vitals	BP 100/50. Pulse 88, Respirations 20, SPO2 98% ta
	23:53	Oxygen	Capnogram square 2.00 LPM.
	23:53	Capnography (W/Out Intubation)	
	23:53	Assessment	12/11/10 assessment 6/10
	23:55	Vital	BP 134/85. Pulse 88. Respirations 15. SPO2 100% O2 taken by
	23:35	C-Collar Only	Pt found with C-Collar in place by VFD
	23:36	Spinal Motion Restriction	
	23:36	Backboard Only	
	00:03	Vitals	BP 137/96, Pulse 92. Respirations 10 taken by
	23:39	EKG	Normal sinus Rhythm noted in II.
	23:55	IV/IO	An 20g IV was attempted in the Antecubital-Right by with success. Blood was not drawn
	00:08	Helicopter Arrived	at LL, W=
	00:35	Dispatched Location	
	00:19	Helicopter Departed	enroute to Childrens Medical Center of
	00:35	In Service	

<b>AMBULANCE RECORD</b>		
Page 4 of 6		
<b>Monitor Events</b>		
<b>Case 201006262353180031345354</b>		
Time	Event	Vitals
23:53:18	Power On	
23:55:31	NIBP	Saturation 99; PulseRate 90; CO2 41; RespRate 21; Systolic 134; Diastolic 88; Mean 110; PulseRate 86
23:55:35	Low Battery	
23:58:15	Vital Signs	Saturation 100; PulseRate 87; CO2 13; RespRate 14
23:58:35	Alarm Apnea	Saturation 100; PulseRate 86
23:59:52	Alarm Apnea	Saturation 99; PulseRate 105; CO2 20; RespRate 10
00:03:02	NIBP	Saturation 99; PulseRate 90; CO2 29; RespRate 11; Systolic 137; Diastolic 96; Mean 109; PulseRate 86
00:03:15	Vital Signs	Saturation 99; PulseRate 94; CO2 29; RespRate 10
00:08:15	Vital Signs	
00:13:15	Vital Signs	
00:18:02	NIBP	
00:18:10	Power Off	
<b>Patient Assessment at Destination</b>		
N/A		
<b>Department Specifics</b>		
<b>Category</b>	<b>Selection</b>	
District Location	Burnet County Z 1	
Truck Number	5496	
<b>Narrative</b>		
<p>&lt;S&gt; Pt was under the supervision of _____ and other personnel at Camp _____ in _____ Pt was found unresponsive on bathroom floor just after 2300. Pt moved to "infirmary". Pt has been breathing and with stable vital signs since she was found until we arrived. Pt health information provided by camp staff and included in "Facesheet" documentation. Pt reported "tripping and falling in bathroom". She reported pain at her forehead. She rated this pain at 6/10. She denied neck pain or pain "anywhere else" two more times.</p> <p>&lt;P/E&gt; Pt's father, _____ was contacted by camp staff at phone _____. Father was informed of pt transport to _____ Children's Medical Center _____. Camp staff departed scene in camp Suburban to meet pt at _____. Pain medication was drawn and not administered.</p>		

## Case Study #10

### Case Presentation

Paramedics are called to the home of a 73-year-old male for active seizure. On arrival, they are surprised to find a nurse practitioner on scene, who has initiated management placing an IV. She informs them that the patient is enrolled in a new home hospital program and that she was on scene when he started to seize. They are also directed by the nurse practitioner to speak to the on-call physician, who requests that they transport the patient to his treating hospital, bypassing multiple closer receiving facilities. The paramedics manage the seizure and transport according to the physician's direction.

As the regional medical director, the case is brought to your attention out of concern that paramedics are receiving medical direction from untrained physicians, who have no knowledge of the EMS system or paramedic protocols, and are being directed to transport outside of EMS destination policies.

### Narrative

**EMS Narrative:** [REDACTED] arrived on scene to find a 73 year old male with cc of witnessed seizure by [REDACTED] nurse practitioner. Patient alert and oriented by 2. GCS of 14. NP described a tonic clonic seizure in which she caught the patient preventing trauma. Patient carried by firefighters to gurney and placed on 12 lead ekg, spo2, and Glucose checked. All findings returned within normal limits. During transport patient found to be hypertensive. Patient denies chest pain, shortness of breath, or weakness. No visible oral trauma or incontinence. NP had established a 22G IV in left forearm prior to seizure. Patient transported back to [REDACTED] for treatment at call center physicians direction.

### Learning Objectives

- EMS systems should have policies regarding physicians on scene
- Hospital at home programs may involve advanced practitioners and/or physicians that do not have knowledge of the EMS system and EMS clinicians may be called to assist; communicating with the programs to provide some guidance on EMS policies and protocols can improve coordination and patient care
- Ultimately EMS clinicians should receive medical direction from trained physicians/practitioners with knowledge of EMS protocols and follow their destination policies

### Resources

Example Physician At the Scene Policy: [https://file.lacounty.gov/SDSInter/dhs/206336\\_816.pdf](https://file.lacounty.gov/SDSInter/dhs/206336_816.pdf)

## Case Study #11

### Case Presentation

Paramedics are on scene with an intoxicated male in his 30s who had a witnessed fall from standing with blunt head trauma and reported brief loss of consciousness. The paramedics report that on their assessment, the patient is alert and oriented, GCS 15. He has a hematoma to his occiput and no other reported injuries. He has mild hypertension and a heart rate of 105. The patient is with his brother. The patient is refusing transport and the paramedics make contact with online medical direction because they have some concern about not transporting the patient given his level of intoxication and evidence of blunt head trauma.

### [Supplemental Material: Audio – paramedic report]

The online medical clinician discusses the case with the paramedic and then talks with the patient, who endorses drinking and has obvious slurred speech. He denies any complaints and continues to refuse transport. He explains that his concern is the cost. He is able to report the prior events with some prompting but continues to state that he will be fine.

There is a brief discussion about involvement of law enforcement, but the paramedic states that they are unlikely to intervene.

The online medical clinician also talks with the brother. It is clear that he has also been drinking. He has a background as a prior EMT and acknowledges the options for a CT scan at the hospital. Ultimately he asks the nurse 'is there beer at the hospital?' and then states 'we will probably see you guys soon.' He refuses paramedic transport and states they will take their own transport to the hospital, though, based on his tone, that is unlikely to occur.

### Learning Objectives

- Decision-making capacity is the ability to use information about an illness and proposed treatment options to make a choice that is congruent with one's own values and preferences. This includes understanding the risks and benefits and having the ability to make and communicate a decision regarding the proposed treatment in the patient's primary language.
- Patients who lack decision-making capacity and have a potential life threat may be treated and transported under implied consent.
- EMS policies must balance respect for patient autonomy with patient safety.
- EMS clinicians should receive education on proper assessment of decision-making capacity.
- Involvement of online medical direction can be helpful in establishing decision-making capacity and can assist EMS clinicians in some cases to convince at-risk patients to agree with transport

### Resources

Carrillo et al. Critical Steps for Determining Capacity to Refuse Emergency Medical Services Transport A Modified Delphi Study. PEC. 2024.  
<https://doi.org/10.1080/10903127.2024.2403650>



## Case Study #12

### Case Presentation

Paramedics respond to a call for a 31-year-old female, approximately 6 months pregnant, with abdominal pain and vaginal bleeding. On arrival, the patient is sitting on a bed. She reports that she had “a miscarriage” and delivered the infant into the toilet prior to EMS arrival. The paramedics began evaluation of the mother. Upon attempting to evaluate the fetus, they are directed by the patient’s partner to prioritize her care prior to being allowed entry into the bathroom.

