

EMSC Connects

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July 2017

**Emergency Medical Services for Children
Utah Bureau of EMS and Preparedness**

A Word From Our Program Manager

Special points of interest:

- Behavioral emergencies in pediatrics
- Approaching the aggressive patient
- Data on behavioral emergency calls to 911
- Improper use of Adenosine in treatment of Asthma

Inside this issue:

Pedi Points	2
The Data Reveals	2
The Doc Spot	3
Protocols in Practice	4
Happenings	5
Pharmacy Facts	6
Calendar	7

July is a month for celebrations, the birth of our country and Utah Pioneer Day. Fireworks are used by many to celebrate the founding of cities, states and this great country of ours. I have to be honest. I would enjoy the celebrations more if we only had public displays for fireworks, with trained fire personnel to manage mishaps and medical personnel to manage injuries. At least in my neighborhood, these holidays and the ability to celebrate with fireworks seem to render people of their common sense and common courtesy. Fireworks go off throughout the month of July at all hours of the night. Animal shelters fill up with stray pets frightened from the noise and children are injured by fireworks each year. According to the Consumer Protection Safety



Commission. 58% of firework related injuries happen to children under the age of 19. During the 4th of July celebration period, over 230 people on average go to the emergency room for firework related injuries. Firecrackers and sparklers cause 40 % of the injuries.

NEVER allow children to play with or ignite fireworks.

The [Utah Burn Center](#) has great resources for emergency healthcare providers on their website. This might be a

good time of year to review burn treatment skills as fireworks, grills and firepits abound.

I hope you all enjoy a festive and safe holiday season. Thank you for all you do and your continued support in caring for the children of Utah.

Jolene Whitney
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Pedi Points
Tia Dickson, RN BSN

Psychiatric or behavioral emergencies are common reasons to call 911. These emergencies can be challenging. Often the patient lacks the objective symptoms we are used to looking for. Symptoms such as respiratory distress or a fever are easy to see and we know how to treat them. The symptoms of behavioral emergencies are often complex and subjective. These emergencies in children are even more challenging due to family and cultural considerations. These calls are frequently for alcohol intoxication, states of agitation, violent or self-harm behavior. As first contact, EMS providers can set the tone for the patients' entire experience.



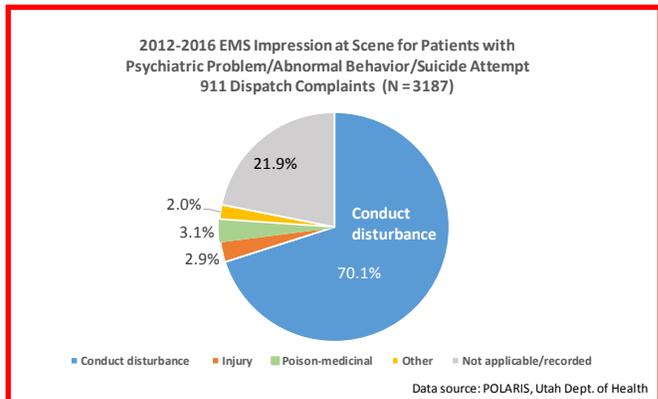
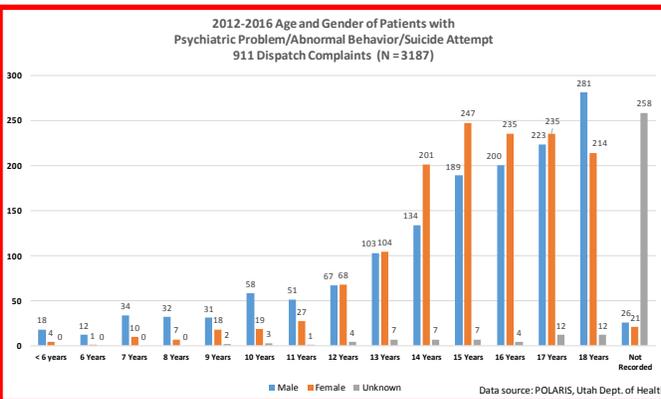
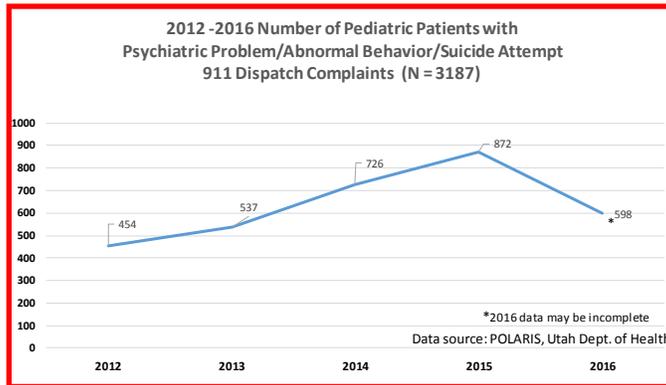
Many patient outbursts are due to an underlying medical problem. Things such as metabolic imbalances, alcohol/drug intoxication, and developmental diagnoses like Autism or ADHD should be ruled out in your initial evaluation.

