



**PROTOCOLS, MEDICATIONS & DEVICES (PMD)  
STANDING COMMITTEE**

**Date:** November 17, 2016 - **Time:** 12:00 PM

**Conference Call: 1-888-205-5513 - Code: 486276#**

**iLinc URL: <https://azdhsems.ilinc.com/register/zvhkcx>**

*You must register prior to the meeting to join the web conference session.*

**AGENDA**

- I. Call to Order – Toni Gross, MD, Chair
- II. Roll Call – (13 Members, 7 required for quorum)
- III. Chairman’s Report – Toni Gross, MD
  - a. Attendance report (Attachment III. a.)
    - i. Welcome new member, Jeffrey Salomone, Trauma Surgeon
  - b. Update from May MDC meeting
  - c. 2017 Meeting Schedule
- IV. Bureau Report – Noreen Adlin
  - a. Rules update –
    - i. Trauma rules progress report
    - ii. Opportunity to review and comment on proposed stroke rules- Terry Mullins
- V. Discussion and Action Items
  - a. Discuss, amend, approve, PMD minutes of July 21, 2016 (Attachment V. a.)
  - b. Discuss, amend, approve Triage, Transport, and Treatment Guidelines (Attachment V.b)
  - c. Discuss, approve adding End Tidal CO2 monitoring/capnography to EMT scope of practice in Table 5.1 -Josh Gaither *Tabled at last meeting*
  - d. Discuss prehospital use of dopamine - Franco Castro-Marin *Tabled at last meeting*
  - e. Discuss prehospital use of ketamine – Gail Bradley *Tabled at last meeting*
- VI. Agenda Items for Next Meeting
- VII. Call to the Public: A public body may make an open call to the public during a public meeting, subject to reasonable time, place and manner restrictions, to allow individuals to address the public body on any issue within the jurisdiction of the public body. At the conclusion of an open call to the public, individual members of the public body may respond to criticism made by those who have addressed the public body, may ask staff to review a matter, or may ask that a matter be put on a future agenda. Members of the public body shall not discuss or take legal action on matters raised during an open call to the public unless the matters are properly noticed for discussion and legal action. A.R.S. § 38-431.01 (G).

Members of the public body may present a brief summary of current events. Members of the public body shall not propose, discuss, deliberate, or take legal action on matters raised during a summary of current events unless the matters are properly noticed for discussion and legal action.
- VIII. Summary of Current Events
  - a. February 5, 2017 – Tackle Trauma [5K RUN/WALK –](http://www.aztracc.org/TACKLETRAUMA5K/)  
<http://www.aztracc.org/TACKLETRAUMA5K/>

IX. Next Meetings: March 16, 2017 @ 12:00 PM, Rooms 215A&B, 150 N. 18<sup>th</sup>

X. Adjournment

**Bureau of Emergency Medical Services and Trauma System  
2017 Statutory/Standing Committee Meetings**

<b>Date</b>	<b>Time</b>	<b>Meeting</b>	<b>Conference Room</b>
January 19, 2017	9:00 a.m.	State Trauma Advisory Board	250 N. 17 <sup>th</sup> Avenue, Lab Auditorium (Igloo)
January 19, 2017	10:30 a.m.	Emergency Medical Services	250 N. 17 <sup>th</sup> Avenue, Lab Auditorium (Igloo)
January 19, 2017	12:00 p.m.	Medical Direction Commission	250 N. 17 <sup>th</sup> Avenue, Lab Auditorium (Igloo)
March 16, 2017	9:00 a.m.	Trauma and EMS Performance Improvement (TEPI)	215A & 215B – 2nd Floor 150 Bldg
March 16, 2017	10:30 a.m.	Education Committee	215A & 215B – 2nd Floor 150 Bldg
March 16, 2017	12:00 p.m.	Protocols, Medications and Devices Committee	215A & 215B – 2nd Floor 150 Bldg
May 18, 2017	9:00 a.m.	State Trauma Advisory Board	215A & 215B – 2nd Floor 150 Bldg
May 18, 2017	10:30 a.m.	Emergency Medical Services Council	215A & 215B – 2nd Floor 150 Bldg
May 18, 2017	12:00 p.m.	Medical Direction Commission	215A & 215B – 2nd Floor 150 Bldg
July 20, 2017	9:00 a.m.	Trauma and EMS Performance Improvement (TEPI)	215A & 215B – 2nd Floor 150 Bldg
July 20, 2017	10:30 a.m.	Education Committee	215A & 215B – 2nd Floor 150 Bldg
July 20, 2017	12:00 p.m.	Protocols, Medications and Devices Committee	215A & 215B – 2nd Floor 150 Bldg
September 28, 2017	9:00 a.m.	State Trauma Advisory Board	215A & 215B – 2nd Floor 150 Bldg
September 28, 2017	10:30 a.m.	Emergency Medical Services Council	215A & 215B – 2nd Floor 150 Bldg
September 28, 2017	12:00 p.m.	Medical Direction Commission	215A & 215B – 2nd Floor 150 Bldg
November 16, 2017	9:00 a.m.	Trauma and EMS Performance Improvement (TEPI)	215A & 215B – 2nd Floor 150 Bldg
November 16, 2017	10:30 a.m.	Education Committee	215A & 215B – 2nd Floor 150 Bldg
November 16, 2017	12:00 p.m.	Protocols, Medications and Devices Committee	215A & 215B – 2nd Floor 150 Bldg

**DISCLAIMER:** “Meeting schedule subject to change upon the request of the Governor’s Office or the Office of the Director. Should this occur, the Bureau will make all reasonable efforts to contact the affected members as soon as feasible.”

10/26/16

---

**PROTOCOLS, MEDICATIONS & DEVICES (PMD)  
STANDING COMMITTEE**

**Date:** July 21, 2016 - **Time:** 12:00 PM

**Location:** 1740 W. Adams Room 05 (Lower Level)

---

**Minutes- Draft**

- I. Call to Order – Toni Gross, MD, Chair **12:00pm**
- II. Roll Call – (13 Members, 7 required for quorum) **Quorum was present**

**III. Members Present**

Toni Gross, MD  
Brian Smith  
Chester Key  
Franco Castro-Marin, MD  
Gail Bradley, MD  
Garth Gemar, MD  
Chester Key  
Jason Johnson, MD  
Josh Gaither, MD  
Neil Gago\*  
Robert Jarvis\*  
Terence Mason, RN

**Members Absent**

Peter Rhee, MD  
Heather Miller, RN

\*indicates member participated telephonically

- IV. Chairman's Report – Toni Gross, MD
- a. Attendance report
    - i. Welcome new member Brian Smith, EMS Council Liaison
  - b. Update from May MDC meeting
- V. Bureau Report – Noreen Adlin
- a. Rules update – Trauma rules revision started
    - The Department received permission to revise existing trauma designation rules
    - First meeting will be held at the State Lab on September 29th, 2016, @ 13:00.
- VI. Discussion and Action Items
- a. Discuss, amend, approve, PMD minutes of March 17, 2016  
Dr. Gross requested a motion to approve the minutes. Motion made by Dr. Bradley.  
**Motion carries**
  - b. Discuss, amend, approve Triage, Transport, and Treatment Guidelines (Toni Gross)  
Dr. Gross requested a motion to discuss the TTTG's. Motion made by Dr. Bradley.  
Discussion ensues. Dr. Gross requested a motion to approve number 1 thru 21 plus number 30 of the TTTG documents with edits. **Motion carries**
  - c. Discuss, approve adding End Tidal CO2 monitoring/capnography to EMT scope of practice in Table 5.1 (Josh Gaither)
    - **Tabled until the November 17, 2016 meeting**
  - d. Discuss prehospital use of dopamine (Franco Castro-Marin)
    - **Tabled until the November 17, 2016 meeting**
  - e. Discuss prehospital use of ketamine (Gail Bradley)
    - **Tabled until the November 17, 2016 meeting**
- VII. Agenda Items for Next Meeting
- No new items requested at this time
- VIII. Call to the Public:

- No response from the public

IX. Summary of Current Events

- a. 27th Annual Southwest Trauma Conference, Presented by the University of Arizona and Banner- University Medical Center August 4 – 5, 2016 – JW Marriott Starr Pass, Tucson  
<https://www.facebook.com/swtrauma/posts/1712960188984114>
- b. November 10 – 11, 2016 – 8th Annual Southwest Trauma and Acute Care Symposium  
<http://www.aztracc.org/symposium/>

X. Next Meetings: November 17, 2016 @ 12:00 PM, Rooms 215A & B, 150 N. 18<sup>th</sup> Ave

XI. Adjournment: 1:35pm

Approved on      by PMD

DRAFT

# VISITORS PLEASE SIGN IN

Education Committee - July 21, 2016 @ 10:30 am

	Name (PLEASE PRINT)	Organization & Position
1	JOELLEN CASWELL	MAX FIRE - EMS CAPTAIN
2	Paul Hargreaves	PORIA FD
3	BRIAN G. BOWLING	MARICOPA Co. SHERIFF'S OFFICE - PARAMEDIC
4	Sharon Hargreaves	Pima College PR
5	Bernad Martinez	FAC PHC
6	Rich Bojorquez - Davila	AZNG
7	CHRIS THOMPSON	YRMC
8	F. Castro-Marin	Home Health
9	Amber Rice	JA
10	Kimberly Boehm	ADHS
11	Andrews Ting	Banner Univ. med. ctr. Tucson
12	Danby Perkins	Gilbert Fire, Educator
13	Rebecca Haro	North County Fire & Medical
14	Danniel Shles	HH, AMR
15		
16		
17		

# Pediatric Respiratory Distress - Bronchiolitis

Child < 2 yo with wheezing or diffuse rhonchi.