The mother’s initial vital signs are blood pressure 112/palp, heart rate 120, and respiratory rate 22. Examination is significant for diffuse abdominal tenderness with guarding and brisk vaginal bleeding. The paramedics placed two 18-gauge IVs and initiated fluid resuscitation.

After delay, the paramedics are permitted to evaluate the fetus, which was noted to be cool, cyanotic, and apneic - therefore determined not viable and placed in a plastic bag for transport.

Online medical direction was consulted en route to the hospital. **[Supplemental Material: Audio – paramedic report]**

On ED arrival, the mother was taken emergently to the operating room for dilatation and curettage. The ED staff evaluated the newborn and found him to have a bradycardic rhythm and agonal respirations. The newborn was intubated, resuscitated, and admitted to the NICU. The hospital course was complicated by respiratory failure, metabolic acidosis, and intracranial hemorrhage. On hospital day seven, the parents and medical team decided to provide comfort-focused care and electively extubate. The infant quickly expired.

### Learning Objectives

- It is important to have mental health resources for EMS personnel who will experience challenging calls and potential poor patient outcomes
- Newborn assessment and resuscitation is a low-frequency high-stress event which benefits from regular continuing education.
- Field births require significant resources on scene with the potential for two critical patients; one should consider what resources are dispatched automatically to these calls and what triggers are in place to send additional resources when needed.

### Resources

Donnelly. Work-Related Stress and Post Traumatic Stress in EMS. PEC. 2012.

<https://doi.org/10.3109/10903127.2011.621044>

Fallon et al. Peer Support Programs to Reduce Organizational Stress and Trauma for Public Safety Workers. Workplace Health & Safety. 2023. <https://doi.org/10.1177/21650799231194623>

## Case Study #13

### Case Presentation

An EMT crew member in your agency sent an email notifying you of a case from the night before. Briefly, a 53-year-old female called 9-1-1 for shortness of breath. She was seen by the fire department's BLS first responders and triaged to your private ambulance agency for BLS transport. The patient reported she is on hemodialysis 3 days per week but had missed her last 4 sessions. She complained of shortness of breath that worsened with exertion.

The patient was transported to hospital without delay or change in condition. Upon hospital arrival one EMT went inside and was directed by the ED triage nurse to "wait in their rig with the patient" and "we will get you when we have room." The EMT diligently returned to the ED triage nurse multiple times but was returned to the ambulance at each attempt over the course of 3 hours. The patient progressively experienced worsening dyspnea and eventually developed respiratory arrest followed shortly after by cardiac arrest while in the ambulance. At that point, EMTs applied an AED, had one cycle of "no shock advised," and rushed into the ED with ongoing CPR.

Your crew member is upset with the hospital for what they feel was inappropriate hospital arrival decorum.

### Learning Objectives

- Delays in offloading a patient can represent significant problems to an EMS system.
- Various strategies have been developed to mitigate this time and return crews to service.

### Resources

NAEMSP Position Statement on Ambulance Diversion and Emergency Department Offload Delay, *Prehospital Emergency Care*. 2011, 15(4), 543.

<https://doi.org/10.3109/10903127.2011.598620>

Cooney D, Millen M, Carter A, et al. "Ambulance Diversion and Emergency Department Offload Delay: A Resource Document to Accompany the NAEMSP Position Statement". *Prehospital Emergency Care*. 2011, 15(4), 555–561. <https://doi.org/10.3109/10903127.2011.608871>

## Case Study #14

### Case Presentation

Sheila Johnson is a 31-year-old paramedic who has worked for the EMS agency for 8 years, 7 years as an EMT and 1 year as a paramedic. Approximately 1 year ago, she began experiencing chronic shoulder pain and weakness that limited her ability to lift. After multiple consultations and diagnostic tests, she was found to have shoulder impingement syndrome. The condition was not work-related, but the agency reassigned Sheila to light duty for several months while she underwent a variety of therapies and surgical intervention. One month following surgery, Sheila presented the attached letter from her physician qualifying her for a full return to independent duty. **[Letter from Dr. Vasquez (see below)]**

Two weeks after she returned to duty, one of the operations supervisors asked her about her new penchant for lollipops. She told him that they were fentanyl, prescribed by her physician to manage her post-op healing and ongoing pain. The operations manager contacts you to discuss this.

### Learning Objectives

- An impaired EMS clinician puts patients at risk.
- EMS medical directors are responsible for the quality of the patient care provided by their agency/system. You determine whether an EMS clinician is competent to provide clinical care.
- The US Equal Employment Opportunity Commission (EEOC) has issued guidance on the use of prescription medications in the workplace and the responsibilities of the employer (in this case the EMS agency) and employee. The employer is usually required to provide reasonable accommodations. The employee must show documentation that they are under physician care and have a disability (vs illicit substance use).

### Resources

<https://www.eeoc.gov/laws/guidance/use-codeine-oxycodone-and-other-opioids-information-employees>

[Letter from Dr. Vasquez]

---

---

---

---

---

Dr. Ronald Vasquez  
Midtown Orthopedics  
4 North Center Street, Suite 100,  
Anytown, USA

Anytown EMS  
3215 Hospital Drive  
Anytown, USA

12/09/2024

To whom it may concern,

I am writing concerning my patient Ms. Sheila Johnson. Ms. Johnson entered my practice approximately 6 months ago complaining of chronic pain and weakness. Following extensive evaluation, I diagnosed Ms. Johnson with shoulder impingement syndrome. A variety of non-surgical interventions failed to resolve her symptoms so I performed a surgical repair on September 22. The surgery went well and on September 29<sup>th</sup> Ms. Johnson entered an aggressive physical therapy regimen with the goal of returning to her work as a paramedic with Anytown EMS.

Ms. Johnson has worked hard in physical therapy, and I am happy to report that her strength and capacity have returned to normal. I certify that Ms. Shelia Johnson is physically and mentally ready to return to full duty as a paramedic with your organization.

Please don't hesitate to contact me if you have any questions. Thank you.

Dr. Ronald Vasquez, MD, FACS

Midtown Orthopedics  
Incredible surgeons, exemplary service

### **Case Presentation**

EMS and law enforcement are on scene with a severely agitated patient crawling in the street. The patient is alert and taking on initial assessment. The decision is made to restrain the patient in order for EMS to administer ketamine to facilitate transport to the emergency department. The patient is physically restrained by law enforcement personnel. No medical assessment is performed. A paramedic administers IM ketamine and then the patient is lifted onto the stretcher. Despite discussion to avoid prone positioning, the patient is positioned prone on the stretcher, seatbelts are applied, and the patient wheeled to the ambulance without monitoring.

