

Prehospital Clinical Decision-Making for Medication Administration for Behavioral Emergencies

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ABSTRACT

Introduction. Prehospital behavioral emergency protocols provide guidance on when a medication may be necessary for prehospital behavioral emergency. However, the final decision of which medication to administer to a patient is made independently by paramedics. The authors evaluated circumstances in a prehospital behavioral emergency when paramedics considered chemical restraints, and factors that go into choosing which medications to administer.

Methods. A qualitative research design was used involving paramedics from a Midwestern County in the United States, between November 18 and 26, 2019. A total of 149 paramedics were asked to complete a survey consisting of two open-ended questions to measure their clinical decision-making process and factors considered when selecting a medication from a behavioral emergencies protocol. An immersion-crystallization approach was used to analyze the content of the interviews.

Results. There was a 53% (n = 79) response rate. Six major themes emerged regarding the paramedics' decisions to use medication for behavioral emergencies: safety of the patients and paramedics, inability to use calming techniques, severity of the behavioral emergency, inability to assess the patient due to presentation, etiology of the behavioral episode, and other factors, such as age, size, and weight of the patient. Six major themes emerged regarding factors considered when choosing medication for behavioral emergency: etiology of the behavioral emergency, patient presentation, the patients' history and age, desired effect and intended outcome of the medication, and other factors.

Conclusions. Emergency medical services (EMS) paramedics relied on several factors, such as safety of all parties involved and etiology of the behavioral emergency in deciding when, and which medication to use in a behavioral emergency. The findings could help EMS administrators to develop protocols, such as how paramedics respond and treat patients with behavioral health emergencies. *Kans J Med* 2023;16:189-193

INTRODUCTION

Behavioral emergencies are complex situations in which affected individuals, due to an interplay of factors such as intoxication, agitation, pain, psychosis, and/or other mental illness, may be at risk of harm

to themselves and those around them.¹⁻³ From June 2017 through May 2018, approximately 6% of emergency medical services (EMS) cases in the United States were behavioral emergencies.⁴ In some of the cases, a combination of physical and chemical restraints (e.g., haloperidol, lorazepam, ketamine, midazolam) were used. The use of physical restraints, however, in the prehospital setting has potential adverse outcomes, such as sudden death, severe acidosis, going into a state of excited delirium, or a combination of these factors.⁵⁻⁷

Deciding how to manage a behavioral emergency requires cautious and thorough consideration.^{1,3} EMS personnel have a responsibility to balance the safety of the patient and themselves, relying on context clues of their surroundings in the pre-hospital setting.^{8,9} Paramedics who arrive on the scene of a patient experiencing behavioral episodes often have limited information and must act quickly for well-being of the patient, making it difficult to determine what factors are playing into the behavioral emergencies.⁴ In such situations, quick decisions must be made by paramedics to determine treatment modality, which, unfortunately, can contribute to negative patient outcomes, such as misdiagnosis of the patient, miscalculation in dosages, and subsequent deaths.^{2,10} Therefore, the clinical decision-making protocol for using chemical restraints must be more standardized. Chemical restraints are medications often used for behavioral emergencies to “subdue, sedate, or restrain” patients.^{11,12}

States and counties have their own protocols for how to assess and manage behavioral emergencies of adult and pediatric populations, although most operate on a continuum of increasing intervention.⁴ When managing behavioral emergencies, initial safety measures may include verbal communication and require that a law enforcement officer is present. More dangerous situations may require the use of physical restraints before resorting to chemical restraints.^{3,4,13} However, no gold standard protocol has been developed for paramedics to decide when to use chemical restraints and which type of medications to use during a behavioral emergency. In addition, there have been no known studies on the factors that influence paramedics' clinical decision-making regarding the use and choice of chemical restraint. Therefore, this study sought to describe the circumstances in a behavioral emergency when paramedics consider chemical restraints, and factors that play into choosing which medications to administer.

METHODS

Participants. The study involved a convenience sample of 149 EMS paramedics from a large Midwestern county in the United States. Participation from all paramedics in the county were solicited by email from November 18 through 26, 2019. No paramedics were excluded. The participants did not receive an incentive for completing the survey.

