Patient restraint: With safety for all

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Introduction

Prehospital emergency medicine often consists of the art of applying clinical medicine to non-clinical settings. Due to the limited interventions and limited number of providers on a given location, EMS providers are sometimes challenged with determining an appropriate means to restrain a patient, either for the patient’s safety or for the EMS providers’ safety. The decision to restrain a patient, whether by physical devices or pharmacological means, is challenging for any patient advocate, balancing the decision to remove a patient’s autonomy versus the need to protect the patient, the EMS providers, and/or the public at large. The decision to restrain a patient, whether physically or chemically, is a decision made in the “heat of the moment” and may often involve law enforcement, potentially even involving the use of deadly force by law enforcement. These are the times when an EMS response can become deadly and may literally become front page news. Please note that nothing in this article is intended to overrule local protocols, medical direction or legal counsel.

Underlying medical causes and assessment

Before making the decision to restrain a patient, you may need to conduct enough of an assessment to identify and possibly “fix” any underlying causes of threatening behavior from the patient. However, it is important to note that not every patient presenting with altered mental status is combative and vice versa. Since some of these patients’ medical
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conditions, especially seizures and diabetic complications, can be medically managed, it is important to attempt to identify an underlying cause as quickly as possible. Rapid medical intervention can sometimes lessen or even eliminate the need to restrain a patient against his or her will.

The mnemonic AEIOU TIPS (at right) is a common guide to identifying causes of altered mental status, particularly decreased mental status. In short, the mnemonic serves as a quick reminder of underlying medical causes of altered mental status that, while potentially a cause of combative behavior, may be identified with a patient assessment and remedied through medical treatment.

Certain patients may indicate a propensity for violence that may require restraint. These patients can be evaluated based on past history, posture, vocal activity and physical activity. Patients with a past history of hostile, aggressive or violent behavior are known to have an increased propensity to be violent. Posture may also be an indicator of potentially violent patients, especially if they are tense or rigid. Loud, obscene and/or erratic speech is a high indicator of emotional distress. A patient who is pacing, otherwise agitated or appears to be staking out physical boundaries is also indicative of a potentially violent patient.

Prior to restraint

Prior to restraining a patient, verbal de-escalation techniques are recommended. The EMS provider should use a calm, friendly voice when trying to verbally de-escalate a combative patient. EMS providers should also avoid direct eye contact and avoid intruding into the patient’s “personal space.” While attempting to calm a patient who continues to respond violently, the medic should offer the patient a final opportunity to comply with EMS providers prior to initiating restraint. Depending on local policies and the situation at hand, you may wish to obtain additional assistance from a second crew, field supervisors, first response agencies or law enforcement before initiating restraint. During the de-escalation process, EMS providers should also be aware of open escape routes both for themselves and the patient.

Physical restraint

Physical restraint is probably the most commonly used form of restraint in the EMS setting although most EMT and paramedic programs devote very little classroom time, whether lecture or practical application, to its practice. In the ideal situation, there should be five EMS providers to physically restrain a patient—one EMS provider to maintain control of each limb and one to hold the patient’s head. Physical restraint of a patient requires both a plan for restraint as well as a team leader to direct the restraint process. The current preference is to apply a four-point restraint device, which immobilizes each limb. Medics may also consider restraining a patient’s hips, thighs and chest if necessary. Tethering a patient’s

| A | Alcohol, Anaphylaxis, Acute myocardial infarction (AMI) |
| E | Epilepsy, Endocrine abnormality, Electrolyte imbalance |
| I | Insulin (i.e., diabetes) |
| O | Opiates |
| U | Uremia |
| T | Trauma |
| I | Intracranial (tumor, hemorrhage or hypertension) or Infection |
| P | Poisoning |
| S | Seizures |
thighs is often more effective to prevent kicking than is tethering the ankles.5

A variety of restraint devices are available to EMS providers. Most common to EMS systems are soft restraints, such as the commercially available Posey restraints. Soft restraints may also be fashioned out of roller gauze, triangular bandages/cravats or sheets. Hard restraints include plastic ties sometimes used by law enforcement, handcuffs and leather restraints. Regardless of the type of physical restraints applied, EMS providers should always check the patient’s pulse, motor function and sensation after the application of physical restraints to ensure that circulation is maintained to the distal extremities. If the patient is handcuffed, he or she should not be handcuffed to the stretcher to avoid injury if there is a collision involving the ambulance. Depending on local policies, law enforcement may be required to accompany the patient in the ambulance. If a peace officer is not riding in the ambulance, EMS providers should have the means to remove the handcuffs from the patient.6