### **[Video – Patient interaction on scene]**

Shortly after the patient is loaded into the ambulance, he is noted to be pulseless and apneic. Resuscitation is initiated; however, the patient ultimately expires.

### **Learning Objectives**

- EMS must have protocols for management of the severely agitated patient that include collaboration with law enforcement and the safe application of restraints when indicated.
- Patients who are restrained may die from positioning that restricts their ability to breathe, leading to hypoxia and acidosis and ultimately asphyxia and myocardial dysfunction.
- Best practices for management of the severely agitated patient include:
  - EMS should perform a timely medical assessment and identify life threats.
  - Individuals should be closely monitored prior, during, after sedation.
  - Verbal de-escalation techniques should be taught and employed as the primary strategy.
  - The least invasive approach to restraint should be applied when indicated, with preference for restraints that are rapidly removable to provide patient care as needed.
  - If law enforcement restraints are applied, one should attempt early transition to medical restraints and positioning whenever possible; the patient should always be placed in the safest possible position, typically supine.
  - The use of chemical restraint should be driven by EMS protocols and involve close monitoring including end-tidal CO<sub>2</sub>, pulse oximetry and cardiac rhythm.

### **Resources**

Kupas et al. Clinical Care and Restraint of Agitated or Combative Patients by Emergency Medical Services Practitioners. *Prehospital Emergency Care*. 2021.

<https://doi.org/10.1080/10903127.2021.1917736>

Levy et al. Consensus Statement of the National Association of EMS Physicians International Association of Fire Chiefs and the International Association of Chiefs of Police: Best Practices for Collaboration Between Law Enforcement and Emergency Medical Services During Acute Behavioral Emergencies. *PEC*. 2024. <https://doi.org/10.1080/10903127.2024.2402530>

## Case Study #15

15 Principles for Reducing the Risk of Restraint-Related Death. Police Executive Research Forum. September 2024. <https://www.policeforum.org/assets/Restraint.pdf>

## Case Study #16

### Case Presentation

You receive the following email from your EMS agency's QA director:

Dear Dr...,

I talked to JL earlier today about the issues we discussed earlier. I'm letting you know because JL was very defensive and argumentative during our discussion. He asked for your number to discuss it further with you.

He was in disagreement with the "critiquing". The xopenox he originally thought was allowed under his CCEMTP status. When pointed out the separation from SCT and ALS protocols he recognized the separation, but still believed he could administer it with an online order. He also remarked that the patient had an allergy to albuterol and reported it after 2 doses of albuterol had already been given. He indicated that given the pts status and continued distress it was warranted.

The Narcan and D50 he believed to be accepted industry standard even though not covered by protocol. He stated that both hold the possibility of helping the patient and are allowable even without cause to suspect hypoglycemia or opiate use. He went on to cite previous incidents where he deviated without authorization and it benefited the patient. He also said he was "not a protocol medic." He's under the impression that any deviation is acceptable so long as you contact Med Control to notify them after the med/procedure.

Now, JL and I have disagreed in the past and don't have best working relationship. These comments he made might be out of contempt for me, and not his actual beliefs. Hopefully when he gets a hold of you, he'll convey himself differently and understand a little better.

### Learning Objectives

- For paramedics that are resistant to protocol adherence, consider the reasoning behind their objections. There may be potential to engage them in the "whys" and involve them in the protocol development so that they feel more invested in the process.
- In instances such as these, it is important for the medical director to focus on the clinical aspects of the medicine being practiced and not the personnel/HR issues.
- If paramedics continue to violate protocol and/or exceed scope of practice, the medical director typically has the authority to prevent their practice by withdrawing accreditation/credentialing.
- Violations in scope of practice are a legal concern and may require reporting to the state medical authority for review and decision-making regarding paramedic licensure. EMT licensure is state dependent and may be handled at the local vs state level.
- While state laws may vary, licensure is often considered property and revocation triggers due process requirements.

## Case Study #16

### Resources

Example Investigation and Disciplinary Procedures: [https://kernpublichealth.com/wp-content/uploads/2023/07/1001.00-Inve\\_Reg\\_Disc\\_08122016.pdf](https://kernpublichealth.com/wp-content/uploads/2023/07/1001.00-Inve_Reg_Disc_08122016.pdf)

NREMT Recertification Guidelines: <https://nremt.org/Handbooks/Recertification/NCCP-The-EMS-System>



## Case Study #17

### Case Presentation

One of your paramedics calls to notify you about a medication error that occurred earlier in the day.

He and his EMT partner were called to a dermatologist's office for an "allergic reaction." On arrival, they found a 28-year-old healthy male who complained of a racing/pounding heart after an injection of lidocaine with epinephrine. The dermatologist called 9-1-1 due to concern for an allergic reaction.

On assessment, the patient had no angioedema, clear lungs, a heart rate of 108, and otherwise normal vital signs. Due to the physician's concern, the paramedic prepared to treat the patient for anaphylaxis despite the lack of objective findings. He initiated oxygen treatment, established cardiac monitoring, and placed an IV prior to moving the patient to the ambulance.

The paramedic explains that, while in the ambulance, he had vials of both diphenhydramine and epinephrine out and he asked the EMT to draw up "the whole vial" of diphenhydramine (50mg consistent with the local protocols). The EMT handed over the syringe and the paramedic administered the medication IV push. The patient subsequently had an acute onset of severe chest pressure, diaphoresis, and a 1-minute run of ventricular tachycardia, which resolved spontaneously. The chest pain and diaphoresis lasted for approximately 10-15 minutes and resolved shortly after ED arrival.

In retrospect, the medic determined that his partner had drawn up the full 1mg dose of epinephrine 1 mg/ml. He called you to both report the error and request follow-up on the patient. He also informed the emergency physician who received the patient and disclosed the error to the patient and family, who were very upset.

Upon your questions, the paramedic did not confirm what had been drawn up by the EMT. He also states it is common practice in the agency for EMTs to draw up meds, which you had not been aware of.

You reach out to the EMT, who tells you that the medic asked for epinephrine, not diphenhydramine; when the EMT is asked how much, she responds "the whole vial."

You follow up on the patient and learn that he had an NSTEMI based on troponin elevation and wall motion abnormalities seen on a cardiac echo.

### Learning Objectives

- Just culture: when mistakes are recognized and disclosed rather than hidden through fears of punishment; allows individuals and organizations to learn from mistakes thus promoting improved services and higher standards of patient care.
- Systems should have a process in place for disclosing medication errors to patients/families. Often, it is beneficial to involve the legal team.

## Case Study #17

- Whether disclosing a medication error can be used in a later legal action is state dependent and medical directors should be familiar with their local laws.