Excludes suspected anaphylaxis, croup, epiglottitis, foreign body aspiration, submersion/drowning.

## EMT



- ABCDE Assessment, full set of vitals signs (T, BP, RR, P, SaO<sub>2</sub>)
- Suction nose and/or mouth (via bulb, Yankauer, or catheter) if needed
- Supplemental oxygen: escalate from nasal cannula to face mask to non-rebreather mask as needed in order to maintain normal oxygenation



- BVM for children with respiratory failure



## AEMT



- IV should only be placed for clinical concerns of dehydration or for administration of IV medications



## EMT-I/Paramedic



- Pulse oximetry and end-tidal carbon dioxide (EtCO<sub>2</sub>) should be routinely used as an adjunct to other forms of monitoring
- Administer Epinephrine 0.5 mg (5 mL of 1:10,000) nebulized for severe respiratory distress if suctioning and oxygen fail to result in clinical improvement



- Patients receiving inhaled epinephrine should be transported to definitive care



- If available, non-invasive positive pressure ventilation or high flow nasal cannula (HFNC) should be administered for severe respiratory distress
  - Do not delay administration of medication to administer non-invasive positive pressure ventilation
- Supraglottic devices and intubation should be utilized only if BVM ventilation fails. The airway should be managed in the least invasive way possible



- Patients receiving inhaled epinephrine should be transported to definitive care

# Pediatric Croup

History of stridor or barking cough.

Excludes suspected anaphylaxis, foreign body aspiration, submersion/drowning, asthma, bronchiolitis.

## EMT



- ABCDE Assessment, full set of vitals signs (T, BP, RR, P, SpO<sub>2</sub>)
- Maintain position of comfort in accordance with safe transport guidelines
- Supplemental oxygen: escalate from nasal cannula to face mask to non-rebreather mask as needed in order to maintain normal oxygenation
- Suction nose and/or mouth (via bulb, Yankauer, or catheter) if excessive secretions are present



- BVM for children with respiratory failure



## AEMT



## EMT-I/Paramedic



- Pulse oximetry and EtCO<sub>2</sub> should be routinely used as an adjunct to other forms of monitoring



- Epinephrine 0.5 mg (5 mL of 1:10,000 or 0.5 mL of 1:1,000 in 2.5 mL NS) nebulized if stridor at rest
  - May repeat dose with unlimited frequency for ongoing respiratory distress
- Dexamethasone 0.6 mg/kg (max dose 16 mg) PO, IV, or IM should be administered, if available



- Patients receiving inhaled epinephrine should be transported to definitive care



- If available, non-invasive positive pressure ventilation may be administered for severe respiratory distress
  - Do not delay administration of medication(s) to administer non-invasive positive pressure ventilation
- Supraglottic devices and intubation should be utilized only if BVM ventilation fails. The airway should be managed in the least invasive way possible



- Consider performing 12-lead ECG, where available, only if there are no signs of clinical improvement after treating respiratory distress

# Pediatric Apparent Life Threatening Event (ALTE)

A patient with an episode that is frightening to the observer with some combination of the following: Apnea (central or obstructive), Color change (usually cyanosis or pallor), Marked change in muscle tone (flaccid or rigid).  
Excludes: Age > 12 months, Seizure, Respiratory distress, Cardiopulmonary arrest, Trauma with known mechanism of injury.

## EMT



- ABCDE Assessment, full set of vitals signs (T, BP, RR, P, SaO<sub>2</sub>)
- If apneic, initiation bag-valve-mask ventilation
- Pulse oximetry should be routinely used as an adjunct to other monitoring
- Supplemental oxygen for signs of respiratory distress or hypoxemia: escalate from nasal cannula to face mask to non-rebreather mask as needed in order to maintain normal oxygenation
- Suction nose and/or mouth (via bulb, Yankauer, or catheter) if excessive secretions are present



- Check blood glucose



## AEMT



- IVs should only be placed in children for clinical concerns of shock, or when administering IV medications



## EMT-I/Paramedic



- Place on cardiac monitor
- Pulse oximetry and EtCO<sub>2</sub> should be routinely used as an adjunct to other forms of monitoring



- Supraglottic devices and intubation should be utilized only if bag-valve-mask ventilation fails in setting of respiratory failure or apnea. The airway should be managed in the least invasive way possible



- Regardless of patient appearance, all patients with a history of signs or symptoms of ALTE should be transported for further evaluation
  - Given possible need for intervention, all patients should be transported to facilities with baseline readiness to care for children, where available, per local protocol

# Neonatal Resuscitation

Newly born infants.

Excludes: Documented gestational age < 20 weeks. If any doubt about accuracy of gestational age, initiate resuscitation.

## EMT



- Clamp cord in 2 places and cut between clamps if still attached to the mother
- Warm, dry, and stimulate
  - Wrap infant in dry towel and keep as warm as possible during resuscitation; keep head covered if possible
- If strong cry, regular respiratory effort, good tone, and term gestation, infant should be placed skin to skin with mother and covered with dry linen
- If weak cry, signs of respiratory distress, poor tone, or preterm gestation, position airway (sniffing position) and clear airway as needed. If thick meconium or secretions present and signs of respiratory distress, suction mouth then nose
- If heart rate > 100 beats per minute:
  - Monitor for central cyanosis and provide blow by oxygen as needed
  - Monitor for signs of respiratory distress. If apneic or in significant respiratory distress, initiate bag-valve-mask ventilation with room air at 40-60 breaths per minute
- If heart rate < 100 beats per minute:
  - Initiate bag-valve-mask ventilation with room air at 40-60 breaths per minute while monitoring heart rate closely
  - If no improvement after 90 seconds: change O2 delivery to 30% FiO2 or 100% FiO2 until heart rate normalizes
- If heart rate < 60 beats per minute:
  - Ensure effective ventilations with supplementary oxygen and adequate chest rise
  - If no improvement after 30 seconds, initiate chest compressions (2 thumb technique preferred)
  - Coordinate chest compressions with positive pressure ventilation (3: 1 ratio, 90 compressions and 30 breaths per minute)

## AEMT



## EMT-I/Paramedic



- If apneic or in significant respiratory distress, consider endotracheal intubation as per local guidelines

# Childbirth

Imminent delivery with crowning.

Excludes:

1. Vaginal bleeding in any stage of pregnancy (see **Obstetrical/Gynecological Conditions** guideline).
2. Emergencies in first or second trimester of pregnancy (see **Obstetrical/Gynecological Conditions** guideline).
3. Seizure from eclampsia (see **Seizure** guideline).

## EMT

• Delivery should be controlled



- Support the newborn's head as needed
- Check the umbilical cord surrounding the neck. If present, slip it over the head. If unable to free the cord from the neck, double clamp the cord and cut between the clamps
- Do NOT routinely suction the infant's airway (even with a bulb syringe) during delivery
- Grasping the head with hand over the ears, gently pull down to allow delivery of the anterior shoulder
- Gently pull up on the head to allow delivery of the posterior shoulder
- Slowly deliver the remainder of the infant
- Clamp cord 2 inches from the abdomen with 2 clamps and cut the cord between the clamps
- Record APGAR scores at 1 and 5 minutes. After delivery of infant, suctioning (including suctioning with a bulb syringe) should be reserved for infants who have obvious obstruction to the airway or require positive pressure ventilation (follow **Neonatal Resuscitation** guideline for further care of the infant)

- ↓
- If complications of delivery are identified, follow the following steps:
    - Shoulder Dystocia – if delivery fails to progress after head delivers, quickly attempt the following
      - Hyperflex mother's hips to severe supine knee-chest position
      - Apply firm suprapubic pressure to attempt to dislodge shoulder
      - Apply high-flow oxygen to mother
    - Prolapsed Umbilical Cord
      - Placed gloved fingers between infant and uterus to avoid compression of cord
      - Consider placing mother in prone knee-chest position
      - Apply high-flow oxygen to mother
    - Maternal cardiac arrest:
      - Apply manual pressure to displace uterus from right to left
      - See **Cardiac Arrest (VF/VT/Asystole/PEA)** guideline for resuscitation care
      - Transport as soon as possible if infant is estimated to be over 24 weeks gestation (perimortem Cesarean section at receiving facility is most successful if done within 5 minutes of maternal cardiac arrest)
    - Breech birth – if head fails to deliver:
      - Placed gloved hand into vagina with fingers between infant's face and uterine wall to create an open airway
      - Apply high-flow oxygen to mother
  - Transport as soon as possible
  - Contact online medical direction and/or closest appropriate receiving facility for direct medical oversight and to prepare team