A recent study found [medics are assaulted more often than firefighters](#). Scene safety is always a first priority and when faced with a violent patient, EMS providers need to know how to recognize, avoid, and escape an attack.

There is a great article online entitled, "[Expert tips for EMS handling of behavioral emergencies](#)" it includes links to top articles and videos on behavioral emergencies. You may find these helpful for your own self-directed learning and squad training.

The Data Reveals
Yukiko Yoneoka, MS Specialty Care Data Analyst. Bureau of EMS and Preparedness, UDOH

FOR MORE ACCURACY AND LESS GREY BOXES, BE THOROUGH IN YOUR POLARIS REPORTING



The Doc Spot

Adapted with permission from; *Management of the Aggressive Patient in the Pediatric Emergency Room* by **D. Richard Martini, M.D.**

Background:

Prevalence of Aggressive Behavior in Public High Schools in a 12 Month Period (United States Department of HHS, 2009)

- * 31.5% of children will be in at least one fight in high school
- * 3.8% will be involved in a fight that led to injury
- * 11.1% will be in a fight on school property
- * 9.8% will be involved in date violence
- * 17.5% carried a weapon in the previous 30 days
- * 5.9% carried a gun in the previous 30 days

Disorders Often Associated with Aggressive Behavior

Disruptive Behavioral Disorders

such as ADHD, hyperactivity, conduct disorders or oppositional defiant disorder (ODD)

- These children tend toward mood lability and impulsivity

Pervasive Developmental Disorders

such as Autism and Asperger syndrome

- These children have difficulty with social and verbal communication.
- Compulsive and self-injurious behaviors can be seen in some.

Major Depression

- They are at increased risk for verbal and physical aggression

Bipolar Disorder

- These patients experience mood dysregulation

Post-traumatic Stress Disorder

- These children can be prone to hyper arousal, hallucinations and disorientation

Delirium

One of the most common reasons for an acute behavioral health emergency is delirium. Is it not a disease but a collection of symptoms that represent an (usually sudden) onset of decline from a previously attained baseline level of cognitive function. It can present as disturbances in consciousness, attention, cognition, and perception. Delirium is a consequence of a medical condition, substance use, withdrawal or toxin exposure. While delirium is most common in the elderly, pediatric patients are at risk. Children are vulnerable to toxic, metabolic, or traumatic CNS insults. These symptoms increase in the presence of a fever. Children have developmental limitations with communication and cognition and their mental health is frequently mismanaged. Medical Providers should consider the reversible causes of delirium in managing a behavioral health emergency;

- ◆ Hypoglycemia
- ◆ Hypoxia or anoxia
- ◆ Hyperthermia
- ◆ Severe hypertension
- ◆ Alcohol or sedative withdrawal
- ◆ Wernicke's encephalopathy
- ◆ Anticholinergic delirium
- ◆ CNS disorders

Stepwise Progression of Emergency Interventions

Conduct a risk assessment

- Evaluate how acutely dangerous the patient is
- Assess risk of harm to self or others
- Obtain additional collateral information from family, school, and peer contacts

