

SPECIAL CONTRIBUTION

Pediatrics

Strategies for optimal management of pediatric acute agitation in emergency settings

Mohsen Saidinejad MD, MBA¹  | Ashley A. Foster MD² | Genevieve Santillanes MD³ |
Joyce Li MD, MPH⁴ | Dina Wallin MD² | Isabel A. Barata MD, MBA⁵ |
Madeline Joseph MD⁶ | Emily Rose MD⁷ | Tabitha Cheng MD¹ |
Muhammad Waseem MD, MS⁸ | Kathleen Berg MD⁹ | Gwendolyn Hooley MD¹⁰ |
Timothy Ruttan MD^{9,11} | Sam Shahid MBBS, MPH¹² | Samuel H. F. Lam MD, MPH¹³ |
Siraj Amanullah MD¹⁴ | Sophia Lin MD¹⁵ | Melanie S. Heniff MD, MHA¹⁶ |
Kathleen Brown MD¹⁷ | Marianne Gausche-Hill MD¹ | ACEP Pediatric Emergency
Medicine Committee

¹David Geffen School of Medicine at UCLA, The Lundquist Institute for Biomedical Innovation at Harbor UCLA, Department of Emergency Medicine, Harbor UCLA Medical Center, Torrance, California, USA

²Department of Emergency Medicine, Benioff Children's Hospital, University of California, San Francisco, California, USA

³Department of Pediatrics, Los Angeles General Medical Center, Keck School of Medicine of University of Southern California, Los Angeles, California, USA

⁴Department of Pediatrics, Boston Children's Hospital, Harvard Medical School, Boston, Massachusetts, USA

⁵Departments of Emergency Medicine and Pediatrics, Donald and Barbara Zucker School of Medicine at Hofstra/Northwell, Manhasset, New York, USA

⁶Department of Emergency Medicine, University of Florida, College of Medicine, Jacksonville, Florida, USA

⁷Department of Emergency Medicine, Los Angeles General Medical Center, Keck School of Medicine of University of Southern California, Los Angeles, California, USA

⁸Department of Pediatrics, Lincoln Medical Center, Bronx, New York, USA

⁹Department of Pediatrics, University of Texas at Austin—Dell Medical School, Austin, Texas, USA

¹⁰Department of Emergency Medicine, Children's Hospital, Keck School of Medicine at University of Southern California, Los Angeles, California, USA

¹¹US Acute Care Solutions, Canton, Ohio, USA

¹²American College of Emergency Physicians, Irving, Texas, USA

¹³Department of Pediatrics, Children's Hospital Colorado, University of Colorado School of Medicine, Aurora, Colorado, USA

¹⁴Department of Emergency Medicine, Brown University School of Medicine, Providence, Rhode Island, USA

¹⁵Department of Emergency Medicine, Weill Cornell Medicine, New York, New York, USA

¹⁶Department of Emergency Medicine, Indiana University School of Medicine, Indianapolis, Indiana, USA

¹⁷Department of Pediatrics, George Washington University School of Medicine, Washington, District of Columbia, USA

Correspondence

Mohsen Saidinejad, MD, MBA, David Geffen School of Medicine at UCLA, The Lundquist Institute for Biomedical Innovation at Harbor UCLA, Department of Emergency Medicine, Harbor UCLA Medical Center, Torrance, CA, USA.

Abstract

Acute agitation in youth is a challenging presentation to the emergency department. In many cases, however, youth can be behaviorally de-escalated using a combination of environmental modification and verbal de-escalation. In cases where additional strategies such as pharmacologic de-escalation or physical restraint are needed, using the

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Email: mohsenmd@gmail.com

least restrictive means possible, including the youth in the decision-making process, and providing options are important. This paper reviews specific considerations on the approach to a youth with acute agitation and strategies and techniques to successfully de-escalate agitated youth who pose a danger to themselves and/or others.

KEYWORDS

agitation, environmental modification, least restrictive means, neurodivergent, restraint use, verbal de-escalation