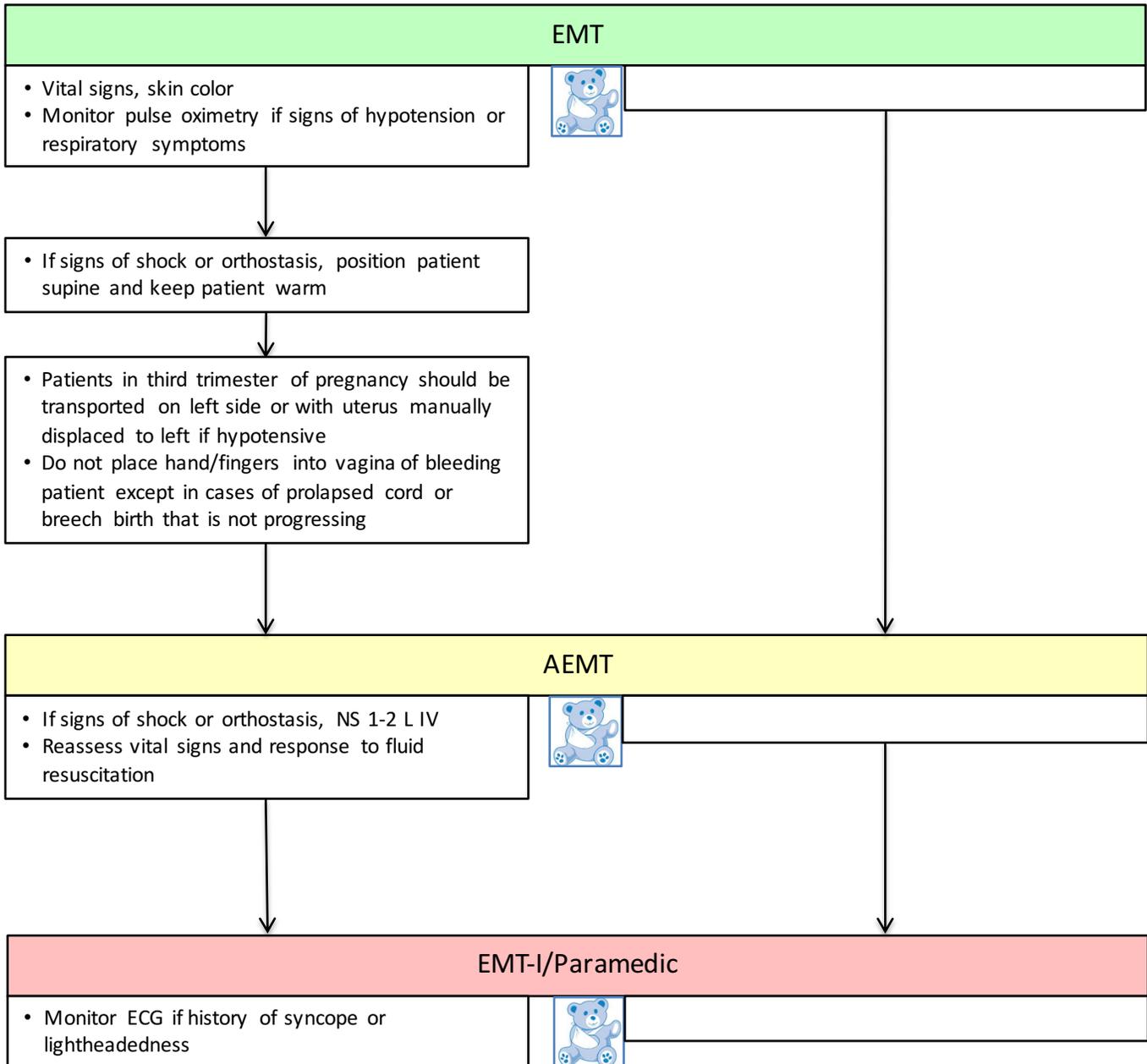
- ↓
- The placenta will deliver spontaneously, often within 5-15 minutes of the infant. Do not force the placenta to deliver. Contain all tissue in plastic bag and transport
  - After delivery, massaging the uterus and allowing the infant to nurse will promote uterine contraction and help control bleeding

# Obstetrical/Gynecologic Conditions

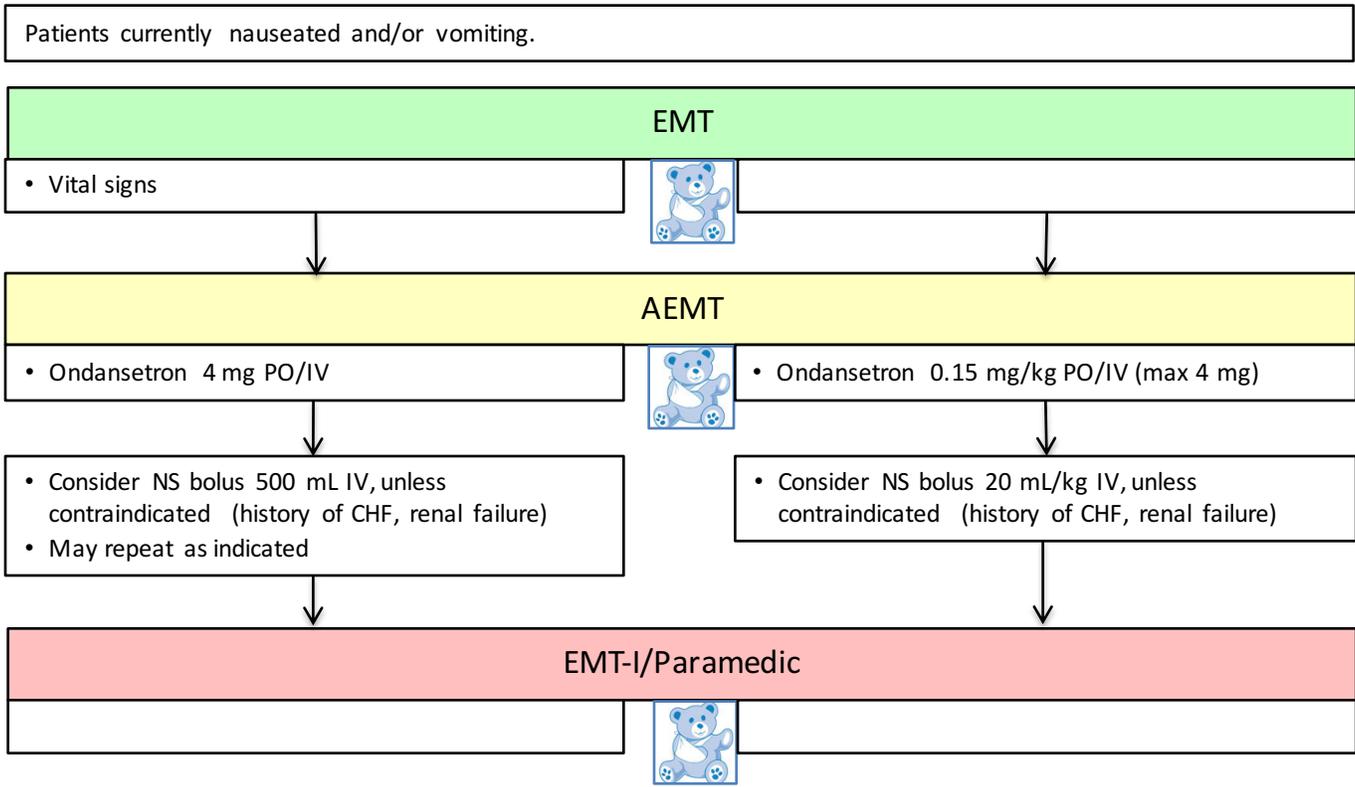
Includes female patient with vaginal bleeding in any trimester, female patient with pelvic pain or possible ectopic pregnancy. Maternal age at pregnancy may range from 10 to 60 years of age .

**Excludes:**

1. Childbirth and active labor (see **Childbirth** guideline).
2. Seizure related to pregnancy/eclampsia (see **Seizures** guideline).
3. Post-partum hemorrhage (see **Childbirth** guideline).