Instrument. No demographic information was collected to protect anonymity and to improve the likelihood that paramedics would complete the survey. The novel survey included two open-ended questions. First, respondents were prompted to report what impacts their decision to use or not to use medication when caring for a patient experiencing a behavioral emergency. Second, respondents were asked to report what factors they consider when choosing the type of medication to give during behavioral emergencies.

Procedures. This study was approved by the University of Kansas

Medical Center's Institutional Review Board. A literature search yielded no similar instruments that met the needs of the study. A survey consisting of two open-ended questions was developed to measure the paramedics' clinical decision-making process and factors that they considered when selecting a medication from the behavioral emergencies protocol. A multi-stage process was utilized to confirm the validity of the questions. First, questions were created based on the goal of the study and were reviewed by an emergency medicine physician to ensure that they accurately assessed the proposed constructs. Next, expert reviews in the form of vetting the questions were conducted by an emergency medicine resident physician, a clinical practice manager from the county's medical director's office, and a paramedic to ensure the questions met the goal of the study. To ensure that the questions were worded correctly and that they could solicit the needed information, the authors also conducted a cognitive interview with two paramedics.¹⁴ Unlike regular interviews where respondents are asked to recall an event or information, cognitive interviews are an evidence-based, qualitative method used to evaluate whether survey questions solicit the needed information. Those paramedics who helped corroborate the questions did not participate in the study.

SurveyMonkey®, an online survey platform, was used to create the survey and generate an electronic survey link that was distributed to the paramedics' professional e-mail addresses. The survey was sent by a faculty member from the University of Kansas School of Medicine-Wichita and prompted participants to complete the two-item questions. To enhance the number of respondents, two e-mail reminders were sent one week apart to all potential participants, unless they opted out of the survey.

Statistical Analysis. The authors analyzed the data using an immersion-crystallization qualitative approach to analyze the content of the open-ended responses individually and as a group.¹²⁻¹⁴ The immersion-crystallization approach offers researchers the opportunity to examine collected data in detail and periodically suspend the immersion process to reflect on emerging findings until consistent themes are identified.¹⁵⁻¹⁷

RESULTS

The response rate was 53% (n = 79). Six major themes emerged regarding the paramedics' decisions to use medication for cases involving patients with behavioral emergencies: safety of patients and paramedics, inability to use calming techniques, severity of the behavioral emergency, inability to assess the patient due to presentation, etiology of the behavioral episode, and other factors, including the age, size, and weight of the patient (Table 1). Regarding safety, paramedics considered the threat that the patients may pose to themselves and/or to the paramedics and crew. The inability to assess the patient because of any erratic or hostile behavior included a subtheme of the patient's escalation of those behaviors.

Six major themes emerged regarding the factors paramedics consider when choosing which medication to use in a behavioral emergency. These themes included: etiology of the behavioral emergency, patient presentation, patient's history and age, desired effect and intended outcome of the medication, and other factors. The patient's history included subthemes regarding their medical, behavioral, and illicit or prescribed medications. Other factors included subthemes regarding the vitals and weight of the patient, ease of administration, potential

adverse effects or allergies to the medication, comfort level with the medication, distance to the hospital, and balancing the risk and benefits of the medication (Table 2).

DISCUSSION

To our knowledge, this is the first published study of its kind specifically assessing factors that influence paramedics' clinical decision-making regarding the use and choice of chemical restraint. The findings of the study showed that EMS paramedics relied on several factors, such as safety of patients and paramedics, inability to use calming techniques, severity of the behavioral emergency, inability to assess the patient due to presentation, and etiology of the behavioral episode, when deciding whether to use medications in a behavioral emergency. These findings may offer insights into developing protocols regarding how paramedics respond and treat patients with behavioral emergencies. The finding regarding safety of the patients and paramedics as the most common theme that drives paramedics' decision to use medication for a patient experiencing a behavioral emergency was consistent with results of previous research that suggested that medications are administered based on behaviors that may predispose paramedics or the EMS service to danger, such as agitation or aggression.^{3,13}