1 | INTRODUCTION

Mental and behavioral health (MBH) emergencies are rising at a crisis level among youth and adolescents in the United States, prompting a declaration of national emergency by the American Academy of Pediatrics, the American Academy of Child and Adolescent Psychiatry and the Children's Hospital Association.¹ It is estimated that one in five youth in the United States have an MBH disorder,² with a 60% rise in emergency department (ED) visits related to MBH emergencies between 2006 and 2017.³ The absolute and relative number of pediatric ED visits for MBH emergencies has increased from 4.8 million (7.7% of visits) in 2011 to 7.5 million (13.1% of visits) in 2020, with significantly more visits by patients with public insurance.⁴ Inadequate infrastructure and lack of timely access to outpatient MBH care,⁵ as well as a declining supply of inpatient psychiatric beds, have resulted in the ED serving as a safety net for youth with MBH disorders,⁶ leading to prolonged ED mental health boarding while youth await definitive psychiatric care.⁷ Furthermore, most youth seek emergency care in non-children's hospitals, where MBH resources may vary.^{8,9} Despite the increase in pediatric mental health emergencies, less than half of hospital EDs have a specific pediatric MBH policy, falling to less than a third for rural EDs.^{8,10} This disparity highlights additional unmet needs in rural settings where resource limitation may be more significant.¹¹ In turn, delays in evaluation and treatment, interfacility transport, and psychiatric hospitalization contribute to mental health boarding, with prolonged wait times for a psychiatric inpatient bed.¹²

Although acutely agitated youth can often be de-escalated without the use of restraints, many EDs do not have specific protocols or training models for non-restraint use in addition to pharmacologic restraint.¹² This paper highlights best practices for identification of pediatric agitation, use of environmental modification and verbal de-escalation, safe approach to pharmacologic or physical restraints, and provides several case examples of these strategies in use (Table 1).

2 | RECOGNIZING CAUSES AND RISKS OF AGITATION

Agitation occurs in up to 13% of all pediatric MBH ED visits and requires immediate intervention to decrease the risk of injury to the patient or others.^{13,14} Youth with agitation may suffer from paranoia,

delusions, or a "fight or flight" response rather than demonstrating true belligerence.¹⁵ Agitated youth who require restraints have higher admission and transfer rates, a longer ED length of stay, and often experience longer ED boarding compared to youth who do not require restraints.¹³ Moreover, when pediatric patients are placed in restraints, the patient, staff, family, and other ED patients are more likely to be harmed.¹⁶

Identifiable risk factors for agitation such as being male, history of abuse or trauma, or recent aggression in the past 24 h have been reported (Table 2).^{13,17} If an underlying psychiatric disorder can be identified and treated effectively, escalation of agitation can often be prevented. For example, a potential trigger for agitation is missed doses of home psychiatric medications; therefore, timely administration of regularly scheduled medications during prolonged ED stays may avert deterioration.¹⁸ Underlying medical problems that could be causing or exacerbating agitation, such as head trauma, postictal states, ingestions, intoxication (eg, stimulants, ethanol), metabolic derangements (eg, hypo/hyperglycemia, thyroid disorders), or pain, should also be considered and managed.¹⁹ Many potential organic causes of psychiatric symptoms such as fever or pain can be detected on history and physical exam; therefore, it is critical to conduct a thorough history and examination. This is particularly important in agitated youth who are neurodivergent (eg, those with attention deficit hyperactivity disorder, autism spectrum disorder, or other developmental disorders) because they may communicate their symptoms differently.²⁰

3 | ENVIRONMENTAL MODIFICATION

Environmental modification is one of the first steps in managing pediatric patients at risk for agitation. The intense lighting, loud noises, poorly regulated temperatures, lack of familiar objects, crowded and chaotic conditions, frequent interruptions from staff, lack of access to food and liquids to drink, and physical discomfort can all trigger or exacerbate a crisis in the ED, particularly for youth who are neurodivergent.^{17,18} Therefore, when possible, patients at risk for agitation should be placed in a setting with a comfortable temperature and where lights, noise, and foot traffic from the rest of the ED can be minimized. Medical equipment that can induce physical harm should be removed or secured.²¹ Providing the patient with a safe area for unrestricted movement may also prevent escalation.¹⁷ For example, an

TABLE 1 Case scenarios.*Case scenario 1: An agitated 5-year-old*

A 5-year-old presents to the ED with agitation and behavioral dysregulation. Per the family, he has had issues with emotional dysregulation but has been assessed by his pediatrician without further evaluation by psychiatry. He currently is not on any medications. The patient's mother came in tonight because he has been particularly violent toward mom after she did not let him have candy, biting and kicking at her. When they arrive in the ED, he is agitated and is screaming that he does not want to be in the ED. Recommended course: the clinician enters with a calm, low voice and introduces himself to youth and mom. They keep some distance from the youth while talking to him. They ask the youth what he likes to do at home. They also ask mom what the youth likes, and she says he likes to draw. The youth initially refuses to talk to the clinician but then also does say she likes drawing. The provider brings some drawing materials for the youth and passes them to the youth. As the youth draws, the provider comments on how much they like his drawing.