# Nausea/Vomiting: Adult & Pediatric

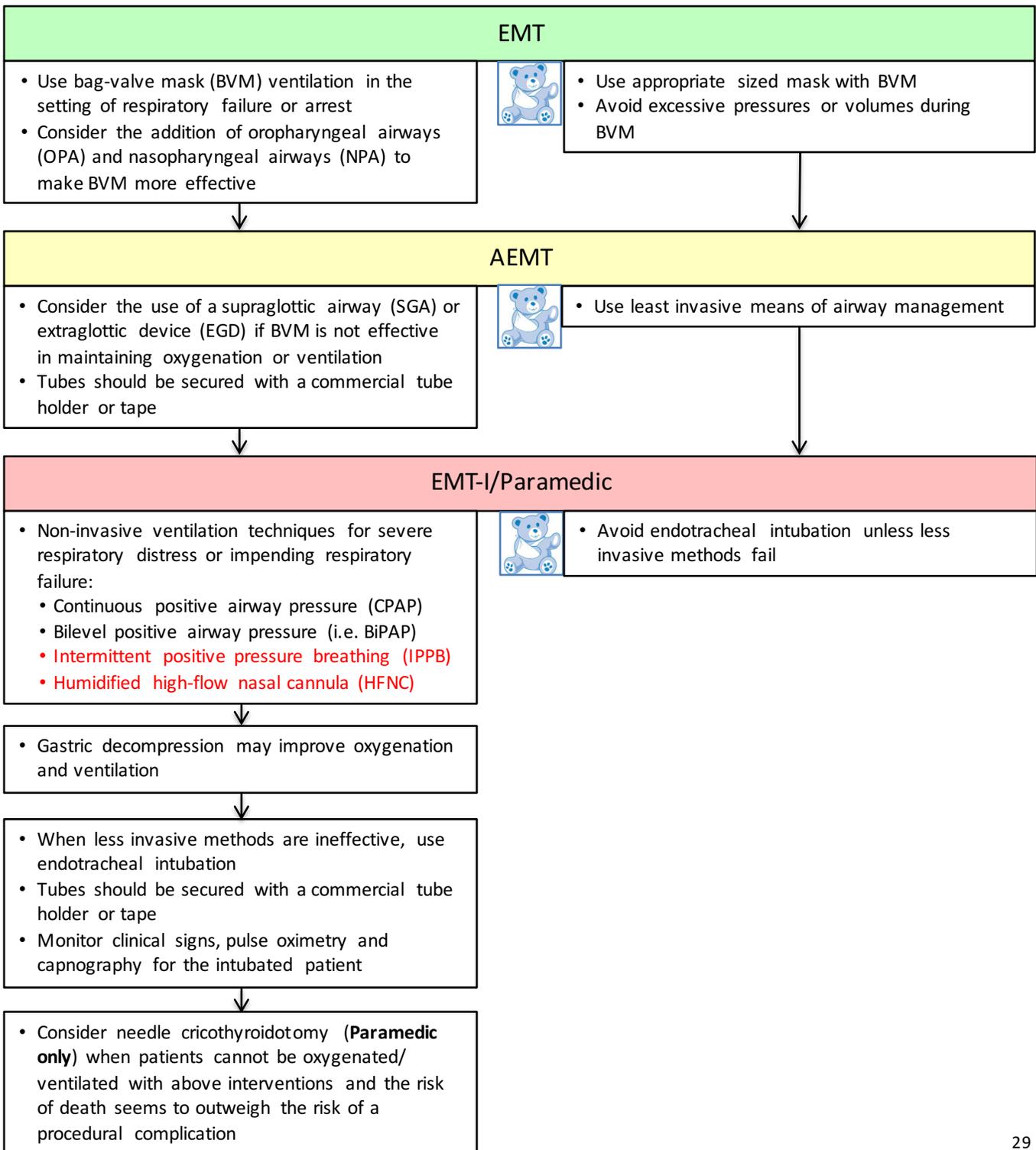


# Airway Management: Adult & Pediatric

Children and adults with signs of severe respiratory distress/respiratory failure.  
Patients with evidence of hypoxemia or hypoventilation.

Excludes:

1. Patients with tracheostomies.
2. Chronically ventilated patients.
3. Newborn patients.
4. Patients in whom oxygenation and ventilation is adequate with supplemental oxygen via nasal cannula or face mask alone.



# Pulmonary Edema: Adult & Pediatric

Respiratory distress with presence of rales.  
 Clinical impression consistent with congestive heart failure.  
Excludes:  
 1. Clinical impression consistent with infection (e.g. fever).  
 2. Clinical impression consistent with asthma/COPD.

## EMT

- Manage airway as necessary
- Provide supplemental oxygen as needed to maintain  $\text{SaO}_2 \geq 94\%$



## AEMT

- Establish IV access



- Nitroglycerin 0.4 mg SL if SBP > 100
- May repeat every 3-5 minutes



## EMT-I/Paramedic

- Cardiac monitoring
- Perform 12-lead ECG, where available
- End-tidal  $\text{CO}_2$  monitoring

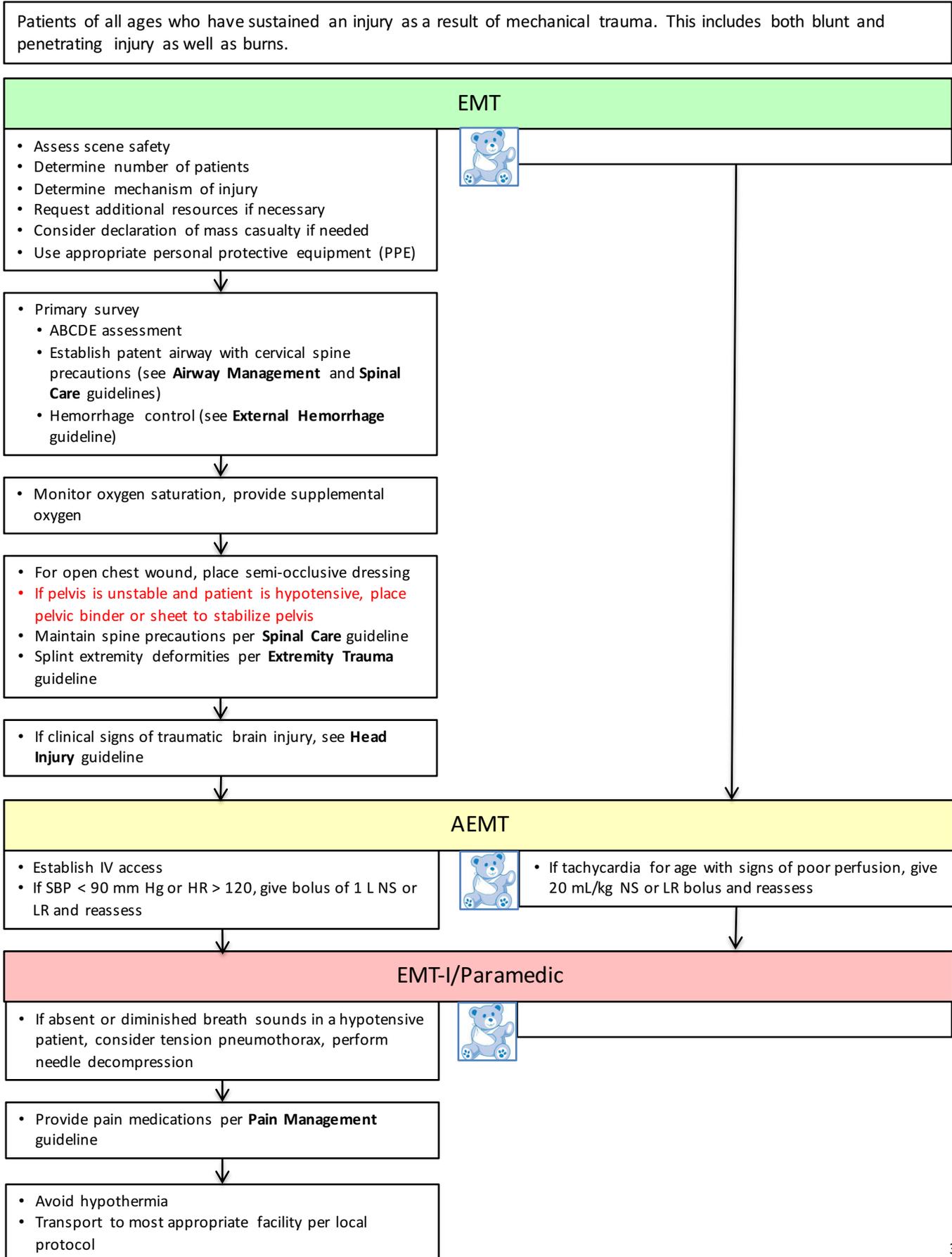


- Non-invasive positive pressure ventilation should be administered for severe respiratory distress (**Paramedic Only**) per local protocol
- Consider advanced airway for severe distress or if not improving with less invasive support