Approach the patient in a calm and solicitous manner

- Avoid aggressive positions
- Clearly introduce yourself, orient the patient to the situation



- Explain what will happen in the ambulance or ER
- Use simplified language in a soft voice, with minimal movements
- Reduce environmental stimulation, if a family member or onlooker is exacerbating the situation, remove them from the patient
- Allow room for pacing, if the patient needs to move, let them
- Listen and empathize

Early interventions

- Utilize the security staff, police presence and social work
- Convey a message to the patient that he/she will be safe in your care
- Find things for the patient to control (food, drink, activities)
- Prepare the destination staff for more direct interventions

Emergent interventions

- Do not leave the patient alone
This increases the risk of escalation and injury to staff and patient
- Do not take the patient's anger personally, acknowledge your own feelings in the situation to yourself in order to manage them

The Doc Spot—continued

professionally

- Assign consistent caregivers when possible

Restraints

Centers for Medicare and Medicaid Services define the use of restraints as follows: “Managing behavioral emergencies (with restraints) is allowed only when all less restrictive measures have failed and unanticipated severely aggressive or destructive behavior places the patient or others in imminent danger.”



Use of either physical or chemical restraints in the pre-hospital and hospital setting is clearly outlined by state and facility/agency protocols. Study the procedures outlined by your agency.

Physical Restraint Considerations

- Use restraints only as designed, avoid makeshift restraints
- Perform face to face assessments through out treatment
- Prone position is initially safer for the patient and clinician
- Beware and assess for the dangers of physical restraint and seclusion
 - * Skin breakdown, Neurovascular damage, Hypoventilatory respiratory failure due to body position and compression, Death

Chemical Restraint Considerations

- Consider when the patient is struggling violently in physical restraints or when physical restraints are not preferred
- Perform serial assessments, avoid either overstimulation or under stimulation, decrease stress for patient and family, orient the patient frequently
- Oral medications are preferred

Protocol in Practice

VIOLENT PATIENT / CHEMICAL SEDATION / TASER BARB REMOVAL

ALL PROVIDERS

- **Scene management**
 - Contact Law Enforcement if the patient is determined to be a threat to EMS providers, themselves, or others or if assistance with patient control is otherwise needed.
 - Remove patient from the stressful environment and remove any possible weapons from scene.
 - Before touching any patient that has been Taser'd, ensure law enforcement has disconnected the wires from the hand-held unit.
- **Focused history and physical exam**
 - Blood glucose, temperature and oxygen saturation assessment.
 - Always assess for a possible medical condition, exposure or trauma including possible abuse.
 - Note medications/substances on scene that may contribute to the agitation, or may be for treatment of a relevant medical condition
- **Cardiac monitor, ETCO2, and pulse oximetry monitoring, when available**
- **Treatment Plan**
 - **Taser'd patient:** Removal of Taser probes
 - EMS providers may remove probes that are not embedded in the face, neck, groin, breast, or spinal area.
 - To remove probes:
 - Place one hand on the patient in the area where the probe is embedded and stabilize the skin surrounding the puncture site. Place other hand firmly around the probe.
 - In one fluid motion, pull the probe straight out from the puncture site and repeat procedure with second probe.

Emergency Medical Services for Children

- The following patients should be transported to an Emergency Department for evaluation:
 - Patient with probes embedded in the face, neck, groin, breast, or spinal area
 - Patient with significant cardiac history
 - Patient having ingested stimulants (including methamphetamines, phencyclidine/PCP, cocaine, spice, bath salts, designer drugs, etc).
 - Patients exhibiting bizarre behavior or those with abnormal vital signs

□ Key Considerations

- Chemical sedation should be considered for patients that cannot be calmed by non-pharmacologic methods and who are a danger to EMS providers, themselves, or others.
- Selection of chemical restraint medications should be based upon the patient's clinical condition, current medications, and allergies. Consult OLMC when necessary to assist in the selection of medications in difficult cases.
- Generally speaking, it is preferable to choose ONE drug for management of agitation and maximize dosing of that medication prior to adding another medication.
- Consider a reduction in the initial dosage of chemical restraint medications if the patient has taken narcotics or alcohol (e.g. begin with 50% of the recommended initial dose to assess response).