Key points:

- Use de-escalation techniques such as using calm/low voice, keeping distance and remaining at eye level with the patient, relating to the patient.
- Utilize family for how to relate best/distract the patient.
- Use distraction techniques.

Case scenario 2: A 14-year-old boarding for agitation

A 14-year-old female with a diagnosis of bipolar disorder has been boarding in the ED for the past 2 days awaiting placement for agitation, self-harm, and suicidal ideation. The patient has a history of impulsive behavior and most recently has been running into traffic when she becomes agitated, to kill herself. She has also been cutting herself when she becomes agitated or upset at home and has several scars on her arms. Recommended course: upon initial evaluation, the team spoke with the patient and her parents about how to best redirect her when she becomes agitated. She likes music, and the family notes that she was taught breathing exercises as well, which can sometimes be helpful for her. The ED obtains a MOAS score at the beginning of each shift. At the beginning of the current shift, her score is a 1 and the team initially talks to the patient to see how they can address her needs. She refuses to talk to them. They offer her to listen to some music and ask her to do her breathing exercises which she declines to do. Given her score of 1, they reassess her MOAS in an hour and note she is now a 2. She is on aripiprazole and is due for this medication in an hour. The team discusses taking her medication early with the patient, and she agrees. They continue to offer her music and ask her if there is anything else she would like to help her feel better. She states that she is tired of staying in the ED and is bored as she has nothing to do. The ED team offers her an activity kit that they keep for boarding patients. After the patient receives her medication and the kit, a MOAS score is repeated, and is now 0. In sign out, the team notes that it may be helpful to offer her an activity kit at the beginning of each shift.

Key points:

- Monitor for signs of agitation/use a scoring system.
- Assess for specific de-escalation techniques/coping at the time of intake to develop a personalized non-pharmacologic agitation plan/de-escalation plan.
- Utilize current home medications/medication plan when possible.
- Provide items/activities for patients during boarding.
- Utilize a tracking process or checklist of de-escalation/coping techniques that have and have not worked throughout the care.
- Perform structured handoffs between shifts to both ensure consistent care and update patient care plans.

Case scenario 3: Physical restraint of a 12-year-old patient with autism

A 12-year-old male patient with autism who is non-verbal has been boarding for 3 days in the ED awaiting placement for agitation. The patient initially presented due to self-harm behaviors at home consisting of head banging, as well as violent behavior toward parents including biting and hitting. His thorough physical examination and evaluation have ruled out medical etiologies of agitation. He is on risperidone in the morning and clonidine at night. At noon, it is noted that he is becoming more agitated with an increasing MOAS score but has not responded to his typical de-escalation techniques. His family is unfortunately not available, as they have to go to work during the day. He attempts to leave the ED. Multiple attempts are made to verbally redirect him and to get him to take his as needed oral medications for agitation, but he refuses. He is now biting and hitting staff as he tries again to exit the department. Recommended course: the decision is made to restrain the patient and give him intramuscular olanzapine. Upon evaluation, an agitation plan was developed with the family, and there was agreement that if he failed all verbal de-escalation and refuses oral medications to proceed to physical restraint if he is at risk to himself and others. Family had noted he had had no adverse reactions to olanzapine in the past. There was a discussion among the team about using physical restraints for as short of a time as possible to administer the olanzapine safely. The physician is at the bedside to ensure the safety of the patient and staff during the application of the restraints. The staff apply four-point restraints, and the nurse gives him the IM olanzapine. They continue verbal de-escalation attempts throughout, and after 15 min, the patient begins to calm down. The staff then slowly removes restraints from one extremity at a time. The patient is drowsy but not completely sedated an hour after the olanzapine. The team performs a debrief and discovers he was not given his scheduled risperidone this morning. A discussion is made on how to ensure he receives his daily medications as he boards in the ED, including a checklist in the morning to use at the bedside to ensure he gets his medications, meals, and other comfort measures when the family is not available.

Key points:

- Medication assessment upon intake is imperative with family, particularly what medications have and have not worked in the past as well as adverse reactions to medications.
- Develop an agitation plan for boarding with the family for those at risk of agitation in the beginning of the ED stay before an agitation event if possible.
- Physical restraints are high-risk events, and time in restraints should be minimized. If physical restraints are used, a plan to minimize restraint time and the goal of restraints should be in place prior to applying restraints. Patients should be closely monitored for medical adverse events while restrained, and continued efforts at de-escalation should continue.
- As physical restraints are high risk events, debriefing should occur after each physical restraint (1) to ascertain potential causes/triggers for the agitation leading to the events, (2) assess de-escalation techniques and medications that were and were not helpful in the patient's agitation, and (3) to modify the existing agitation plan or create an agitation plan from lessons learned and to develop plans for any modifiable triggers/causes of agitation.
- Consider using tools for tracking daily activities of living and home medications such as individualized patient checklists or standardized tracking lists.