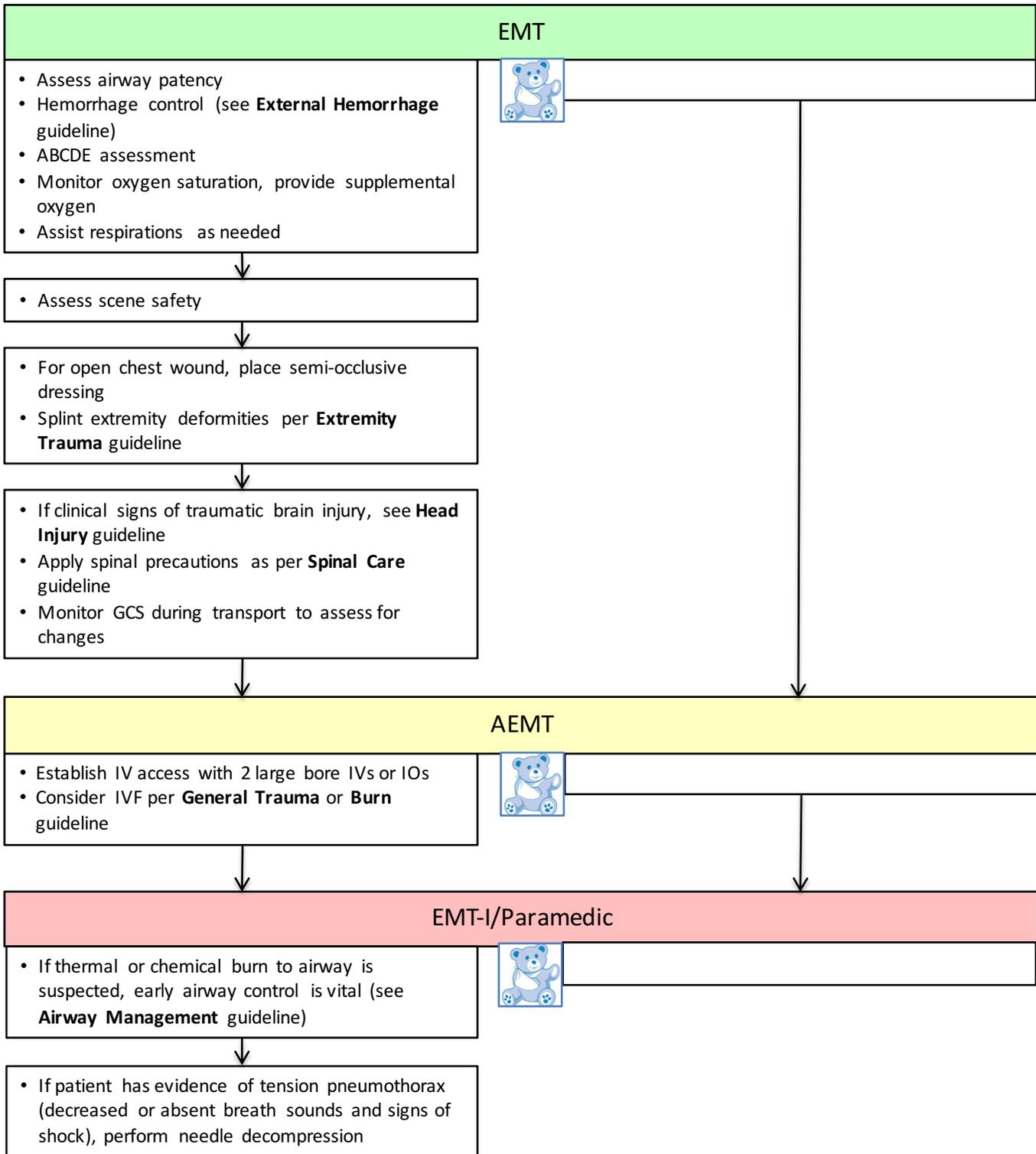
- If high altitude pulmonary edema suspected, follow **Altitude Illness** guideline

# General Trauma Management: Adult & Pediatric



# Blast Injuries: Adult & Pediatric

Patients exposed to explosive force (injuries may include any or all of the following: blunt and/or penetrating trauma, burns, pressure-related injuries (barotrauma), and toxic chemical contamination).



# Burns: Adult & Pediatric

Includes patients sustaining thermal burns.  
Excludes: Electrical, chemical, and radiation burns (see **Toxins and Environmental** section)

## EMT

- ABCDE assessment, resuscitation as indicated
- Assess airway patency
- Monitor oxygen saturation, provide supplemental oxygen as needed or if patient rescued from confined space
- Assist respirations as needed



- ↓
- Stop the burning:
    - Soak clothing and skin with water if burning or smoldering
    - Remove clothing if not stuck to patient
    - Remove jewelry
  - Leave blisters intact
  - Cover burns with dry dressing or clean sheet

- ↓
- Estimate BSA burned and depth of burn

## AEMT

- Establish IV access, avoid placement through burned skin
- Initiate fluid resuscitation: Use lactated ringers or normal saline
  - If patient in shock, give fluid per **Shock** guideline
  - If patient not in shock: Begin fluids based on estimated TBSA. Initial fluid rate can also be calculated as:  $\text{body weight (kg)} \times \text{TBSA} = \text{cc of fluid to be given in first 2 hours}$



- Use length-based tape for weight estimate

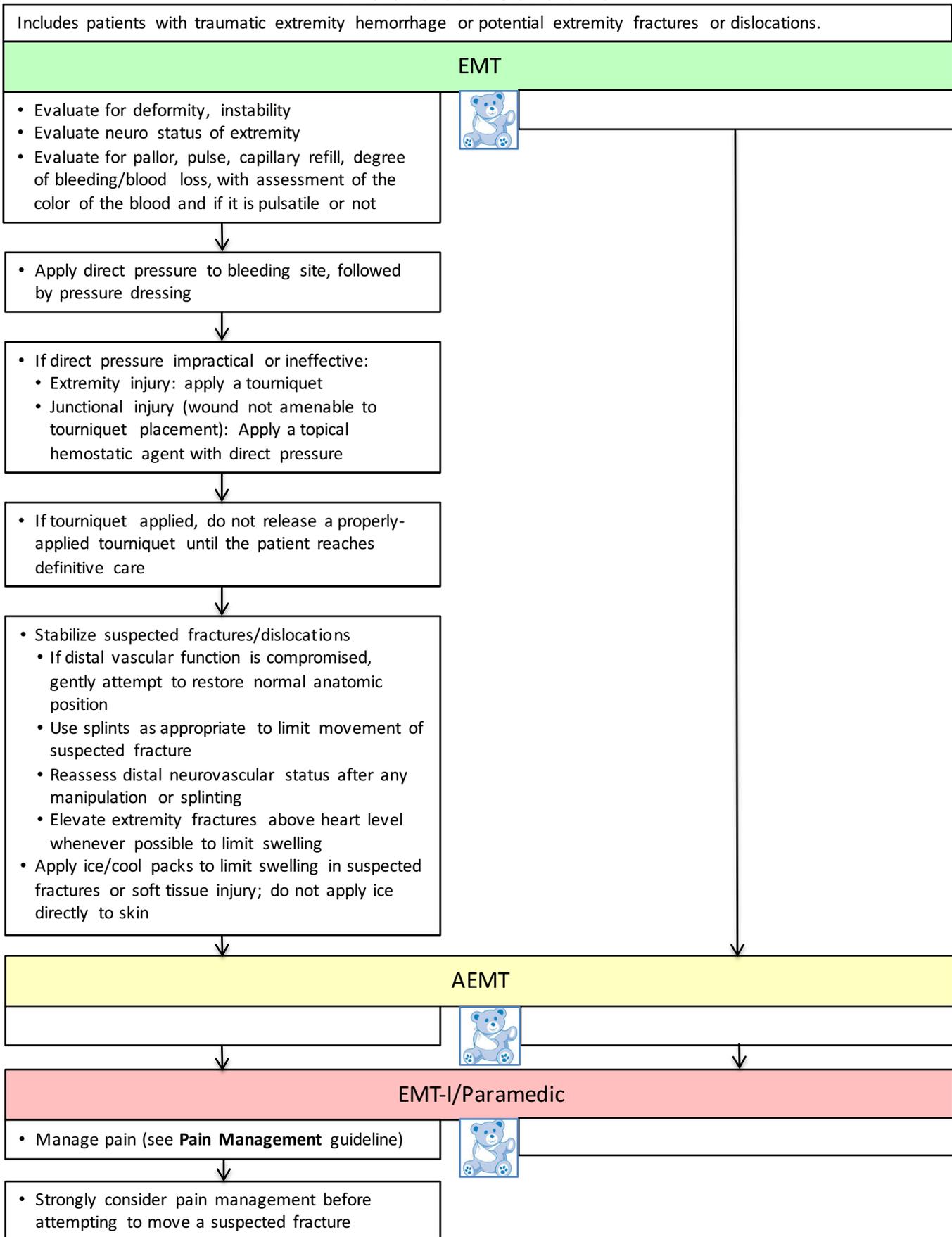
## EMT-I/Paramedic

- EtCO<sub>2</sub> monitoring
- If thermal burn to airway is suspected, early airway control is vital (see **Airway Management** guideline)



- ↓
- Consider early management of pain and nausea/vomiting

# Extremity Trauma/External Hemorrhage Management: Adult & Pediatric



# Facial Trauma: Adult & Pediatric

Includes patients with Isolated facial injury, including trauma to the eyes, nose, ears, midface, mandible, dentition.  
Excludes: **General Trauma, Burns.**

## EMT

- ABCDE assessment with focus on ability to keep airway patent
  - Stable midface
  - Stable mandible
  - Stable dentition
  - Bleeding
- Oxygen supplementation based on hypoxia to maintain O<sub>2</sub> saturation ≥ 94%



- Overall trauma assessment for spinal injury, head injury

- Avulsed teeth should be collected on scene
  - Avoid touching the root of the avulsed tooth. Do not wipe off tooth
  - Pick up at crown end. If dirty, rinse off under cold water for 10 seconds
  - Place in milk or saline as the storage medium. Alternatively patient can hold tooth in mouth using own saliva as storage medium

- Eye trauma: consider eye shield
  - If globe is avulsed, do not put back into socket; cover with moist saline dressings
- Mandible unstable: have suction available
- Epistaxis: squeeze nose for 10-15 minutes
- Nose/ear avulsion: recover tissue if it does not waste scene time; wrap tissue in sterile gauze moistened with sterile saline

## AEMT

- IV access as needed for fluid or pain medication administration



## EMT-I/Paramedic

- Use ETCO<sub>2</sub> to help monitor for hypoventilation and apnea
- Manage pain (see **Pain Management** guideline)



# Head Injury: Adult & Pediatric

Adult or pediatric patient with blunt or penetrating head injury.

