

EMSC for ME

IMPROVING EMERGENCY CARE FOR THE CHILDREN OF MAINE



Welcome!

The Maine EMS for Children (EMS-C) Program is happy to share with you this new monthly newsletter designed to share info, topics, education and events to better the care we all deliver to the pediatric population in Maine!

Did you Know?

The three most common types of transport by EMS for pediatric patients in Maine during 2018 were:

1. Behavioral Emergencies (17%)
2. Head Trauma (8%)
3. Seizures (7%)

Infectious Diseases

Click [here](#) for American Academy of Pediatrics' "Red Book Online" for up-to-date information and resources on current infectious disease outbreaks affecting the pediatric population in all states. (<https://redbook.solutions.aap.org/selfserve/ssPage.aspx?SelfServeContentId=outbreaks>)



PEDIATRIC TRANSPORT STUDY

Released in late October 2018, a new paper from Johns Hopkins University on pediatric transport and safety was released supporting the development of evidence based guidelines in line with those for adults. Please find the publication [here](#).

(<https://www.ncbi.nlm.nih.gov/books/NBK513234/>)

TAKE A DEEPER DIVE INTO PEDIATRIC SEIZURES

Managing a pediatric seizure can be a challenging call for any level of EMS provider. According to the Merck Manual, seizures are an abnormal, unregulated electrical discharge of nerve cells in the brain or part of the brain. This abnormal discharge can alter awareness or cause abnormal sensations, involuntary movements, or convulsions. Convulsions are violent, involuntary, rhythmic contractions of the muscles that affect a large part of the body. To see any person experiencing a seizure is unforgettable, for the parent, bystanders, and the EMS providers. Our goal as EMS providers is to limit the length of the seizure, and protect the patient from injury. At the same time, we must try and determine the cause of this seizure. Causes may include: fever, sepsis, head injury, bleeding within the brain, stroke, blood chemistry disorders (including low blood sugar, but also levels of magnesium, calcium and sodium), and drug ingestion.

The Maine EMS protocol Pediatric Seizures, on page Pink 6 & 7 outline the steps involved in treating the patient. All EMS providers should begin with a thorough assessment and history to help narrow the focus to a cause(s). Because of the lack of muscular coordination, breathing changes, poor airway position and vomiting may occur. This must be addressed first. If trauma is suspected, prevent further injury once seizure(s) have stopped, through the use of spinal restriction. Assess blood glucose regardless of history, and if above 60 mg/dl, look for other causes. If fever is suspected, remove diapers/heavy clothing and keep warm, but not hot. If not an ALS provider, request ALS, and determine if the ALS response is sooner than transport to an Emergency Department. If you are ALS, continue with IV access and application of a cardiac monitor (AEMTs should do this en route to a hospital unless a paramedic would arrive sooner). Paramedics should administer midazolam if seizures remain. Options are:

- IM – 0.2 mg/kg to max of 10mg
- IV – 0.1 mg/kg to max of 5mg
- IN – 0.2 mg/kg over 15 sec, split dose between each nostril. Maximum volume per nostril is 1ml. Max dose of 6mg total.

Repeat doses of midazolam require OLMC approval.

Providers should monitor pulse oximetry and ALS should monitor ETCO₂ and manage airway as needed.

Some patients may have a Vagus Nerve Stimulator (VNS) which may help stop seizures by sending pulses through the vagus nerve. The VNS can be restarted through the use of a magnet (which looks like an iWatch) held over the device (usually near the left clavicle) during a seizure. Any level EMS provider may use this, but must consult OLMC (Brown 5).

Pediatric Seizure #1

EMT

1. Manage airway as needed per Blue 5
2. Spinal immobilization if indicated
3. Protect the patient from self-injury
4. Perform finger stick to measure blood glucose, if so trained. If blood glucose is less than 60 mg/dl, refer to Pink 13
5. Request ALS

ADVANCED EMT

6. Cardiac monitor
7. IV access en route

PARAMEDIC

11. Administer IM midazolam if no IV is established. If an IV is established, administer midazolam via the IV route:
 - a. Intramuscular dosing – midazolam 0.2 mg/kg IM to maximum dose of 10 mg
 - b. Intravenous dosing - midazolam 0.1 mg/kg IV maximum 5 mg
 - c. Alternate routes to IM/IV dosing:
 - i. Intranasal dosing – midazolam 0.2 mg/kg IN over 15 sec, one half of dose into each nostril to a maximum dose of 6 mg
 - d. Contact OLMC if repeat dosing of midazolam by IM/IV/IN is necessary