Restrained patients should not be transported in a prone position due to the possibility of airway compromise. Similarly, patients should not be hobbled or hog-tied with their arms and legs tied behind their backs. Patients should not be placed between backboards, scoop stretchers or mattresses. Nothing should be placed over the patient’s face, head or neck. To prevent the patient from spitting at responders, EMS providers may place a surgical mask, non-rebreather mask (with oxygen flowing) or a commercially made “spit hood” on the patient. A cervical collar may also be considered, which would limit the patient’s ability to move his or her neck in an attempt to bite responders.7

**Chemical restraint**

In the event that a patient may no longer be safely restrained by physical means or as dictated by local protocol, advanced-level EMS providers may be authorized to utilize chemical restraints (i.e., medications) to further subdue the patient. These medications are usually a benzodiazepine or an antipsychotic. It should also be noted that rapid sequence intubation and/or the use of paralytics is neither a substitute nor an alternative for proper chemical restraint. The decision to sedate or chemically restrain a violent patient or to manage the airway with a paralytic are two completely separate decisions.

**Benzodiazepines**

Benzodiazepines are a class of sedatives used to treat anxiety, calm agitation and promote sleep. These medications bind to gamma-aminolytic acid (GABA) Type A receptors in the brain. By potentiating GABA levels within the brain, benzodiazepines promote sedation. The most common benzodiazepines in the EMS setting include diazepam (Valium), midazolam (Versed), and lorazepam (Ativan).8

Diazepam (Valium) is a commonly used benzodiazepine in the EMS setting. It has a short effect and has the potential to precipitate if mixed with other medications. Side effects include drowsiness and hypotension. For sedation purposes, the common dose varies from two to five milligrams, administered either intramuscularly or intravenously, although this may vary with local protocols. Intravenous onset typically occurs within one to five minutes, with intramuscular administration taking fifteen to thirty minutes to become effective. Intravenous peak effects typically occur
within ten minutes, while intramuscular administration requires thirty to forty-five minutes for peak effectiveness. Diazepam’s duration typically lasts fifteen to sixty minutes.9

Midazolam (Versed) is also a common benzodiazepine in the EMS setting. It should be noted that it is contraindicated for patients with a history of hypersensitivity to the medication as well as those patients who are hypotensive or have narrow-angle glaucoma. Midazolam can also produce side effects such as respiratory depression and hypotension. It may be administered intravenously, intramuscularly or intranasally, usually at a dosage range from one to five milligrams, depending on local protocols. Intravenously administered, midazolam’s onset occurs within three to five minutes; intramuscularly administered, onset occurs within fifteen minutes. The peak effects occur within twenty to sixty minutes. Intravenous midazolam typically lasts less than two hours, while intramuscularly administered midazolam can remain effective from one to six hours.10

Lorazepam (Ativan) is another benzodiazepine found in EMS settings. It too is associated with hypotension and respiratory depression. It is typically administered intravenously or intramuscularly at one half to two milligrams, with intravenous dosages increasing up to four milligrams, depending on local protocols. Intravenously administered lorazepam has an onset of one to five minutes, while intramuscularly administered lorazepam typically has an onset of fifteen to thirty minutes. Peak effect ranges from fifteen to twenty minutes for intravenous administration to two hours for intramuscular administration. The duration of lorazepam typically ranges from six to eight hours, regardless of administration route.11

Antipsychotics

Some EMS systems have additional chemical restraint options, usually in the form of antipsychotic medications, either administered in lieu of a benzodiazepine or in addition to the benzodiazepine.

Haloperidol (Haldol) is probably the most common antipsychotic in the EMS arena. It is a butyrophenone-class tranquilizer that appears to block the brain’s dopamine receptors, associated with mood and behavior. Haloperidol should be administered with caution in patients on anticoagulant therapy. In some cases, instances of orthostatic hypotension have been noted. Typical dosage is two to five milligrams administered intramuscularly. Although there is no official “black box” warning, in some cases, involving higher doses than seen in prehospital care, haloperidol has been associated with episodes of prolonged QT/QTc segments and/or torsade de points. As such, cardiac monitoring is recommended with administration of haloperidol. Haloperidol is also associated with extrapyramidal symptoms, also known as dystonia, which typically manifest as atypical muscle movements or contractions influencing gait, movement and posture. These symptoms, when detected early, can easily be reversed with diphenhydramine (Benadryl). Haloperidol’s typical onset is within ten to twenty minutes although the peak effects may take from thirty to sixty minutes. The duration of haloperidol’s effects may vary.12