## EMT

- ABCDE assessment with focus on ability to keep airway patent
- Continuous pulse oximetry
- Oxygen supplementation to maintain  $SaO_2 \geq 94\%$ ; prevent any desaturation  $< 90\%$
- Do not hyperventilate patient unless signs of herniation
- Frequent blood pressure measurement



- ↓
- Maintain cervical stabilization (see **Spinal Care** guideline)

- ↓
- Control bleeding with direct pressure if no suspected open skull injury

- ↓
- Evaluate blood glucose if indicated

- ↓
- Trend neurologic status assessment (GCS or AVPU)

## AEMT

- Do not delay transport to initiate IV access
- IV access as needed for fluid administration
- Avoid hypotension



## EMT-I/Paramedic

- Use  $ETCO_2$  to monitor for hypoventilation and apnea; target  $ETCO_2$  35-40 mm Hg



- ↓
- Avoid nasal intubation

# Spinal Care: Adult & Pediatric

Adult or pediatric patient with traumatic mechanism of injury.

## EMT

<ul style="list-style-type: none"> <li>• Assessment:                             <ul style="list-style-type: none"> <li>• In position that patient was found</li> <li>• High risk mechanism?                                     <ul style="list-style-type: none"> <li>• Motor vehicle collisions</li> <li>• Axial load injuries, diving injuries</li> <li>• Associated substantial torso injuries</li> <li>• Falls &gt; 10 feet</li> </ul> </li> <li>• Physical exam:                                     <ul style="list-style-type: none"> <li>• Mental status, Neurologic deficits, Spinal pain or tenderness, Evidence of intoxication, Other severe injuries</li> </ul> </li> </ul> </li> </ul>		<ul style="list-style-type: none"> <li>• Immobilize with cervical collar IF ANY of the following:                             <ul style="list-style-type: none"> <li>• Torticollis</li> <li>• Midline neck or spine pain</li> <li>• Midline neck or spinal tenderness with palpation</li> <li>• Abnormal mental status or neurologic deficit</li> <li>• Evidence of drug or alcohol intoxication</li> <li>• Another severe or painful distracting injury is present</li> <li>• Communication barrier that prevents accurate assessment</li> </ul> </li> </ul>
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

<ul style="list-style-type: none"> <li>• Immobilize with cervical collar IF ANY of the following:                             <ul style="list-style-type: none"> <li>• Midline neck or spine pain</li> <li>• Midline neck or spinal tenderness with palpation</li> <li>• Abnormal mental status or neurologic deficit</li> <li>• Evidence of drug or alcohol intoxication</li> <li>• Another severe or painful distracting injury is present</li> <li>• Communication barrier that prevents accurate assessment</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Extrication: after placing cervical collar,                             <ul style="list-style-type: none"> <li>• Children in booster seat should be allowed to self-extricate</li> <li>• Infants and toddlers already strapped in a car seat with a built-in harness should be extricated while strapped in his/her car seat</li> </ul> </li> </ul>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

<ul style="list-style-type: none"> <li>• Patients with penetrating neck injuries, regardless of symptoms, should not receive spinal immobilization</li> </ul>	<ul style="list-style-type: none"> <li>• Helmet removal:                             <ul style="list-style-type: none"> <li>• If a football helmet needs to be removed, it is recommended to remove the face mask followed by manual removal (rather than the use of automated devices) of the helmet while keeping the neck immobilized. Occipital padding should be applied, as needed, with the patient in a supine position, in order to maintain neutral cervical spine positioning</li> </ul> </li> </ul>
---------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

• Patients should not routinely be transported on long boards, unless the clinical situation warrants long board use. In these rare situations, long boards should be padded or have a vacuum mattress applied.

• Extrication: after placing cervical collar, patient should be allowed to self-extricate

## AEMT

		
--	-------------------------------------------------------------------------------------	--

## EMT-I/Paramedic

		
--	-------------------------------------------------------------------------------------	--

# Poisoning/Overdose Universal Care: Adult & Pediatric

Presentation may vary depending on the concentration and duration of exposure.

Poisoning may occur by

- Absorption
- Ingestion
- Inhalation
- Injection

Refer to guidelines for specific agents as indicated.

National 24-hour toll-free telephone number to poison control centers: **1-800-222-1222**.

## EMT

- Remove patient from hazardous material environment/decontaminate to remove continued sources of exposure
- Ensure scene is safe
- Consider Body Substance Isolation or appropriate personal protective equipment (PPE)
- ABCDE assessment, vital signs
- Check blood glucose level
- Assess risk for organ impairments (heart, brain, kidney)
- Treat signs and symptoms in effort to stabilize patient
- Assure a patent airway
- Administer oxygen and if hypoventilation, support breathing with BVM ventilation
- Maintain or normalize patient temperature



- Children often show signs of poisoning before adults due to increased absorption of toxin
- When wet decontaminating children, attempt to prevent hypothermia
- Wet infants are slippery; care should be exercised during decontamination to avoid additional injuries

## AEMT

- Identify intoxicating agent by toxidrome or appropriate environmental testing
- Identify antidote or mitigating agent



- Initiate IV access for infusion of lactated ringers or normal saline
  - Fluid bolus (20 mL/kg) if evidence of hypoperfusion

## EMT-I/Paramedic

- Monitor pulse oximetry and end-tidal CO<sub>2</sub> (ETCO<sub>2</sub>) for respiratory decompensation
- Ensure maintenance of airway, oxygenation, and ventilation
- Place on cardiac monitor
- Obtain blood samples if EMS management might change value (e.g. glucose, cyanide)
- Monitor ECG, where available, with special attention to rate, rhythm, QRS and QT duration



- Symptomatic dystonia, extrapyramidal signs or symptoms: consider diphenhydramine 1 mg/kg IV/IO or IM (max dose 25 mg)
- Supraglottic devices and intubation should be utilized only if BVM ventilation fails. The airway should be managed in the least invasive way possible

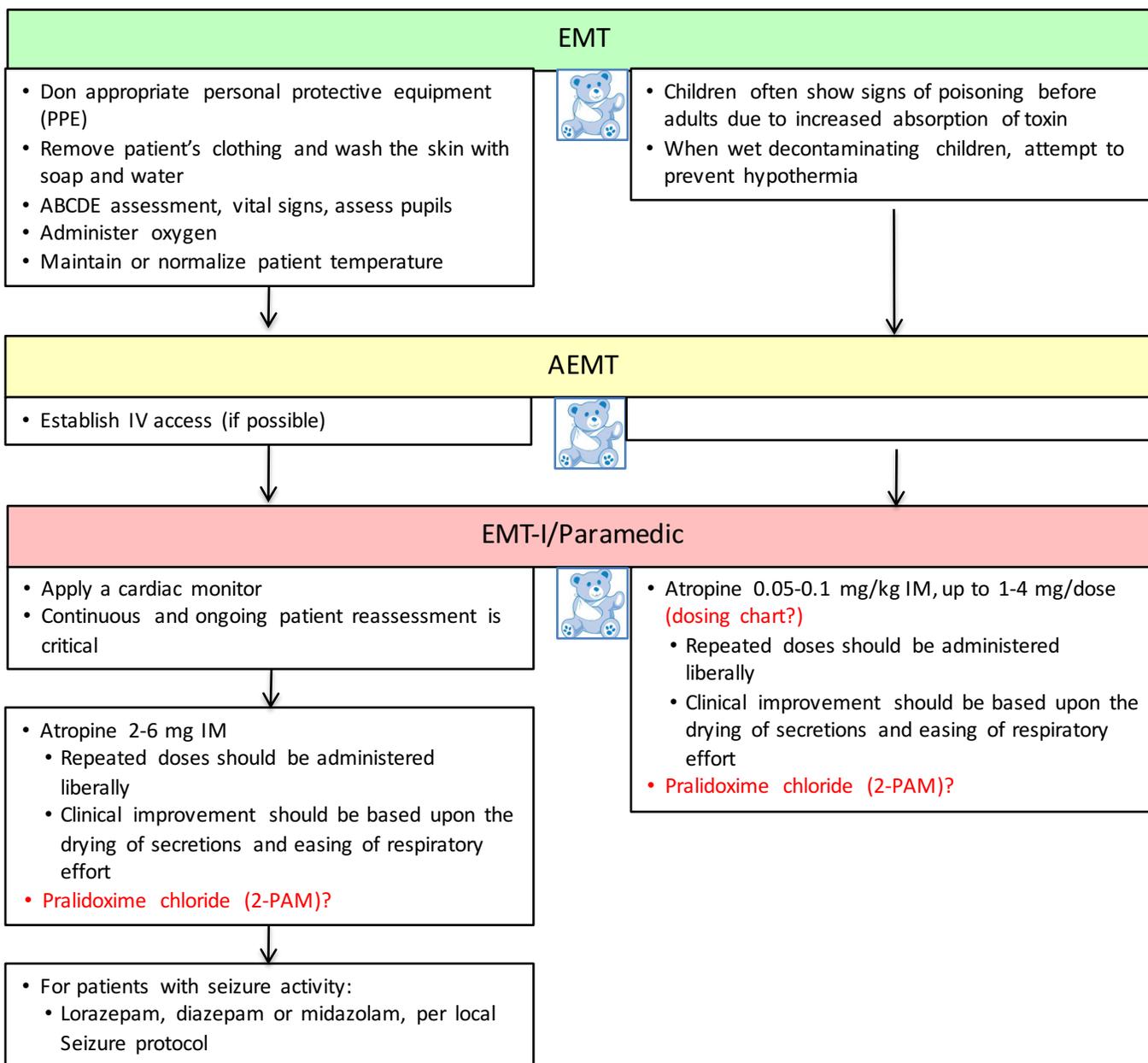
- Symptomatic dystonia, extrapyramidal signs or symptoms: consider diphenhydramine 25 mg IV/IO or IM