The EMS personnel in this study emphasized that their decision to use a chemical restraint depended on etiology and severity of the behavioral episode. Given that every situation is different in terms of etiology and severity, prior preparation for potential dangers and organizing a care plan with the entire team, including law enforcement, can protect all those involved.^{18,19} Using a risk assessment tool, such as the Richmond Agitation Sedation Score or Altered Mental Status Score, could assist with assessing such situations and choosing the optimal approach to safely subdue agitated patients or those with an altered mental status.²⁰ Creation of a crisis intervention team where paramedics coordinate with mental health clinicians and trained local police departments, may target repeat behavioral emergency dispatches with appropriate behavioral health care as a preventive measure to future interactions may be beneficial.^{21,22}

Findings about the use of calming techniques prior to using medications to sedate patients in our study were in line with results from prior studies that suggested verbal de-escalation techniques can reduce the risk of progression of agitation into violence and such approaches need to be considered prior to chemical and physical restraints.^{1,23,24} Although the paramedics in the current study did not specify the type of calming techniques they often use, prior research suggested that clinical shared-decision making with firm boundaries between the clinician and the patient was the most effective way to avoid mistrust and escalation of erratic or hostile behaviors, which may allow for paramedics to assess and evaluate the patients better.^{17,23,24} Our findings also found that patient demographics, such as age, were considered prior to medication administration. This information was consistent with the suggestion that patients older than 65 years need to be evaluated for signs of acute confusion or delirium.²⁰

Table 1. Paramedics' open-ended comments on decision to use medication for behavioral emergency.

Themes	Subthemes	Quotations from Participants
Safety	Safety of paramedics	"First, I consider the safety of myself and my crew. If the patient appears to be extremely agitated and potentially violent, I will err on the side of medication every time."
		"If I am in fear for my safety or the safety of my partner then I will use medication"
	Safety of the patient	"...if the patient cannot be safely reasoned with, is hurting themselves, or my team then medication is the safest route for everybody."
		"Primarily the decision is based on the threat the patient poses to herself or responders."
Unsuccessful use of calming techniques		"I move to medications only when I am unable to use calming techniques."
		"When patient is capable of calming with reassurance and calming techniques resulting in normalizing of vital signs and ceasing any behaviors likely to cause harm to self or others, no medication is used."
Severity of the emergency		"When de-escalation fails then safety must take priority and the patient is then restrained and/or sedated."
		"The patient's presentation and the likelihood of the patient's status changing during transport."
		"Pts whose anxiety, agitation or psychosis is negatively [affecting] their vital signs and coaching/calming techniques have been ineffective."
		"...severity of behavioral emergency and respiratory status."
Inability to evaluate the patient because of erratic or hostile behavior		"If the assessment that we need to do is hindered by the patient's behavior."
		"If the patient is unable to be consoled or able to follow even basic commands to ensure safety then that will also weigh into my decision to administer a medication."
		[Patients] "whose anxiety, agitation or psychosis prevents continuing care including treatment and transportation."

Table 2. Open-ended comments on factors participants consider when choosing medication for behavioral emergencies.

Themes	Subthemes	Quotations from Participants
Etiology of behavioral emergency		"I would consider the etiology of the event."
		"I consider the root cause of their behavior, if it is primarily a psychotic episode..."
		"I consider whether or not this is truly a behavioral emergency or whether or not other substances are involved."
Patient presentation		"...patient presentation and cause of the current behavioral emergency will depend on what is given."
		"Patient presentation and history"
		"I chose medication based on intoxicating substance, patient history, and presentation."
Patient's history	Medical	"Patient's medical history."
		"Past history and medications also are helpful."
	Behavioral	"I ask family, friends or bystanders about patients mental health history as well as current medications."
		"I consider whether they have a psychiatric history."
	Illicit or prescribed medication	"If it is a combative patient due to mainly behavioral problems."
		"What their medical history is, if they are currently on any type of drugs or alcohol, how severe of a physical threat they are."
	"...what medications the patient currently takes and/or is allergic to"	
Patient's age		"The [patient's] age will help direct my decision."
		"I consider age..."
Desired effect of medication		"...the desired effect we are looking for."
Intended outcome		"Desired effects of the medication."
		"My intended outcome" [of the medication]
		"..., the treatment goal."