Abbreviations: ED, emergency department; MOAS, modified overt aggression scale.

TABLE 2 Risk factors associated with acute agitation.^{13,17,18,84}

- Prior history of acute agitation (especially prior 24 h)
- History of abuse or victim of violence or trauma
- Communication barrier (neurodivergence, developmental delay, etc.)
- Male sex
- Existing mental and behavioral health conditions (conduct disorder, disruptive mood dysregulation disorder, or oppositional defiant disorder)
- Foster care, group home, incarcerated youth

urgent care area of an ED that closes at night may be used for patients to rest during overnight hours to help boarding patients maintain circadian rhythms.

Other environmental considerations, including daily schedules for familiarizing patients with their ED courses may reduce anxiety.²² Somatosensory kits, age-appropriate activities, and distraction items (such as books and tablets), may be used to distract a patient, aid in preventing acute agitation, and improve emotional functioning and ongoing support during their ED stay.^{17,23–25} Teams may also enlist the help of caregivers in providing patients with comfort objects from home, preferred food or drink, and/or appropriate distraction items.¹⁸ Caregiver presence is usually helpful for keeping patients calm, especially for younger children and those who are neurodivergent. Consideration for caregiver experience with previous agitation episodes and successful de-escalation, particularly for neurodivergent youth can be very helpful in avoiding potentially unsuccessful strategies to achieve de-escalation. For example, involvement of family and patient during each shift, or family rounds during shift transitions may facilitate conversation about individualized environmental modifications, agitation reduction strategies, and early identification of agitation in the ED. However, it is important to be aware that in some cases, caregiver–patient dynamics can trigger agitation. In these cases, if developmentally appropriate, patients can remain in the ED without caregivers at the bedside or given periods of respite from caregivers.¹⁷

4 | VERBAL DE-ESCALATION

Once identified, acute agitation can often be managed with verbal de-escalation techniques. Early intervention is more likely to successfully support patients with managing their emotional responses and behavior. When interacting with agitated youth, it is important to remain calm in voice and body posture intentionally. Over 90% of emotions and >50% of what is spoken are communicated non-verbally.¹⁴ Although several tools and formulas for verbal de-escalation exist,²⁶ a working group of emergency psychiatrists noted, based on experience and literature review, that “having a positive regard for the patient is more effective than any other method/tool/formula.”²⁷ Clinicians must communicate empathy for the patient’s circumstances as part of their care and it may be helpful to view the role as a coach to the patient in this

TABLE 3 Ten domains of verbal de-escalation.⁸⁵

- Respect personal space
- Do not be provocative
- Establish verbal contact
- Be concise
- Identify wants and feelings
- Listen closely to what the patient is saying
- Agree or agree to disagree
- Lay down the law and set clear limits
- Offer choices and optimism
- Debrief the patient and staff

process. Additionally, an important goal of de-escalation is to empower patients to soothe themselves. Familiarity with the 10 domains of successful verbal de-escalation (Table 3) and the ERASER mnemonic can help recall the steps in de-escalation (Table 4).

5 | PHARMACOLOGICAL MANAGEMENT

Pharmacological management should be implemented when further intervention beyond verbal de-escalation is needed. It is also important that non-pharmacological strategies be continued during and after medication administration. Furthermore, patients should continue their usual medication schedule in the ED; therefore, an accurate medication history is necessary to continue home medications, as well as to screen for possible drug interactions and signs of intoxication or withdrawal (Table 5). Also, use of medications that are readily available with evidence supporting their use may be prioritized.²⁸ While no single class of medication is deemed to be the gold standard for the care of agitated youth, the medications used most frequently in the treatment of agitation are atypical antipsychotics and benzodiazepines.²⁹ Potential adverse effects when choosing medication therapy, as well as the patient’s age, weight, medical comorbidities, and developmental level should be considered (Tables 6 and S1).³⁰ Also, efforts should be made to determine the etiology of agitation when choosing the agent and appropriate dose (Table 5). For example, a youth with autism could be given an additional dose of their usual home medications as first-line treatment for agitation symptoms in the ED. A youth with undifferentiated agitation could be given either diphenhydramine or olanzapine, depending on the degree of agitation and urgency of resolving the situation. Benzodiazepines can be particularly useful in treating agitation related to substance ingestion.²⁹ Whenever possible, oral medications should be attempted before intramuscular or intravenous administration.^{18,31} If an initial dose of medication is not effective, it is preferred to administer a second dose of the same medication rather than a new medication, except when adverse drug reactions occur, or when the maximum daily limit of a given medication is reached.¹⁸ It is important to continuously reassess the etiology of agitation and the response to current therapy, additional therapy, and if adverse drug reactions are developing.¹⁸