# Acetylcholinesterase Inhibitors (Carbamates, Nerve Agents, Organophosphates): Adult & Pediatric

DUMBELS mnemonic used to describe the signs and symptoms of acetylcholinesterase inhibitors:

- D** Diarrhea
- U** Urination
- M** Miosis (pinpoint pupils)/Muscle weakness
- B** Bronchospasm/Bronchorrhea
- E** Emesis
- L** Lacrimation
- S** Salivation/Sweating

Penetration into the central nervous system can cause seizures, lethargy or unresponsiveness, apnea, death.

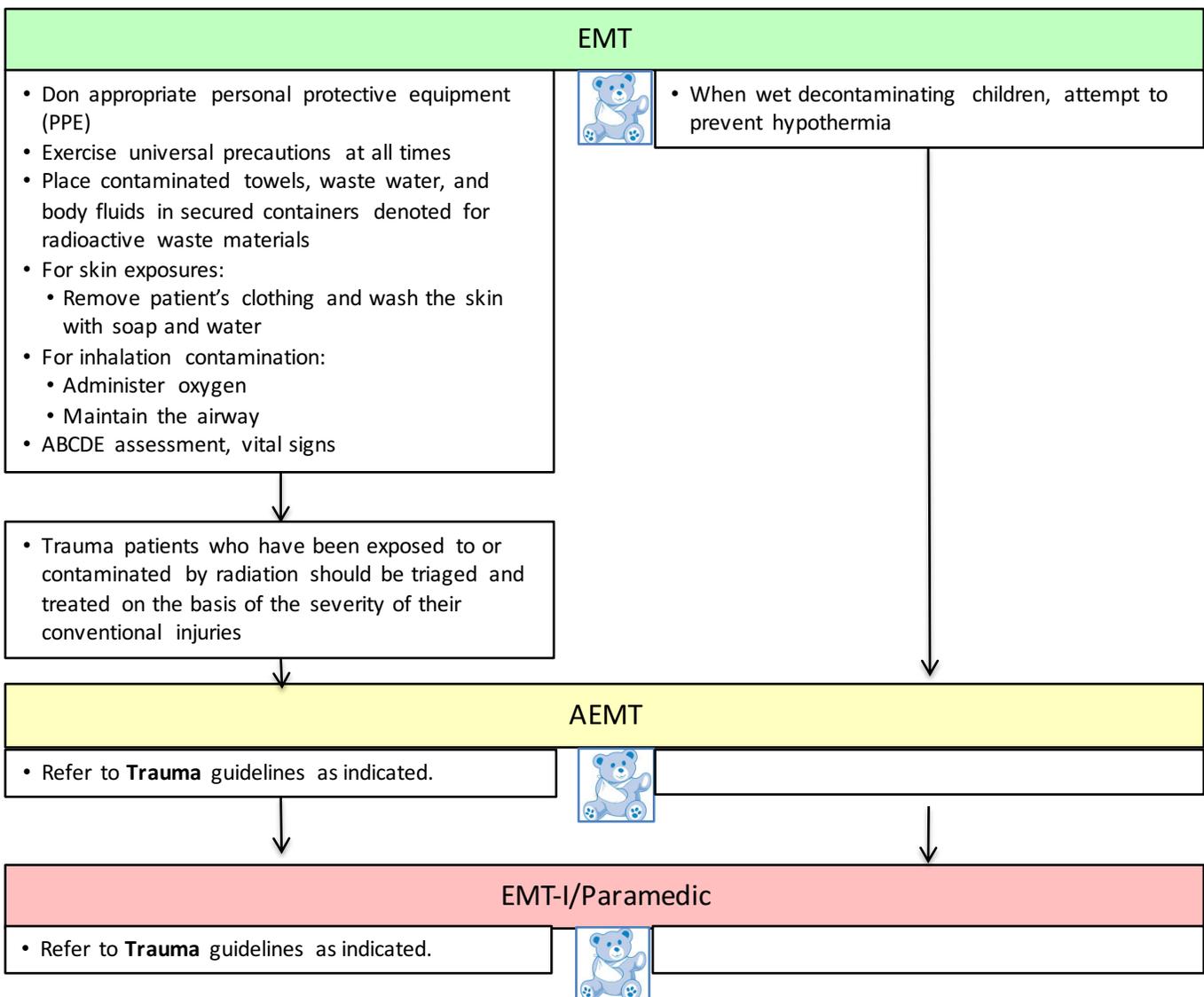


# Radiation Exposure: Adult & Pediatric

Patients exposed to a known or suspected source of radiation, particularly patients exhibiting the signs and symptoms of acute radiation toxicity:

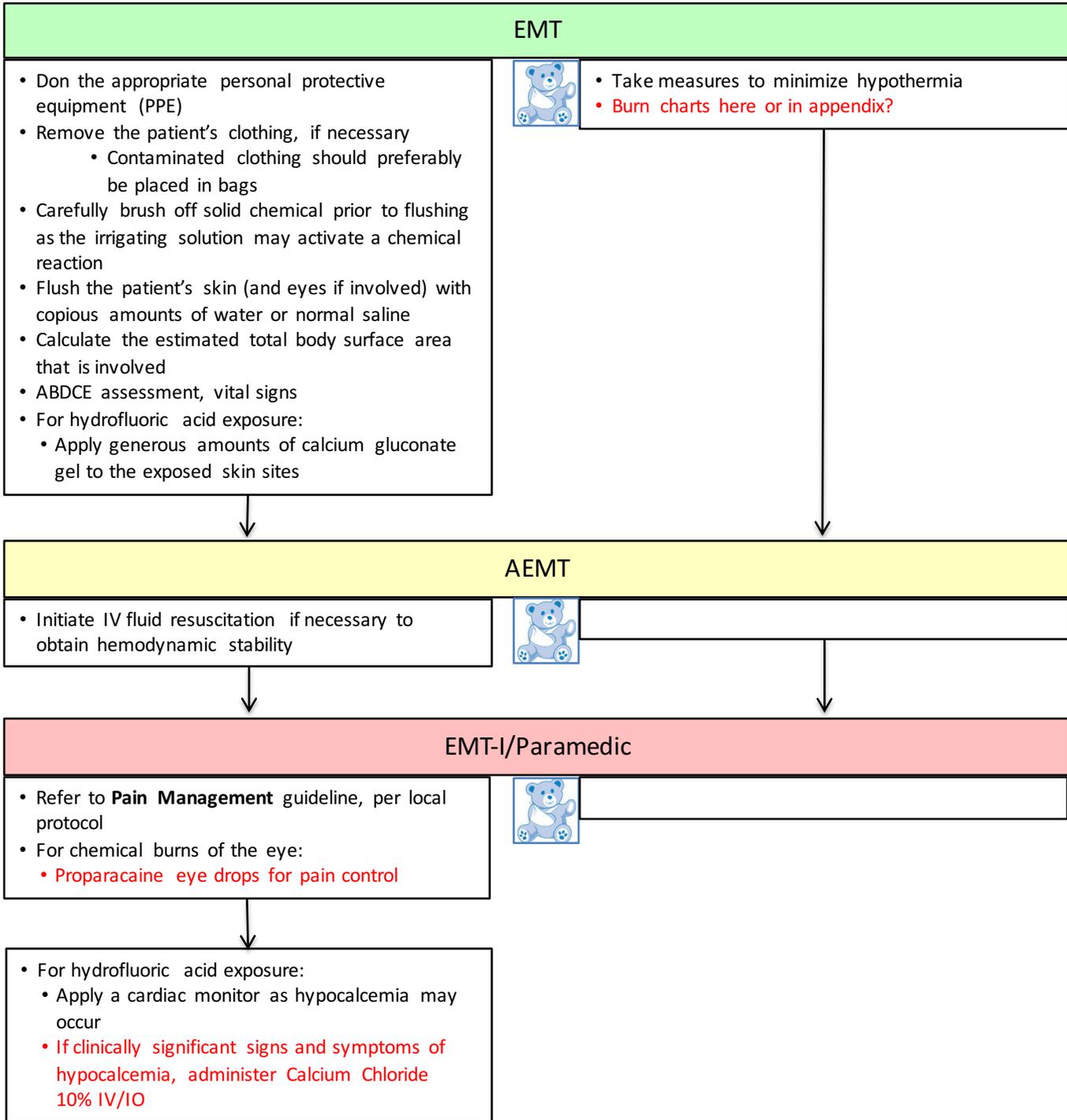
- a. Nausea
- b. Vomiting
- c. Petechiae
- d. External bleeding
- e. Suspected internal bleeding
- f. Dizziness
- g. Headache
- h. Altered mental status

Most patients will be asymptomatic initially.