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Pediatric Seizure #2

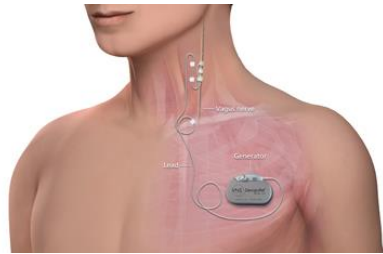
P

12. Monitor oxygenation and ventilation with O₂ saturation and EtCO₂ in all patients receiving midazolam, especially if providing repeated doses of midazolam
13. Manage the patient's airway as necessary

PEARLS for Seizures:
Intranasal dosing must be performed with concentrated midazolam. The maximum volume of medication absorbed per nostril is 1 mL.

Most seizures are self-limited. Unless a specific underlying condition exists (i.e. diabetes with hypoglycemia), treatment of a seizure or multiple seizures with a total duration of less than 5 minutes should focus on patient protection and oxygenation.

For patients with Vagus Nerve Stimulator who are having repeated/continuous seizure activity, consider activation of the Vagus Nerve Stimulator; if not already attempted, by holding the patient's hand-held magnet over the Vagus Nerve Stimulator.



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This information or content and conclusions are those of the author and should not be construed as the official position or policy of, nor should any endorsements be inferred by HRSA, HHS or the U.S. Government.

Pediatric Educational Opportunities



Maine Medical Center
MaineHealth

Maine Medical Center is offering a Clinical Updates in Pediatric Practice conference on January 25 from 715 until 330 pm at the Dana Center at Maine Medical Center, Portland. A pdf flyer is attached, registration and more information is through Susan Woods at 207-662-2290 or by email at woods4@mmc.org



Atlantic Partners EMS

Atlantic Partners EMS is offering a variety of Pediatric Advanced Life Support (PALS), Pediatric Emergency Assessment, Recognition & Stabilization (PEARS) and Emergency Pediatric Care (EPC) courses. For more info and to sign up, visit www.apems.org, or contact APEMS at 207-877-0936, or by e-mail at staylor@apems.org

1. PALS Provider - Thursday, Jan 17 & Friday, Jan 18 at Northern Light Medical Transport
2. PALS Refresher - Friday, Jan 18 at Northern Light Medical Transport
3. PALS Provider - Thursday, Jan 30 & Friday, Jan 31 at Poland Fire & Rescue
4. PALS Refresher - Friday, Jan 31 at Poland Fire & Rescue
5. PALS Provider - Monday, Feb 25 & Tuesday, Feb 26 at St. Mary's Regional Medical Center
6. PALS Refresher - Tuesday, Feb 26 at St. Mary's Regional Medical Center
7. PEARS- Thursday, Mar 27 at Northern Light Medical Transport
8. PEPP Hybrid (BLS & ALS) - Wednesday, Apr 17 Location TBD
9. PEARS - Thursday, May 16 at Northern Light Medical Transport
10. PALS Provider - Thursday, May 22 & Friday, May 23 at St. Mary's Regional Medical Center
11. PALS Refresher - Friday, May 23 at St. Mary's Regional Medical Center
12. PEARS - Tuesday, June 11 at St. Mary's Regional Medical Center
13. EPC - Tuesday, June 25 & Wednesday, June 26 Location TBD



United Training Center in Lewiston is offering the following pediatric education programs:

PALS Refresher	8:30a-5:00p	Jan 16	Apr 26	Aug 13	Nov 12
PEPP ALS/BLS Hybrid	8:30a-5:00p	Mar 21	Jun 11	Oct 22	

To register for the above programs, please visit www.unitedambulance.com

January 25, 2019 9:00a-3:30p Pregnancy & Childbirth Complications & Care of the Neonate
4 Hours OB/Peds, 2 Hours BLS Skills

February 15, 2019 9:00a-3:30p Ages and Stages, What's Normal & What's Not. Disease Variances with
Adults vs Children 4 Hours OB/Peds, 2 Hours Medical

To register for either of these programs, please call 782-8414 x247

Free Online CAPCE approved Opportunities (<https://www.boundtree.com/university/free-online-ceus>)

Pediatric Shortness of Breath

Safe Transport of the Pediatric Patient

We are happy to share your pediatric related education opportunities. Contact marc.a.minkler@maine.gov