TABLE 4 Steps in de-escalation mnemonic ERASER.⁸⁶

E	Eyeball the patient	Evaluate the patient from a safe distance. Survey the scene and ask about weapons or other features that make the scene unsafe. Law enforcement involvement should only be sought when absolutely necessary. Are there signs that the patient will not respond to verbal de-escalation?
R	Respect the patient's space	Patients may escalate when there is intrusion into the personal space. Healthcare team should maintain a respectful distance while being aware of escape routes should the patient become violent.
A	A single member of EMS personnel does the talking and builds rapport	Establishing rapport is critical. With multiple healthcare team on the scene, a single individual should be charged with talking to the patient. The EMS personnel charged with this task must remain neutral, and not become "emotionally involved" in the patient (such as becoming angry, irritated, or frightened of the patient). <ul style="list-style-type: none"> • State your name and position, offer your help. • Be genuine and honest. • Use a calm, reassuring, and helpful voice, and a neutral expression. Be concise in your questions, statements, or instructions. • Give the patient time to respond.
S	Sensible listening	Often patients want to be heard, and people who are upset or confused generally want a way to resolve the issue. Help them find a "way out" if it is reasonable. Try to understand what the patient wants. Show a willingness to calmly listen to the patient, without necessarily reacting to demands. This step can result in re-escalation of agitation if healthcare team become emotionally reactive, angry, frightened, or frustrated. Other healthcare team members may need to step in and continue if this happens.
E	Establish expectations and set boundaries	Boundaries should be set with the patient about behavior that will not be tolerated, consequences of actions, and what the patient is likely to expect. It is important to be clear but avoid using language that can sound intimidating or threatening. <ul style="list-style-type: none"> • For example, "You may not threaten people, it is our job to make sure everyone stays safe." "We need to make sure that you are ok, can we check your vitals and ask you some questions." "Unfortunately, we are worried that you cannot make informed medical decisions because you are intoxicated. We are going to take you to the hospital so you can be treated for your injuries." • Give specific instructions such as "can you please sit down so we can talk." Avoid generic directives such as "calm down" or "relax." • Provide a clear warning to the patient about the need to ensure the safety of both the patient and EMS personnel and public. Warn that restraint, or medications will be given as necessary, but as a last resort.
R	Reasonable choices are given to the patient	By retaining some degree of control, many patients will comply with direction if given reasonable choices. For example, EMS personnel could say, "would you like to walk over to the ambulance and sit on the bed inside, or do you prefer we bring the bed over here for you to sit on?"

Abbreviation: EMS, emergency medical services.

TABLE 5 Pharmacologic considerations for acute agitation in intoxication or withdrawal.

Benzodiazepine or alcohol intoxication	Haloperidol (PO/IV/IM)
Benzodiazepine or alcohol withdrawal or stimulant intoxication	Lorazepam or midazolam (PO/IM/IV) May add haloperidol for severe agitation or hallucinations
Opioid withdrawal	Clonidine (PO) or opioid agonists (methadone) or partial agonists (buprenorphine-naloxone)
Phencyclidine intoxication	Lorazepam (PO/IM/IV)
Intoxication from unknown substance	Lorazepam (PO/IM/IV) Add haloperidol for severe agitation or hallucinations

Abbreviations: IM, intramuscular; IV, intravenous; PO, oral.

6 | PHYSICAL RESTRAINT AND POST-RESTRAINT CONSIDERATION

Limited data indicate that the use of physical restraints are commonly used in pediatric ED patients, with several studies reporting a range of restraint use from about 2% to 7% of MBH patients.³² The range of physical restraint use varies widely, from the sole method in almost half of agitated youth to only 10% in others.³² Aside from the psychological trauma to patients and requirements in terms of staff resources, restraints can have harmful physical³³ and psychological consequences in youth.³⁴ While it is difficult to get a true estimate, pediatric death due to physical restraints, most commonly due to asphyxia, has been reported.³⁵⁻³⁷ As such, physical restraints should only be used as a last resort to protect the patient and staff, and efforts to minimize the duration of restraint use should be a priority.^{34,38} Detailed standards for physical restraint use are somewhat limited. The Joint Commission requires hourly re-evaluation of the need for restraints for patients under 9 years of age and every 2 hours for patients aged 9-17 years.