Droperidol (Inapsine) is also a butyrophenone-class medication, similar to haloperidol. In addition to its use as a chemical restraint, it is also used to manage nausea and/or vomiting in patients who are
not responding to first-line antiemetics. Its usual dosing ranges from two and a half to ten milligrams, either intravenously or intramuscularly. Droperidol is associated with a “black box” warning for reported adverse cardiac effects, notably prolonged QT/QTc intervals and torsade de pointes. Typically, droperidol has an onset of three to ten minutes, with peak effects occurring in thirty minutes. It has a duration of two to four hours.13

Ziprasidone (Geodon) is an antipsychotic unrelated to either of the common antipsychotic drug classifications—the butyrophenones or the phenothiazines. It has an unknown mechanism of action, but probably inhibits synaptic uptake of serotonin and norepinephrine. It is normally administered either every two hours at ten milligrams or every four hours at twenty milligrams. Intramuscularly, it has an onset of fifteen to thirty minutes, with peak effects at sixty minutes. Ziprasidone has a duration from between four and eight hours.14

Other medications

Ketamine (Ketalar) is rapidly becoming more accepted for sedation in the prehospital setting, in large part due to the shortage of etomidate as an induction agent for rapid sequence intubation. However, ketamine is also gaining popularity among EMS medical directors for chemical restraint. Ketamine is contraindicated in patients with significant hypertension. Ketamine sedates a patient by causing a dissociation between the cortical and limbic systems. Ketamine has the potential for side effects that include hallucinations, increased skeletal muscle tone, nausea, vomiting and increased bronchial secretions. Recovery time from ketamine may be increased if the patient has also received narcotics and/or barbiturates. The intravenous dosage typically ranges from one half to one milligram per kilogram while the intramuscular dosage typically varies from two to four milligrams per kilogram. Onset ranges from less than a minute for intravenous administration to less than five minutes for intramuscular administration. The peak effects vary. The duration of ketamine’s effects range from ten to fifteen minutes for intravenous administration to twenty to thirty minutes for intramuscular administration. An additional risk associated with ketamine administration is the possibility of emergence hallucinations: hallucinations following waking post-ketamine sedation. The possibility of emergence hallucinations can be lessened by keeping the environment quiet when the patient emerges from sedation.15

Excited delirium

A factor in some instances of patient restraint will require a secondary medical response. Excited delirium, as defined by the University of Miami, is a sudden occurrence of bizarre and/or aggressive behavior, shouting, paranoia, panic, violence directed at others, unexpected physical strength and hyperthermia. Hyperthermia is often the ultimate cause of death in excited delirium patients. During the course of being restrained by law enforcement, the typical victim of excited delirium struggles with the peace officers. Within minutes of finally being subdued, the patient loses all vital signs and goes into cardiac arrest. Death typically results from any of the following factors: hyperthermia, rhabdomyolysis or renal failure. Excited delirium is often, but not always, associated with drug usage, particularly cocaine, PCP, methamphetamines or amphetamines. The use of these drugs
is believed to block the transmission of dopamine in the brain, leading to increased levels of dopamine. Increased dopamine levels in the synaptic membranes in the brain can lead to the paranoia, delusions and psychosis that underlie the excited delirium event. The University of Miami’s recommendations for treatment of excited delirium include sedation with benzodiazepines, external cooling, fluid administration, cardiac and respiratory monitoring and, ultimately, treatment in the emergency department for rhabdomyolysis and hyperkalemia.16

Legal concerns
In general, Texas’ broadly written “Good Samaritan” statute provides protection from legal liability for EMS providers for providing emergency care, except if the act was willful or wantonly negligent.17 However, in the case of restraining patients, these protections may be less applicable. Common law claims in civil court based on assault, battery and/or false imprisonment are all considered to be “intentional torts” and could likely be considered outside of the protection of the Good Samaritan statutes. Further, Federal civil rights law, in particular Title 42, United States Code, Section 1983, provides for civil liability for government employees who, in the course of their employment, deprive someone of their civil rights. This statute is commonly used as a basis for lawsuits in Federal court against public safety personnel for complaints of unlawful or excessive force, primarily in the law enforcement setting, but claims have been filed against EMS providers as well.

Conclusion
In conclusion, the decision to restrain a patient, whether by physical or pharmacological means is one of the more challenging decisions that an EMS provider may face. It requires a thorough and complete understanding of patient assessment, medical emergencies, pharmacology, and ethical and legal understanding. Ultimately, the decision to restrain requires the ability to be a true patient advocate, which is the highest calling that we have as ethical, professional providers of prehospital emergency medicine.

This article is provided for education only. Always consult with your medical director and follow your local protocols in making treatment decisions.

References
5 Id.
6 Id.
7 Id.
9 Id.
10 Id.
11 Id.
12 Id.
13 Id.
14 Id.
15 Id.
17 Texas Civil Practices and Remedies Code §§74.151-152.