The order in which medications below are listed is not intended to indicate hierarchy, order, or preference of administration

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT

- Attempt to calm or gently restrain the patient with verbal reassurance. Engage the assistance of any family or significant others in the process.

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AEMT

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- Vascular access and fluid therapy per *IV/IO Access and Fluid Therapy Guidelines*

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Midazolam

- **IV/IO – 5 mg**, may repeat once in 10 minutes, if needed. Total max dose: 10mg
- **Intranasal (IN) – 5 mg**, may repeat once in 10 minutes to a max dose of 10mg
- **Intramuscular (IM) – 10 mg** once

Midazolam

- **IV/IO - 0.1 mg/kg** (max 5 mg), may repeat once in 10 minutes, if needed. Total max dose: 10 mg
- **Intranasal (IN) - 0.3 mg/kg** (max 5 mg), may repeat once in 10 minutes, if needed. Total max dose: 10 mg
- **Intramuscular (IM) – 0.15 mg/kg** (max 5 mg) once

Diazepam

- **IV/IO – 5 mg** every 10 min to the desired effect or max dosage of 20 mg
- **Intramuscular (IM) – 10 mg** once (IM not preferred, unless no other options)

Diazepam

- **IV/IO - 0.1 mg/kg** (max 5 mg), may repeat once in 10 minutes, if needed. Total max dose: 10 mg
- **Intramuscular (IM) – 0.2 mg/kg** (max 10 mg) once (IM not preferred unless no other options)

Lorazepam

- **IV/IO – 2 mg** every 5 min. to the desired effect or max dose of 4 mg
- **Intramuscular (IM) – 4 mg** once

Lorazepam

- **IV/IO – 0.05 mg/kg** (max 2 mg), may repeat once in 10 minutes, if needed. Total max dose: 4 mg
- **Intramuscular (IM) – 0.05 mg/kg** (max 4 mg) once

① Contact OLMC for dosages above those provided or use of medication NOT fitting the guideline parameters.

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Emergency Medical Services for Children

PARAMEDIC	PARAMEDIC
<p>Ketamine</p> <ul style="list-style-type: none"> • Intramuscular (IM) – 4 mg/kg once (max 300 mg) • IV/IO – 1 mg/kg every 10 min to the desired effect (max dose 200 mg) <p>Haloperidol</p> <ul style="list-style-type: none"> • Intramuscular (IM) - 5-10mg once • IV/IO – 2-5 mg every 10 min to the desired effect (max dose 10 mg) <p>① Contact OLMC for dosages above those provided or use of medication NOT fitting the guideline parameters.</p>	<p>① Contact OLMC for consultation prior to giving ketamine or haloperidol to children</p> <p>Ketamine</p> <ul style="list-style-type: none"> • Intramuscular (IM) – 3 mg/kg once (max 300 mg) • IV/IO – 1 mg/kg once (max dose 200 mg) <p>Haloperidol</p> <ul style="list-style-type: none"> • <6 years old – NOT recommended • 6-12 years old: 0.15 mg/kg IM (max 3 mg) once • 12 years and older: 5-10mg IM once

Happenings

14th Annual Utah TRAUMA Network 2017

We are pleased to announce [registration](#) for the 14th Annual Utah Trauma Network Conference is open! This conference is the premier event sponsored by the six Level 1 & 2 trauma centers in Utah, and the Bureau of Emergency Medical Services. The purpose of the conference is to educate trauma care providers on the recent advances in trauma care. September 15th, 2017

Pharmacy Facts

Greg Nelsen PharmD and Richard Thomas PharmD, Bureau of EMS Pediatric Disaster Strike Team

Albuterol Tachycardia and Adenosine

Recently a few children have received adenosine for the tachycardia caused by the administration of high dose, nebulized albuterol during an acute asthma attack. Tachycardia is a well-documented side effect of nebulized albuterol therapy. Albuterol binds to the beta-2 adrenergic receptors in the heart, the same receptors to which epinephrine binds. Like epinephrine, albuterol produces a sympathomimetic or fight or flight response relaxing bronchial smooth muscle, opening the airway and increasing heartrate. The resulting tachycardia can reach rates of 180 bpm and have the appearance on an ECG of supraventricular tachycardia. However, giving adenosine in these patients is not recommended for several reasons.