Table 2. Open-ended comments on factors participants consider when choosing medication for behavioral emergencies. *continued.*

Themes	Subthemes	Quotations from Participants
Other factors	Patient's vitals	"There are several factors that I consider when choosing which medication to give. Patient age, medical history, current medications, psychiatric history, ...vital signs."
	Weight of the patient	"I consider age, weight and if any other substance[s] are already on board."
	Ease of administration	"Ease of administration" [of the medication]
	Potential adverse effects and/or patient's allergies to the medication	"Indications/contraindications of the medications [and] potential for adverse effects."
		"Least amount of side effects and usually the quickest acting with route being administered."
	Comfort level	"My comfort level with the medication."
	Distance to hospital	"First, the distance/time from the hospital."
Risk/benefit of meds	"Which medication will benefit the patient the most with the fewest risks or adverse side effects."	

Our study found that the participating paramedics consider six factors, such as safety of patients and paramedics, etiology of the behavioral emergency, patient presentation, patient's history and age, and desired effect and intended outcome of the medication, when deciding which medication to use in a behavioral emergency. The findings regarding physical safety of patients and paramedics were consistent with prior research that documented the physical safety of everyone present during the encounter, including the EMS personnel and patient, should be the predominant factor to consider when managing behavioral emergencies.^{13,25} The decision to use, and the type of, medication should depend on factors like etiology of the behavioral emergency, as well as how the patient presents at the time of the emergency.¹³ Assessment for intoxication or abnormal changes in behavior, as well as a quick evaluation of the patient's airway, breathing, and circulatory status need to be considered prior to medication administration.²⁰

In our study, desired effects and intended outcomes of the medications, as well as the patient's history were reported as factors paramedics consider in deciding which medication to use in behavioral emergencies. These findings were consistent with results of previous studies that indicated medication administration must address the patients' underlying etiology for the behavioral episode quickly and safely by relaxing the patients without making them unconscious.^{23,26} In addition, studies suggested that factors related to the medication, such as the side effects and benefits, route and ease of administration, and availability of the medication must be considered.^{23,24} These factors also were reported in our study. Calming such patients allows for EMS personnel and other clinicians to obtain vital history and treat any psychiatric-related behaviors. The findings of this study have shown that EMS personnel consider several factors, often unique to each situation or call, when they respond to calls involving behavioral emergencies.

Although the identified factors in this study were consistent with findings from previous studies,^{1,3,13,23,24} our study was unique for two reasons. First, it assessed the circumstances in a behavioral emergency when paramedics consider chemical restraints. Second, it examined the factors paramedics considered when choosing the type of medications to administer to such patients suffering from behavioral episodes. To our knowledge, the clinical decision-making process regarding

these two circumstances have not been identified and integrated prior to this study, which provided insight into paramedic decision-making.

EMS personnel and organizations would benefit from additional research across the United States to confirm these initial findings and identify other considerations when intervening in a behavioral health emergency. The identification of these factors could allow for consensus-building among paramedics, regionally and nationally, to develop protocols that offer better, more uniform support to patients experiencing suspected behavioral emergencies.

Limitations. This study has several limitations. One major limitation was the absence of demographic information from the participating paramedics. Having this information could help to determine if the sample's demographic information was representative of the population and offer insight into the differences in paramedics' experiences. A new paramedic may work from what they have learned throughout school and from their mentor, whereas a paramedic with years of experience may have responded differently based on their experiences in the field. Also, 70 of the paramedics in the county did not participate in the survey, which creates a potential bias between responders and non-responders. Inclusion of responses from these additional participants could have provided a more detailed, clearer picture of the use of chemical restraints in this county. There are possible changes to the findings since the data used in the study were collected in 2019, albeit important results. Finally, our findings represented information from paramedics of one county in Kansas and may be applicable to other counties or states with comparable communities and population characteristics.

Future studies could include paramedics across larger areas or multiple regions to confirm our findings and identify other potential decision points and factors involved when intervening in a behavioral health emergency.

CONCLUSIONS

This study sought to characterize paramedics' perspectives about how they decide when to administer medication in behavioral emergencies and the factors considered in choosing the type of medication to treat such emergencies. The findings suggested that several factors, such as safety of the patients and paramedics, etiology of the behavioral emergency, contributed to paramedics' clinical decision process. Determining reasons why paramedics make these decisions, or factors that influence their decision-making process could help administrators to develop protocols that address a variety of behavioral health emergencies.

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