TABLE 6 Pharmacologic considerations for acute agitation by diagnosis.

Diagnosis	Medication
Neurodivergent	Consider extra dose of patient's home medication Risperidone (PO) or Chlorpromazine (PO/IM) or Olanzapine (PO/IM) or Clonidine (PO) or Aripiprazole (PO)
Delirium	Risperidone (PO) or Olanzapine (PO/IM) or Clonidine (PO)
Anxiety/trauma/ PTSD	Lorazepam (PO/IM/IV)
Mania or psychosis	Consider extra dose of patient's home medication Risperidone (PO) or Quetiapine (PO) or Chlorpromazine (PO/IM) or Olanzapine (PO/IM) or Haloperidol (PO/IM)
Oppositional defiant disorder or conduct disorder	Chlorpromazine (PO/IM) or Lorazepam (PO/IM) or Olanzapine (PO/IM) or Risperidone (PO)
Undifferentiated agitation	Moderate agitation: diphenhydramine (PO/IM) or olanzapine (PO/IM) or lorazepam (PO/IM) Severe agitation: haloperidol (PO/IV/IM) ± lorazepam (PO/IM) or chlorpromazine (PO/IM) or olanzapine (PO/IM) ketamine (IV/IM)

Abbreviations: IM, intramuscular; IV, intravenous; PO, oral; PTSD, post traumatic stress disorder.

Moreover, the least restrictive form of restraint that maintains patient and staff safety should be used.³⁹

Although ED protocols for care after placement of physical restraints are limited, a plan for preventing and managing the potential return of agitation is among the important proposed quality measures for pediatric agitation in the ED.⁴⁰ To create such a plan, including early identification of triggers, ED teams should debrief after every restraint event to develop an individualized agitation plan for optimal treatment and prevention of ongoing physical restraint.⁴¹ It is also important to ensure appropriate information sharing among team members when caring for a patient boarding in the ED for an MBH condition, especially if an individualized agitation plan has been established. Structured handoffs have been shown to improve communication and ensure that critical messages are relayed.⁴² Sign-out tools for structured handoffs have been shown to help avoid missing critical information during transitions in care.⁴² Last, frequent reassessment and active monitoring for signs of agitation throughout the ED stay are important ways to prevent future episodes. Currently, no specific agitation scoring system is recommended for pediatric patients boarding in the ED for an MBH

crisis; however, there are some preliminary studies of agitation scoring systems for youth with MBH conditions in other settings.

- Brief Rating of Aggression by Children and Adolescents: a 16-point scale to assess and predict potential aggression toward others⁴³; this score has not been validated for aggression toward self.
- Modified overt aggression scale⁴⁴ or (MOAS): a four-point scale that can be quickly used in real time to assess the level of agitation via interview with the patient. While primarily used in adults, the American Academy of Pediatrics recommends MOAS as an agitation scoring system,⁴⁵ which can be particularly helpful for adolescents.

7 | DISPARITIES IN PHARMACOLOGIC AND PHYSICAL RESTRAINT USE

Disparities exist within all aspects of pediatric MBH care, including outpatient care, referral to neuropsychiatric testing, access to trauma-informed mental health services, diagnosis, and management of MBH conditions, as well as management of agitated patients in acute settings.^{46–52} In a study of 30 children's hospitals across the United States investigating pharmacologic restraint use in the ED, Black youth had a higher likelihood than White youth of receiving pharmacologic restraint (adjusted odds ratio [aOR] 1.22; 95% confidence interval [CI] 1.09–1.35).⁵³ An additional study of 11 different EDs within a New England healthcare system revealed that Black youth were more likely to be physically restrained compared to White youth (aOR 1.80; 95% CI 1.40–2.32).⁵⁴

Several institutional-level interventions can reduce both overall restraint use and disparities in use in youth with acute agitation. First, hospitals can provide staff training on trauma-informed/responsive care and de-escalation techniques for youth with behavioral dysregulation.³⁸ Additionally, the use of standardized agitation screening tools and evidence-based acute agitation care pathways may enhance the quality and equity of care.^{50,55} Integration of individualized behavioral health plans can enhance patient-centered care while also offering the possibility of decreased acute agitation events that require restraint.³⁸ Establishing behavioral emergency response teams within the ED setting has been shown to reduce restraint events for youth and adults.⁵⁶ Quality improvement dashboards that monitor disparities in care can also help inform ongoing responses to ensure equitable pediatric MBH care.