First, the FDA approved package insert for adenosine states that it - should be used with caution in patients with obstructive lung disease not associated with bronchoconstriction (e.g., emphysema, bronchitis, etc.) and should be avoided in patients with bronchoconstriction or bronchospasm (e.g., asthma).” Second, when adenosine is given by inhalation, it produces significant bronchoconstriction in asthmatics but has little effect on non-asthma patients. Consequently, it might be expected, that IV adenosine would do the same. There are a few case reports and small studies that provide conflicting information about the likelihood of adenosine causing bronchospasm when given for the treatment of SVT in asthmatic patients. Because of these reasons, a high level of caution should be exercised if a patient presents in symptomatic SVT and has asthma or COPD. Adenosine administration may worsen a patient’s symptoms without having any beneficial effect on the patient’s heartrate.

July 2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4 	5	6	7	8
9	10	11 EGR	12	13	14	15
16	17	18	19	20 PEL	21	22
23	24 	25	26	27	28	29
30	31					

Pediatric Education Around the State

Pediatric Grand Rounds (PGR) are educational/CME offerings webcast weekly (Sept-May) you can watch live or archived presentations. It is geared towards hospital personnel. But will qualify for BEMSP CME. Access at <https://intermountainhealthcare.org/locations/primary-childrens-hospital/for-referring-physicians/pediatric-grand-rounds/>

EMS Grand Rounds (EGR) This offering alternates with Trauma Grand Rounds every other month, it is geared towards EMS. Live viewings qualify for CME credit.

There are 2 ways to watch

1. Live real time viewing via the internet at: www.emsgrandrounds.com. If you would like to receive CME for viewing this presentation live, email Zach Robinson (Zachary_robinson@hsc.utah.edu)
2. Delayed viewing at your personal convenience, a week after the presentation at: www.emsgrandrounds.com

July 11th 2:00 pm—3:00 pm *Heat Environment Emergencies* John Meyer MD

Peds EMS Lecture Series (PEL) Free monthly pediatric CME/CEU presentations from Primary Children's Emergency Department Attending Physicians to Utah's EMS. Offered every 3rd Thursday. Contact Lynsey.Cooper@imail.org for info. To resume in September 2017

Project ECHO Burn and Soft Tissue Injury (ECHO) has a pediatric and adult component. CME/CEU and MD CME available

<https://crisisstandardsofcare.utah.edu> click request access and follow instructions.

August 9th *At risk populations*

Upcoming Peds Classes, 2017

For PEPP and PALS classes throughout the state contact Andy Ostler Aostler@utah.gov

For PALS and ENPC classes in Filmore, Delta and MVH contact Kris Shields at shields57@gmail.com

Save the Date

Sept 8-10th, 2017 Annual EMSC Coordinator's Workshop

Sept 15-16, 2017 5th Annual Eastern Utah Emergency Services Symposium

Sept 15th, 2017 14th Annual Utah Trauma Network (UTN)



Emergency Medical Services for Children Utah Bureau of EMS and Preparedness

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WERE ON THE WEB

[HTTPS://BEMSP.UTAH.GOV/](https://bemsp.utah.gov/)

The Emergency Medical Services for Children (EMSC) Program aims to ensure that emergency medical care for the ill and injured child or adolescent is well integrated into an emergency medical service system. We work to ensure that the system is backed by optimal resources and that the entire spectrum of emergency services (prevention, acute care, and rehabilitation) is provided to children and adolescents, no matter where they live, attend school or travel.

Save the Date

EMSC's Annual Workshop for Coordinator's is scheduled in Moab on **September 8th-10th**. Families are welcome. Andy Ostler will be sending out rooming requests and information soon.