## Resources

NAEMT Position Statement - Just Culture in EMS

[https://www.naemt.org/docs/default-source/advocacy-documents/positions/Just\\_Culture\\_in\\_EMS.pdf?sfvrsn=0](https://www.naemt.org/docs/default-source/advocacy-documents/positions/Just_Culture_in_EMS.pdf?sfvrsn=0)

Disclosure of “Nonharmful” Medical Errors and Other Events. *Arch Surg.* 2012;147(3):282-286.

doi:10.1001/archsurg.2011.1005

<https://jamanetwork.com/journals/jamasurgery/fullarticle/1107400>

Berlin L. Will Saying “I’m Sorry” prevent a Malpractice Lawsuit. *American Journal of Roentgenology.* 2006;187: 10-15. 10.2214/AJR.06.0110

<https://www.ajronline.org/doi/10.2214/AJR.06.0110>

## Case Study #18

### Case Presentation

You are the Medical Director for a large fire-based urban-suburban EMS agency. You are notified around 8am on a Thursday of an active shooter event at a local high school. You are called by the 9-1-1 supervisor who forwards the call recording to you. **[9-1-1 recording]**

You have 14 hospitals in your jurisdiction and your prehospital resources are as detailed below. **[Hospital list, maps (see below)]**

You get an update from the first crew on scene about the number of patients and severity of injuries. **[Patient list (see below)]**

### Learning Objectives

- The role of the EMS MD in on-scene response during an MCI is limited.
- As Medical Director, you can influence on-scene response through education and training. Ideally trainings will include all agencies involved - not just EMS but also law enforcement.
- The role of the EMS MD in disaster preparedness is important and may look different based on the type of agency and area of response. In general, the EMS MD is an important part of education/training and after-action reviews.

### Resources

Active Shooter Incidents in the United States 2023 <https://www.fbi.gov/file-repository/2023-active-shooter-report-062124.pdf/view>

Improving survival from active shooter events. The Hartford Consensus. *Journal of Trauma and Acute Care Surgery* 74(6):p 1399-1400, June 2013. | DOI: 10.1097/TA.0b013e318296b237

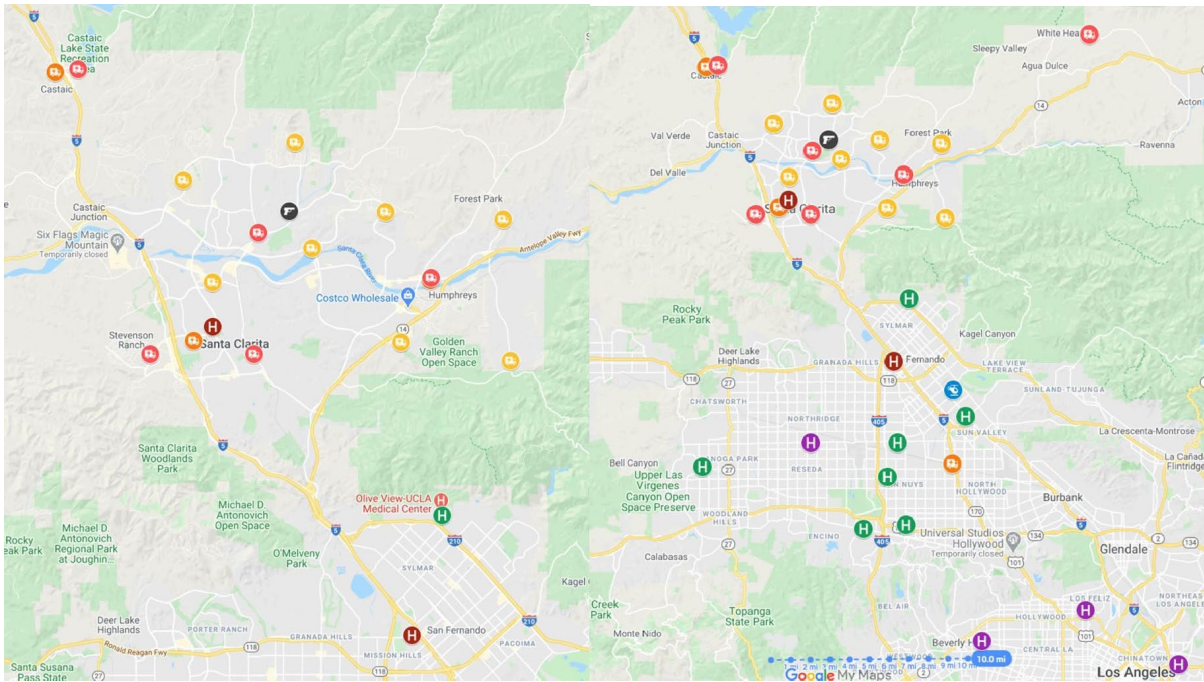
# Case Study #18

## [Hospital list]

Hospital	Designation	ETA Ground	ETA Air
1	Trauma Center/ED Approved for Pediatrics	15 minutes	5 minutes
2	Trauma Center/ED Approved for Pediatrics	25 minutes	10 minutes
3	Trauma Center/Pediatric Trauma Center	45 minutes	15 minutes
4	Pediatric Trauma Center	50 minutes	20 minutes
5	Trauma Center/Pediatric Trauma Center	60 minutes	20 minutes
6	Trauma Center/Pediatric Trauma Center	75 minutes	20 minutes
7	Academic Non-trauma Center	25 minutes	10 minutes
8-14	Community Hospitals	≥40 minutes	NA

## [Maps]

Resource	Symbol
BLS Assessment Unit	Yellow Ambulance
BLS Transport Unit (4 units)	Orange Ambulance
ALS Ground Unit	Red Ambulance
ALS Helo (3 units)	Blue Helicopter
Trauma Center (TC)	Red H
TC/Pediatric TC	Purple H
Non-Trauma Hospital	Green H



## Case Study #18

### [Patient list]

Victim	Age/Sex	Injuries	Condition	START/JumpSTART Triage Level	Transport
1	14 M	GSW Abdomen	GCS 3, RR 8, weak radial pulse	Immediate	ALS Ground
2	16 M	GSW Head	GCS 3, apneic, HR 43, strong radial pulse	Immediate	ALS Ground
3	15 F	GSW L Chest	GCS 3, apneic and pulseless, asystole on monitor	Immediate	ALS Ground
4	15 F	GSW Pelvis	GCS 15, BP 118/68, HR 120, RR 16, strong distal pulses	Delayed	ALS Helo
5	14 F	GSWs L Shoulder, R Hip	GCS 15, BP 131/86, HR 85, RR 24, strong distal pulses	Delayed	ALS Ground
6	14 M	GSW R Thigh	GCS 15, BP 118/60, HR 100, RR 20, strong distal pulses	Delayed	ALS Ground
7	15 F	Fall, Blunt Knee Injury	GCS 15, BP 137/90, HR 140, RR 20, strong distal pulses	Minor	BLS Ground

## Case Study #19

### Case Presentation

Your agency's QA committee received a patient care concern from a receiving hospital in your system. The complaint identified that the ALS provider failed to recognize the acuity of a diabetic patient who was transported. Specifically, the concern addresses the paramedic's limited assessment (vitals and point-of-care glucose were obtained but no ECG was done) and interventions (no IV access was obtained).

You review the PCR.