8 | YOUTH WITH NEURODIVERGENCE

Neurodivergent youth are particularly at risk for agitation.⁵⁷ Challenges in connecting and communicating can be extremely frustrating for the patient, family, and ED staff. Neurodivergent youth may become agitated because of a change in their environment, loss of routine and familiar surroundings, or changes in their schedule.²² Verbal de-escalation strategies alone may be less effective in these patients. Reducing sensory stimuli such as noise, light, and crowds, as well as

an attempt to provide as familiar an environment as possible and easy access to food and water, are cornerstones of managing acute agitation in neurodivergent youth. Agitation may also indicate underlying pain (eg, dental pain, constipation), illness, or overstimulation.⁵⁸

While no standardized assessment tools are currently available for managing an agitated neurodivergent youth, one study found that the affective reactivity index, a parent-rated measure of irritability, performed well in assessing irritability and agitation in youth with autism.⁵⁹ When speaking to the youth, it is important to keep the conversation brief and simple and avoid overstimulation.⁵⁹ When assessing needs and concerns, use of visual and illustrated cues may be more effective than verbal communication.⁶⁰ Further research on agitation recognition and management in neurodivergent youth is needed, particularly to better understand the heterogeneous nature of agitation in this group of youth and influence of co-existing psychiatric conditions, when present.⁶¹

The pharmacologic approach to treating agitation in neurodivergent youth differs from that of neurotypical youth.⁶² Currently, few medications are approved by the Federal Drug Administration (FDA) to treat agitation in neurodivergent youth specifically. Aripiprazole and risperidone are the only two medications with FDA approval for managing irritability in neurodivergent youth.^{63,64}

Severe behavioral dysregulation, self-injury, and property destruction are more common in neurodivergent youth. According to one study, as many as two-third of all youth with autism have had at least one significant episode of self-harm or property destruction.⁶³⁻⁶⁶ While physical restraint use in neurodivergent youth is not uncommon,⁶⁷ it may potentially worsen agitation by taking away a youth's freedom and by inducing fear and promoting dysregulation. This can also result in a long-lasting negative effect on youth. Therefore, verbal de-escalation, must be prioritized over physical restraint, and focus should be on modifying environmental factors, such as noise, lighting, temperature, and interactions, to reduce agitation.⁶⁸

9 | SAFETY AND QUALITY CONSIDERATIONS

In addition to risk of iatrogenic harm to the patient from pharmacologic or physical restraint, acute agitation creates a safety risk to families, other patients, and ED staff. A recent study found a high prevalence of workplace violence among ED healthcare workers, with 31% reporting physical assault from an agitated patient in the preceding 6 months.⁶⁹ Workplace violence is likewise commonly reported among pediatric ED staff, both nationally and internationally, and reinforces the importance of early and effective intervention for agitated patients.⁷⁰⁻⁷² Quality measures can help track progress in meeting the goal of high-quality care delivery and minimization of patient and staff harm in structure, process, and outcome (Table 7).⁷³ ED examination room safety, number of patients restrained, adverse medication events, staff or patient injuries, presence of a standardized agitation algorithm, staff training on de-escalation techniques, documentation of plans for re-escalation, and time between medication order and administration are important quality metrics to consider.⁵⁵

TABLE 7 Quality measures for acute agitation.⁵⁵

Structure
<ul style="list-style-type: none"> • Presence of a structured multi-disciplinary “behavioral health rapid response” • Presence of a standardized protocol available to guide management of agitation
Process
<ul style="list-style-type: none"> • Number of patients with a mental or behavioral health symptom screened for agitation upon arrival • Percent of patients at risk for agitation placed in ED room designed for safety • Number of agitated patients who have a complete set of vital signs documented within 30 min of ED arrival • Number of verbal de-escalation strategies prior to medication administration for agitation • Percentage of ED staff who have completed a formal training program in verbal de-escalation techniques and crisis intervention • Percentage of ED staff who have participated in a didactic training followed by simulation training on verbal de-escalation techniques and crisis intervention • Percentage of patients with mental or behavioral health symptom who receive a medication for agitation • Time from onset of agitation to time of first medication given for agitation • Time from medication order to administration of medication for agitation • Percent of patients who receive a medication who receive youth life services • Percentage of patients who receive medications or restraints who have a documented plan for prevention or treatment of re-escalation • Length of stay in the ED for patients with agitation • Return visit within 7 days for patients with agitation who are discharged
Outcome
<ul style="list-style-type: none"> • Median time in physical restraints per patient in minutes • Number of ED patients who receive physical restraints per 1000 h of ED patient care • Frequency of serious adverse events related to administration of medication for agitation • Patient/family and staff injuries per month related to episodes of patient agitation

Abbreviation: ED, emergency department.

10 | MANAGING AGITATION IN PRE-HOSPITAL SETTING

In the pre-hospital setting, acute agitation is particularly challenging to manage, given the environment, time, and resource constraints.⁷⁴ When pharmacologic restraint is needed during pre-hospital transport, intramuscular ketamine is used by some emergency medical services (EMS) agencies, with or without the addition of midazolam.⁷⁵ This may result in the patient arriving to the ED already sedated, which needs to be managed.⁷⁶ In a large prospective pre-hospital registry study of over 3700 patients who had received ketamine for severe agitation, in two adult patients (0.02%), ketamine may have resulted in the death of the patient on scene.⁷⁷ In the same study, of the 122 youth younger than 19 years who had received ketamine in the field, none died, and most were discharged from the ED.⁷⁷ The American College of

Emergency Physicians' Clinical Policy on treatment of adult patients in the out-of-hospital and ED settings suggests that in situations where rapid control of agitation and protection the safety of the EMS personnel, bystanders, and the patient is necessary, ketamine may be a reasonable choice in medication due to its rapid onset and reliability.⁷⁸ Regardless of the setting and medication utilized, appropriate dosing based on weight and monitoring of patients for respiratory failure are critical for rapid treatment of this complication.

11 | LEGAL AND COMPLIANCE CONSIDERATIONS IN AGITATION MANAGEMENT

Emergency clinicians who manage agitation following the principles described in this paper will be acting within their duties and legal obligations. Specifically, using stepwise strategies to manage agitation that poses a threat to the patient or staff is appropriate and, when documented clearly in the medical record, is within the expected standard of care. This documentation should include the use of the least invasive method (use of verbal de-escalation before the use of pharmacologic restraint, for example). As in all emergencies, there is a general exception for parental consent when the treating clinician determines that the degree of agitation poses clear harm to the patient or staff.⁷⁹

Emergency Medical Treatment and Active Labor Act regulations requiring stabilization of medical emergencies include the management of an acutely agitated patient.⁸⁰ As is the case with any issue of parental consent, the primary responsibility of the emergency clinician is to the patient, ensuring that they are safe and medically stable. It is important that local protocols and state laws be followed, and while law enforcement and child protective services may be involved, clinicians should work with families and the entire care team to create care plans to safely address agitation in the ED.

12 | ED DISPOSITION OF CHILDREN WITH AGITATION

Youth with acute agitation in the ED likely need an MBH assessment to determine the safest and least restrictive environment of care. Although some youth with agitation may require a period of psychiatric hospitalization if there is ongoing concern for the safety of themselves or others, once acute agitation has resolved, prior studies show a majority can be safely discharged to home.^{13,81} For a youth who needs special MBH support or inpatient hospitalization and interfacility transfer is required, principles of patient and medical team safety with prioritization of verbal de-escalation techniques and minimization of restraint and sedation should be utilized.⁸² Last, prior to disposition, an important consideration for all youth with MBH conditions is optimizing the safety of the home environment. Therefore, for any youth who has been evaluated for agitation and who may have risk to themselves or others in the future, the ED team and/or MBH specialist can help to create an individualized safety plan, which also includes screening and counseling on access to lethal means.⁸³

13 | CONCLUSION

Agitation is a common presentation to the pediatric ED. Identification of the cause of agitation is important to provide targeted interventions to address underlying conditions or specific triggers of agitation. Any youth developmentally able to understand and communicate should be allowed to participate in the care plan, when possible. Clinicians can assess the ability to provide verbal de-escalation before attempting any method of restraint. When verbal de-escalation alone is not effective and pharmacologically assisted de-escalation is required, the least restrictive means, such as oral medication, should be considered to minimize stress and disruption to the patient, family, and ED staff. Physical restraint should be a last option, and when employed, youth in restraint should be frequently reassessed and restraint removed as soon as safely possible. Ongoing efforts to eliminate disparities in restraint use in pediatric patients with MBH conditions are needed.

AUTHOR CONTRIBUTIONS

All the authors have contributed significantly to this manuscript. Each author has participated in literature search and has served as either primary or secondary author in one or more sections of the paper. Each author has provided edits and feedback, and has participated in revisions, generation of tables, and final review.

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CONFLICT OF INTEREST STATEMENT

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ORCID

Mohsen Saidinejad MD, MBA  <https://orcid.org/0000-0002-4782-0597>

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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