EMS Agency  
PSAP Call Date/Time: 0\*/0\*/20\*\* 09:00:39

Incident Number: E17xxxxxxx

#### Prehospital Care Report - No PHI

Patient Information		
Age: 47 Years	Gender: Female	
Provider Impression		
Primary Impression: GI/GU - Diarrhea	Secondary GI/GU - Nausea (With Vomiting) Impression:	
Narrative		
<p><b>Narrative:</b> T410 and M408 responded for an ALS emergency for trouble breathing. On arrival, 47 year old female was found lying on the floor of a bedroom. Multiple family members were in the room which made it difficult to assess patient, family was <u>ask</u> to leave the room. Daughter of the patient stated that she had been having nausea and vomiting and diarrhea since that morning. Daughter stated that she has diabetes but doesn't know of any medications or other medical problems. Patient was alert and oriented but uncooperative and would not sit up. Patient was placed on the stairchair to be carried down the stair and to the stretcher. Patient had a bowel movement while she was lying on the floor and was lying in her vomit. Patient would not answer any other questions. Vitals were taken, dexti was high, no fever present. Patient denied any pain or trouble breathing. Patient would only ask for water, it was explained why we could not give her any water. Patient was transported to ER with no changes. Patient care was transferred to ER staff.</p>		
Past Medical History		
Patient Medications		
Medication	Dosage	Route
Unable to Complete		
Medication Allergies		
Unable to Complete		
Environment Allergies		
Environmental/Food Allergies		
Medical History: Unable to Complete	Pregnancy: No	
Medical History Family Obtained From:	Advance Directives: None	
Assessment Exam		

Case Study #19

**Assessment Summary**

06/07/2017 09:39:07

**Detailed Findings**

Location	Description	Details
<b>Normal Findings</b>		
<u>Skin</u> : Mental Status ;		
<b>Not Done</b>		

**Activities**

**Vitals**

Time	BP	Limb Pulse	Pulse Rhythm	Resp Effort	SpO2	Qual	CO2 Level	Glucose	Glucose	Coma	Total Glasgow	Glasgow Coma	Score-Eye	Score-Verbal	Score-Motor	Score- Qualifier	Stroke Pain Scale	Pt. RTS Position
09:16:35	163/100	73	12	Normal	100	At Room Air	321											No
09:23:41	160/98	74	12	Normal	100	At Room Air		15	Opens Eyes spontaneously (All Age Groups)	Oriented (>2 Years); Smiles, oriented to sounds, follows objects, interacts	Obeys commands (>2Years); Appropriate response to stimulation	Initial GCS is legitimate					No	12

**Medical Devices**

Date/Time of Event (per Medical Device)	Medical Device Event Type	Medical Device ECG Lead	Medical Device ECG Interpretation	Shock or Pacing Energy	Total Number of Shocks Delivered	Pacing Rate	EKG Comments

**Procedures**

Time	Crew	Name	Location	Size of Equipment	Attempts	Response	Success

**Patient Condition**

Complaint Type	Complaint	Duration
Chief (Primary)	vomiting	1 Days
Primary Symptom: GI - Vomiting		Alcohol/Drug Use: None Reported
Other Symptoms: Not Applicable		

**Call Type/Location/Disposition**

## Case Study #19

**Urgency:**

**Destination:** Hospital

**Response:** 911 Response (Scene)  
**Location:** Residence - Single Family Home

**Dest. Determ.:** Closest Facility

**Response Delay:** None/No Delay  
**Type of Scene Delay:** None/No Delay  
**Transport Delay:** None/No Delay

### Patient Transport/Positioning

**Patient Moved to** Stairchair  
**Ambulance:**  
**Patient's Position in Fowlers (Semi-Upright Sitting)**  
**Transport:**  
**Patient Moved From** Stretcher  
**Ambulance:**

### Response Times and Mileage

**Unit Disp.:** 06/07/2017 09:00:39  
**Enroute:** 06/07/2017 09:01:11  
**At Scene:** 06/07/2017 09:05:08  
**At Patient:** 06/07/2017 09:06:12  
**Depart:** 06/07/2017 09:16:52  
**Arrive Dest.:** 06/07/2017 09:24:18  
**In Service:** 06/07/2017 09:44:00

**Incident Number:**  
**Call Sign:** Mxx8

### Unit Personnel

Crew Member	Level of Certification	Role
~	EMT-Paramedic	Primary Patient Caregiver-At Scene, Primary Patient Caregiver-Transport
	EMT-Basic	Driver-Response, Driver-Transport, Other Patient Caregiver-At Scene

**Call Type:** Breathing Problem  
**Resp. Mode:** Emergent (Immediate Response)

**Disposition:** Treated & Transported  
**Transport Mode:** Emergent (Immediate Response)

You also review the follow up information from the hospital, which is as follows:

“Upon ED arrival, staff immediately recognized the patient was in acute distress. An ECG showed STEMI. She became hypotensive and was taken to the cath lab immediately, where she was found to have an occluded LAD, which was stented. She remained in cardiogenic shock despite multiple vasopressors and suffered cardiac arrest on the cath lab table with subsequent ROSC and Impella placement. The patient was placed on ECMO. Her hospital course was complicated, including by a large left mid-cerebral artery stroke with shift. She ultimately expired.”

You conduct a case review with the QA committee, the crew on scene, and agency leadership all present. During this discussion, the paramedic, who has a number of years of seniority in the agency, identified that the patient and family spoke primarily Arabic, reported the patient was not cooperative, and voiced concern about exposing the patient in the presence of male family members. When asked if the family was asked to leave, the paramedic responded “you know



## Case Study #19

how those people are” and did not clarify what attempts, if any, were made to expose the patient enough to start an IV, perform a 12-lead ECG, and otherwise conduct an assessment. At the end of the discussion, the paramedic declined to accept that their actions were anything less than satisfactory and maintained that obtaining IV access or doing a 12 lead ECG would not have changed the outcome of this patient.

### Learning Objectives

- Prehospital STEMI detection, routing to PCI-capable hospitals, and pre-arrival notification improves patient outcomes.
- Agencies should have in place tools for communicating with patients who do not speak English, as well as strategies and education on managing a culturally diverse patient population.
- There are disparities in prehospital care based on race/ethnicity and sex/gender.
- Agencies should consider including care disparities based on language barrier into their QA/QI process.

### Resources

Savage ML, Hay K, Vollbon W, Doan T, Murdoch DJ, Hammett C, Poulter R, Walters DL, Denman R, Ranasinghe I, Raffel OC. Prehospital Activation of the Cardiac Catheterization Laboratory in ST-Segment-Elevation Myocardial Infarction for Primary Percutaneous Coronary Intervention. *J Am Heart Assoc.* 2023 Jul 18;12(14):e029346. doi: 10.1161/JAHA.122.029346. Epub 2023 Jul 14. PMID: 37449585; PMCID: PMC10382081.

Farcas AM, Joiner AP, Rudman JS, Ramesh K, Torres G, Crowe RP, Curtis T, Tripp R, Bowers K, von Isenburg M, Logan R, Coaxum L, Salazar G, Lozano M Jr, Page D, Haamid A. Disparities in Emergency Medical Services Care Delivery in the United States: A Scoping Review. *Prehosp Emerg Care.* 2023;27(8):1058-1071. doi: 10.1080/10903127.2022.2142344. Epub 2022 Nov 29. PMID: 36369725.

## Case Study #20

### Case Presentation

You are asked by the mayor of your community to critically evaluate and respond to him regarding the below incident. He is under substantial political pressure regarding the event and needs an assessment of the situation.

EMS was called to the scene of a domestic dispute in which the victim was strangled by their partner. While caring for the victim in the ambulance, the assailant, who had previously run away, returned and attempted to enter the ambulance to get to the victim. Paramedics locked the ambulance for safety, as the suspect was enraged and aggressively attempting to gain access into the ambulance. They called for emergency assistance from police, who arrived 60 seconds later and confronted the suspect outside the ambulance.

The paramedics state that they then heard gunshots and both attempted to cover the patient and hit the floor. One of the paramedics later exited the ambulance and found the suspect down with a gunshot wound to the head. The paramedic started resuscitating the suspect.

The officers state that the suspect became violent with them and continued to fight with them as they attempted to take him to the ground. They state that the suspect straddled one of the officers and attempted to grab that officer's firearm from the holster. The other officer realized this and shot the suspect to prevent him from getting the firearm.

The agency's ambulances have exterior cameras pointing to the front and back that are always recording. There is footage of the officers approaching the rear of the ambulance to confront the suspect but he moves just off camera and the recording subsequently only shows his feet at the upper corner of the frame.

There were bystanders present during this event, which became a high-profile incident. During the ensuing investigation, some of the bystanders stated that they saw the paramedic on top of the suspect holding him down while the officer executed him. The suspect was a Black male and there were subsequent accusations of racism on the part of the officers and paramedics, followed by weeks of riot activity and civil unrest.

### Learning Objectives

- While on scene cameras can be helpful in confirming appropriate patient care or identifying concerning treatment, they should be balanced with ensuring patient's privacy. LE typically have guidance about shutting off cameras in places where privacy would be expected. There is also typically a process for record review and redaction as needed prior to any public records release
- EMS body worn cameras have benefits including QA/QI, documentation accuracy, education and there may be a role for cameras in direct medical direction.
- EMS clinicians should assume they are being recorded during patient encounters, particularly in public spaces, given today's environment. LE BWC are increasingly

## Case Study #20

commonplace and bystanders often record scenes. EMS clinicians would benefit from training on how to appropriately manage this on scene.

### **Resources**

Los Angeles County EMS and Law Enforcement Co-Response (ELCoR) Task Force - Guidance Document on Body Worn Cameras 2024.

[https://file.lacounty.gov/SDSInter/dhs/1169962\\_LACElCoRGuidanceDocumentonBodyWornCameras10-7-24\\_FINAL.pdf](https://file.lacounty.gov/SDSInter/dhs/1169962_LACElCoRGuidanceDocumentonBodyWornCameras10-7-24_FINAL.pdf)

## Case Study #21

### Case Presentation

One of your ALS EMS crews responded emergently to a patient with a self-inflicted gunshot wound to the head. Upon arrival, the patient is pulseless and apneic with PEA on the monitor that changed to asystole during their physical assessment. On exam, the patient had a large caliber penetrating wound to his head and his pupils were 6mm and unreactive bilaterally. Bystanders reported agonal breathing last seen 10 minutes prior to EMS arrival. Per agency protocols, resuscitation was not initiated and the patient was left in the custody of the coroner.

When reviewed by the local trauma QA/QI committee, questions came up as to why this patient did not have an attempt at resuscitation and was not transported to the trauma center 7 minutes away from the call location. There were concerns about potential organ donation as well.

As the medical director for this agency, you are asked to review this case and respond to the trauma committee's concerns.

### Learning Objectives

- EMS systems should have protocols and guidelines in place for both termination of resuscitation and withholding of resuscitation for both traumatic and medical causes.
- There are scenarios in which EMS may choose to resuscitate and transport a traumatic arrest patient that they may have otherwise been able to withhold or terminate resuscitation on scene, such as public perception and scene safety.
- The role of EMS in identifying candidates for organ donation has potential but has not been clearly defined.
- If a patient loses pulses in the ambulance, resuscitation cannot be terminated and the patient must be transported to a facility for pronouncement.

### Resources

NAEMSP Position Statement. Withholding of Resuscitation for Adult Traumatic Cardiopulmonary Arrest. National Association of EMS Physicians and American College of Surgeons Committee on Trauma. Prehospital Emergency Care 2013;17:291.  
<https://www.tandfonline.com/doi/full/10.3109/10903127.2012.755586>

NAEMSP Position Statement. Termination of Resuscitation for Adult Traumatic Cardiopulmonary Arrest. National Association of EMS Physicians and American College of Surgeons Committee on Trauma. Prehospital Emergency Care 2012;16:571.  
<https://www.tandfonline.com/doi/full/10.3109/10903127.2012.695857>

## Case Study #22

### Case Presentation

Paramedics are called to the street outside an apartment complex by the brother of a 27-year-old male who has ingested unknown substances and is acting erratic. Upon their arrival, they find the patient A&Ox1, agitated and uncooperative. The paramedics request law enforcement assistance to restrain the patient but law enforcement refuses to engage the patient, stating that he 'does not fit their criteria.' Paramedics remain concerned for the patient's safety and request the law enforcement supervisor to the scene; however, in the meantime, the patient elopes. Upon contact with online medical direction, the EMS supervisor and the law enforcement supervisor are on scene but the patient is no longer present. The brother went back to the apartment to make some calls. Law enforcement is refusing to assist further.

### [Supplemental Material: Audio – paramedic report]

### Learning Objectives

- Clear and early communication between EMS and law enforcement on scene is important.
- The primary goals are to prevent the patient from injuring themselves and to protect the public and responding personnel from harm.
- De-escalation and self-preservation are key principles.
- EMS should have specific dispatch protocols regarding deployment strategies to the scene of mental health emergencies, which will depend on local resources.
- The national 988 suicide and crisis hotline may also be a resource; consider how this integrates with 9-1-1 in your system.
- EMS agencies should all have protocols for managing the agitated patient and include guidance on interaction with law enforcement.
- Collaborative trainings between EMS and law enforcement, as well as post-incident debriefings, are valuable.

### Resources

Law enforcement disengagement policies: <https://police2peace.org/but-we-cant-just-leave-how-lapd-swat-implemented-a-strategic-disengagement-policy/>

Example guideline for EMS and law enforcement co-response:

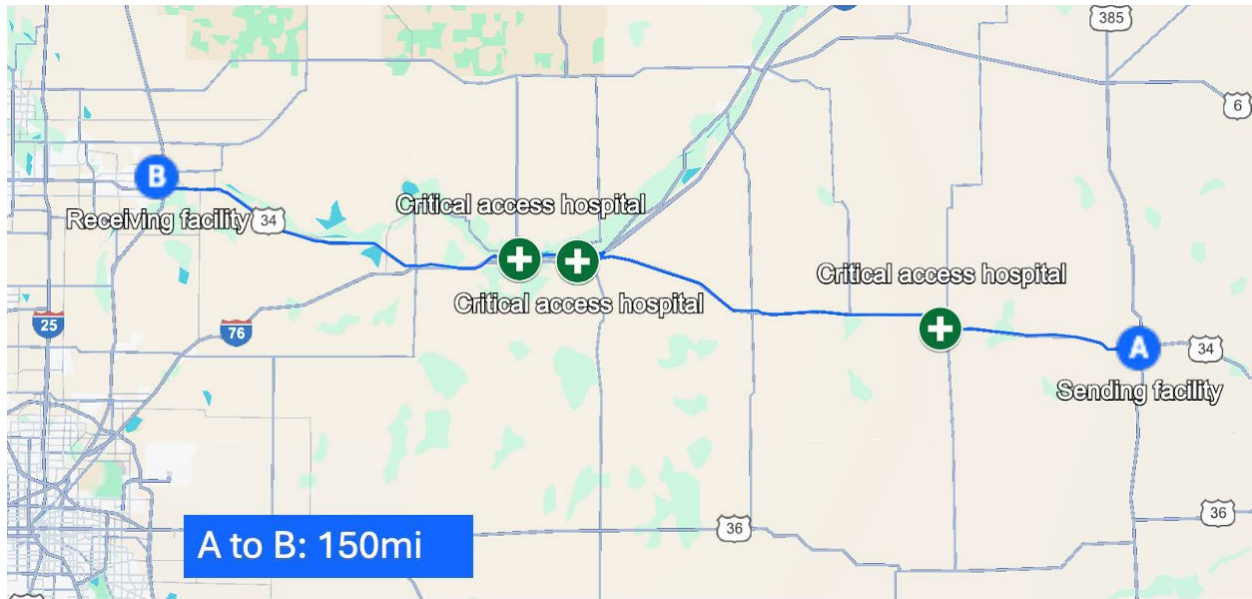
[https://file.lacounty.gov/SDSInter/dhs/1163127\\_1307.4EMSandLawEnforcementCo-Response2024-07-01.pdf](https://file.lacounty.gov/SDSInter/dhs/1163127_1307.4EMSandLawEnforcementCo-Response2024-07-01.pdf)

## Case Study #23

### Case Presentation

You receive a call at 2am from the director of a small, rural EMS agency for which you serve as medical director. The local critical-access hospital requested their services for an interfacility transport (IFT) to an accepting hospital, which is 2.5 hours and 150 miles away. There are 3 critical access hospitals along the way with no closer higher-level facility. [map]

[map]



The director tells you the following information that she received from the hospital: A 67 year-old female presented with acute lower GI bleeding. Her last set of vitals include a heart rate of 106 and a blood pressure of 88/44. The critical access hospital has the ability to do labs and reported a hemoglobin of 4.5. They are transfusing a unit of packed red blood cells and will be able to send a second unit for transfusion during transport. The patient has been accepted to the receiving facility for a higher level of care. She is looking for your advice as to how to respond to this request.

### Background

The service has 2 units available, each staffed by 1 paramedic and 1 EMT. They are all starting day 3 of a 72-hour shift. In this state, continuing a facility-initiated transfusion is within scope for ALS.

### Learning Objectives

- When considering using a 9-1-1 response agency for IFT, there are many factors that need to be taken into consideration, including appropriate level of care, the effect losing an asset has on local 9-1-1 response resources, provider safety, and availability of other methods of transportation.
- Although the determination of level of care on an IFT is legally the responsibility of the sending provider, it is the responsibility of the transporting EMS agency and medical

## Case Study #23

director to offer education and guidance on appropriate transportation, as well as to ensure the agency can provide quality care.

- While there is a lot of published data on air vs. ground transport of trauma and pediatric patients, there do not exist many guidelines on general transport, especially in rural communities, so medical directors and EMS agencies need to develop guidelines and policies for their individual systems with input from local hospital stakeholders.

## Resources

Shelton SL, Swor RA, Domeier R, Lucas R, NAEMSP. Medical Direction for Interfacility Transports. *Prehospital Emergency Care* 2000;4(4):361-364.

## Case Study #24

### Case Presentation

A local EMS Agency has offered you a position as the new Medical Director after their longtime Medical Director of 20+ years has retired. The position is funded for 20 hours/month at a rate of \$150/hour to serve as the Medical Director of an urban EMS Agency that serves a population of approximately 100,000. There are 84 personnel including 12 paramedics operating with four assessment units, two ALS units and two BLS units. You are reviewing the contract in which duties and other compensation/benefits are not specified.

### Learning Objectives

- When considering a contract for a Medical Director position, be sure to clarify your specific roles and responsibilities, including authority within department structure, responsibility for credentialing and role in remediation decisions, distinguishing your role from occupational health and other expectations such as field response and on-call duties.
- To reduce your liability, consider a professional review of the contract for boilerplate language that may not apply, check the liability insurance coverage to see if it is adequate, ensure medication storage and tracking is up to your standard, and verify that you have authority of oversight if it falls under your responsibilities to order medications, particularly controlled substances.
- For compensation, consider local comparable rates to negotiate your pay and ensure a cost of living adjustment is included. Consider negotiating other sources of compensation such as CME/travel funds.

### Resources

Harvard Law School Program on Negotiations Reading List:

<https://www.pon.harvard.edu/daily/negotiation-training-daily/negotiation-books-a-negotiation-reading-list/>

Chris Voss. Never Split the Difference. Harper Business. 2016.

<https://www.amazon.com/Never-Split-Difference-Negotiating-Depended/dp/0062407805>



**COST EXERCISE:**

Yesterday, you and your EMS director, Eleanor Rigby, met with representatives from Yellow Submarine Medical (YSM) to receive a proposal for the new ZolPak 2050 monitor/defibrillator - a state of the art device, featuring advanced communication, data and AI capabilities. As medical director, you consider this a mandatory acquisition to retain the Penny Lane EMS (PLEMS) system's standing as a leader in out of hospital care, both in its community and nationally. The cost per device is \$30,000.

PLEMS is an Advanced Life Support (ALS) response system with approximately 30,000 incidents annually, transporting approximately 25,000 patients. To ensure both adequate geographical coverage and optimum response times, PLEMS deploys 20 ALS units operating 24/7. PLEMS has a policy of having an additional 20% inventory to ensure redundancy and to provide a device for the physician response vehicle.

Director Rigby recognizes that you have had something of a long-standing collaboration with YSM and has left the final negotiations to you, but stresses that the cost must be within budget. PLEMS has been using the current ZolPak for five years with excellent results. YSM has advised that a reasonable discount is available if all units are purchased in a single acquisition. In addition, it will take the same number of units of the past model in trade at \$5000/unit.

Director Rigby is willing to help cover the cost of this purchase through the agency's funded depreciation account. She has asked you to provide the annual costs of the purchase at the next meeting.

Questions:

What is the total number of units needed?

What reasonable discount will you request?

What do you consider to be a reasonable estimate of the useful life years?

## Finance Case Study

What is the revised cost of each unit accounting for these discounts?

What is the annual cost for this purchase?

### **REVENUE EXERCISE:**

For a suburban system, Director Rigby operates quite an efficient operation. The unit hour cost is essentially the national median at \$200 and currently the unit hour utilization ratio is 0.28.

PLEMS will soon incorporate the small city of Norwegian Wood into its service area, which will add an additional 225 transports to the total. Based on careful analysis, Director Rigby has assessed that there is no need to add unit hours. The result will be an increased efficiency to a 0.29 unit hour utilization.

Gracious as most EMS directors are, Director Rigby has agreed to also help with the revenues needed with some stipulations: first, the savings from only the additional transports will be used to fund the units; second, 50 percent of the revenues collected from patient fees in the new service area can be used for the purchase. The average bill is \$1500 with an average collection of 43%.

Questions:

Before the addition of Norwegian Wood, what is the cost of transport?

After the addition of Norwegian Wood, what is the cost of transport?

## Finance Case Study

What is the savings amount to be applied?

What is the amount of newly collected revenues from patient fees to be applied?

What are the total revenues?

### **SUMMARY**

Are the revenues sufficient to cover the cost of the purchase?

If not, what options do you have to raise additional revenue?

What would be the impact of raising rates? What information would you need to determine that?

**EXERCISE 1**  
**DEVELOPING A PROJECT AIM**

You recently joined Redland County EMS as part of the clinical quality leadership team. In assessing opportunities for your next quality improvement project, you and the team begin by examining the National EMS Quality Alliance (NEMSQA) suite of measures. Specifically, you start with a review of performance reports related to documentation of vital signs for patients not transported by EMS (TTR-01). Redland County EMS has approximately 50 encounters that end in non-transport per week.

You receive the following data for the last 12 weeks:

Month	TTR-01  % of patients not transported by EMS with documentation of a basic set of vital signs
Week 1	44%
Week 2	24%
Week 3	41%
Week 4	55%
Week 5	35%
Week 6	57%
Week 7	39%
Week 8	47%
Week 9	25%
Week 10	35%
Week 11	42%
Week 12	40%
<b>Average</b>	<b>40%</b>

## QI Case Study

1) Does this topic have the elements of a good improvement project? Why or why not?

2) What would good performance look like for this measure?



QI Case Study

SMART GOAL	PRIMARY DRIVERS	SECONDARY DRIVERS	CHANGE THEORIES
<p>To obtain a full set of vital signs in at least 90% non-transported patients within one year.</p>	<p>Definition of a "Patient"</p>	<p>Policy / Protocol</p>	
		<p>Culture around "lift assist"</p>	
		<p>Documentation requirements</p>	
		<p>Education</p>	
	<p>Patient assessment</p>	<p>Equipment</p>	
		<p>Education</p>	
		<p>Process</p>	
	<p>Patient preferences</p>	<p>Financial concerns</p>	
		<p>Trust and rapport with EMS clinicians</p>	
		<p>Understanding of health risks</p>	

## QI Case Study

Using the change concept list, develop ideas you might test that relate to the secondary drivers on your driver diagram.

### Change Concepts

<p><b>Eliminate Waste</b></p> <ol style="list-style-type: none"> <li>1. Eliminate things that are not used</li> <li>2. Eliminate multiple entries</li> <li>3. Reduce or eliminate overkill</li> <li>4. Reduce controls on the system</li> <li>5. Recycle or reuse</li> <li>6. Use substitution</li> <li>7. Reduce classifications</li> <li>8. Remove intermediaries</li> <li>9. Match the amount to the need</li> <li>10. Use sampling</li> <li>11. Change targets or set points</li> </ol> <p><b>Improve Workflow</b></p> <ol style="list-style-type: none"> <li>12. Synchronize</li> <li>13. Schedule into multiple processes</li> <li>14. Minimize handoffs</li> <li>15. Move steps in the process close together</li> <li>16. Find and remove bottlenecks</li> <li>17. Use automation</li> <li>18. Smooth workflow</li> <li>19. Do tasks in parallel</li> <li>20. Consider people as in the same system</li> <li>21. Use multiple processing units</li> <li>22. Adjust to peak demand</li> </ol> <p><b>Optimize Inventory</b></p> <ol style="list-style-type: none"> <li>23. Match inventory to predicted demand</li> <li>24. Use pull systems</li> <li>25. Reduce choice of features</li> <li>26. Reduce multiple brands of the same item</li> </ol> <p><b>Change the Work Environment</b></p> <ol style="list-style-type: none"> <li>27. Give people access to information</li> <li>28. Use proper measurements</li> <li>29. Take care of basics</li> <li>30. Reduce demotivating aspects of the pay system</li> <li>31. Conduct training</li> <li>32. Implement cross-training</li> <li>33. Invest more resources in improvement</li> <li>34. Focus on core process and purpose</li> <li>35. Share risks</li> <li>36. Emphasize natural and logical consequences</li> <li>37. Develop alliances and cooperative relationships</li> </ol>	<p><b>Enhance Producer/Consumer Relationship</b></p> <ol style="list-style-type: none"> <li>38. Listen to customers</li> <li>39. Coach the customer to use a product/service</li> <li>40. Focus on the outcome to a customer</li> <li>41. Use a coordinator</li> <li>42. Reach agreement on expectations</li> <li>43. Outsource for “free”</li> <li>44. Optimize level of inspection</li> <li>45. Work with suppliers</li> </ol> <p><b>Manage Variation</b></p> <ol style="list-style-type: none"> <li>46. Standardization (create a formal process)</li> <li>47. Stop tampering</li> <li>48. Develop operational definitions</li> <li>49. Improve predictions</li> <li>50. Develop contingency plans</li> <li>51. Sort product into grades</li> <li>52. Desensitize</li> <li>53. Exploit variation</li> </ol> <p><b>Manage Time</b></p> <ol style="list-style-type: none"> <li>54. Reduce setup or startup time</li> <li>55. Set up timing to use discounts</li> <li>56. Optimize maintenance</li> <li>57. Extend specialist’s time</li> <li>58. Reduce wait time</li> </ol> <p>Design Systems to Avoid Mistakes</p> <ol style="list-style-type: none"> <li>59. Use reminders</li> <li>60. Use differentiation</li> <li>61. Use constraints</li> <li>62. Use affordances</li> </ol> <p><b>Focus on the Product or Service</b></p> <ol style="list-style-type: none"> <li>63. Mass customize</li> <li>64. Offer product/service anytime</li> <li>65. Offer product/service anyplace</li> <li>66. Emphasize intangibles</li> <li>67. Influence or take advantage of fashion trends</li> <li>68. Reduce the number of components</li> <li>69. Disguise defects or problems</li> <li>70. Differentiate product using quality dimensions</li> <li>71. Change the order of process steps</li> <li>72. Manage uncertainty — not tasks</li> </ol>
---	--

Change concepts developed by Associates in Process Improvement. (See: Langley GJ, Nolan KM, Nolan TW, Norman CL, Provost LP. The Improvement Guide. San Francisco: Jossey-Bass Publishers, Inc.; 2009.)