# Topical Chemical Burn: Adult & Pediatric

Patients exposed to a chemical that can cause a topical burn in a delayed clinical presentation.



# Stimulant Poisoning/Overdose: Adult & Pediatric

Substances include cocaine, amphetamines, phencyclidine (PCP), Ecstasy, methamphetamine, bath salts.

## EMT

- ABDCE assessment, vital signs including temperature
  - Refer to **Hyperthermia/Heat Exposure** guideline as needed
- Check blood glucose level
- Check for trauma, self-inflicted injury
- Ask about chest pain and difficulty breathing



- Children may experience acute coronary syndrome due to coronary artery vasospasm caused by cocaine.
- Seizures are more common serious event due to stimulant poisoning.

- Treat chest pain as Acute Coronary Syndrome

- Refer to **Agitated or Violent Patient** guideline if indicated

## AEMT

- IV access if need for fluids or medications
  - Give fluids for poor perfusion



## EMT-I/Paramedic

- Apply a cardiac monitor and examine rhythm strip for arrhythmias
- Monitor end-tidal CO<sub>2</sub> (ETCO<sub>2</sub>) for respiratory decompensation



- Perform 12-lead ECG, where available
  - Follow STEMI protocol if indicated

# Cyanide Exposure: Adult & Pediatric

Suspect in occupational or smoke exposures (i.e. firefighting), industrial accidents, natural catastrophes, suicide and murder attempts, chemical warfare and terrorism.

Non-specific and early signs of cyanide exposure include anxiety, vertigo, weakness, headache, tachypnea, nausea, dyspnea, vomiting, and tachycardia.

## EMT

- Remove patient from toxic environment
- If indicated, expose patient, then cover to retain body heat
- ABDCE assessment, vital signs including temperature
- Check blood glucose level



- For patients with appropriate history and manifesting one or more signs or symptoms of high concentration of cyanide:
  - 100% oxygen via non-rebreather mask or BVM

## AEMT



## EMT-I/Paramedic

- Apply a cardiac monitor and examine rhythm strip for arrhythmia potentials
- Consider 12-lead ECG, where available
- Monitor pulse oximetry and end-tidal CO<sub>2</sub> (ETCO<sub>2</sub>) for respiratory decompensation



- For patients with appropriate history and manifesting one or more signs or symptoms of high concentration of cyanide:
  - **Hydroxocobalamin\***
    - Collect a pre-treatment blood sample
    - 70 mg/kg slow IV over 15 minutes; reconstitute each 5 gm vial with 200 mL lactated ringers (maximum dose 5 gm)
    - Additional dose per local protocol

- For patients with appropriate history and manifesting one or more signs or symptoms of high concentration of cyanide:
  - **Hydroxocobalamin\***
    - Collect a pre-treatment blood sample
    - 5 gm slow IV over 15 minutes; reconstituted with 200 mL lactated ringers
    - Additional dose per local protocol
  - **Amyl nitrite inhaled ampule (do not use in conjunction with carbon monoxide poisoning)**

- If patient seizing, consider lorazepam, midazolam or diazepam per local Seizure protocol; refer to **Seizure** guideline

\*Hydroxocobalamin approved for use by HazMat Medics only

# Beta Blocker Poisoning/Overdose: Adult & Pediatric

Patients present with:

- Bradycardia
- Hypotension
- Lethargy
- Weakness
- Shortness of breath
- Possible seizures

## EMT

- ABCDE assessment, vital signs including temperature
- Check blood glucose level



- Immediate blood glucose level check, as beta blockers cause hypoglycemia in pediatric patients

- Identify medication taken, noting immediate release vs. sustained release formulations

## AEMT

- For hypotension, IV/IO fluids 20 mL/kg



- For hypoglycemia, refer to **Hypoglycemia** guideline

- For symptomatic patient, consider glucagon 1mg IV every 5 minutes (may require 6 mg to see clinical effects)

- For symptomatic patient, consider glucagon:
  - < 25 kg: 0.5 mg IV every 5 minutes as necessary
  - 25-40 kg: 1 mg IV every 5 minutes as necessary

## EMT-I/Paramedic

- Apply a cardiac monitor, examine rhythm strip for arrhythmias; consider 12-lead ECG where available
- Monitor pulse oximetry and end-tidal CO<sub>2</sub> (ETCO<sub>2</sub>) for respiratory decompensation



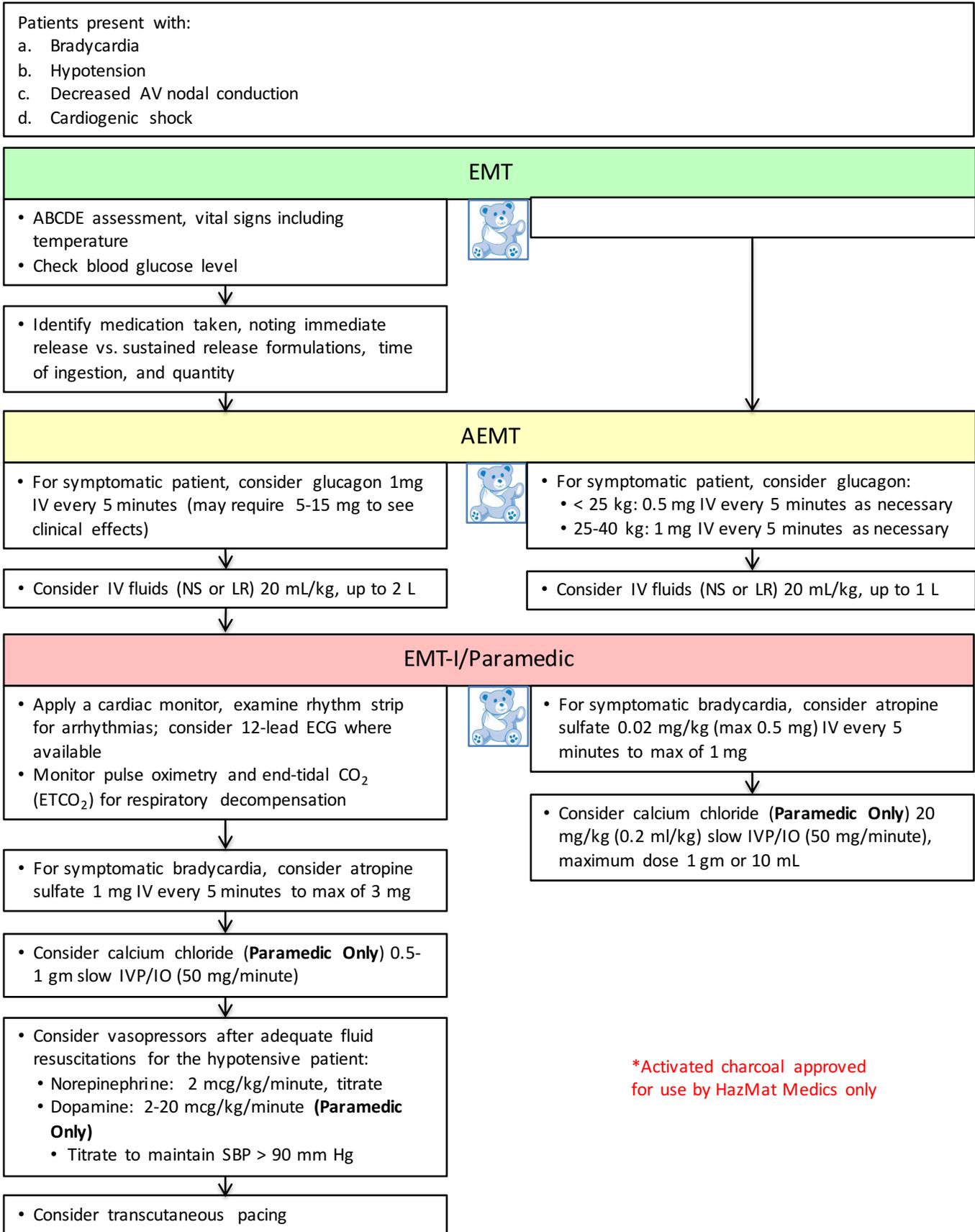
- For symptomatic bradycardia, consider atropine sulfate 0.02 mg/kg (0.5 mg max) IV/IO every 5 minutes to max total dose of 1 mg IV/IO mg

- **Activated charcoal 1 gm/kg PO**
  - **If risk of rapidly deteriorating mental status, do not administer oral agents**

- For symptomatic bradycardia, consider atropine sulfate 1 mg IV/IO every 5 minutes to max of 3 mg

**\*Activated charcoal approved for use by HazMat Medics only**

# Calcium Channel Blocker Poisoning/Overdose: Adult & Pediatric

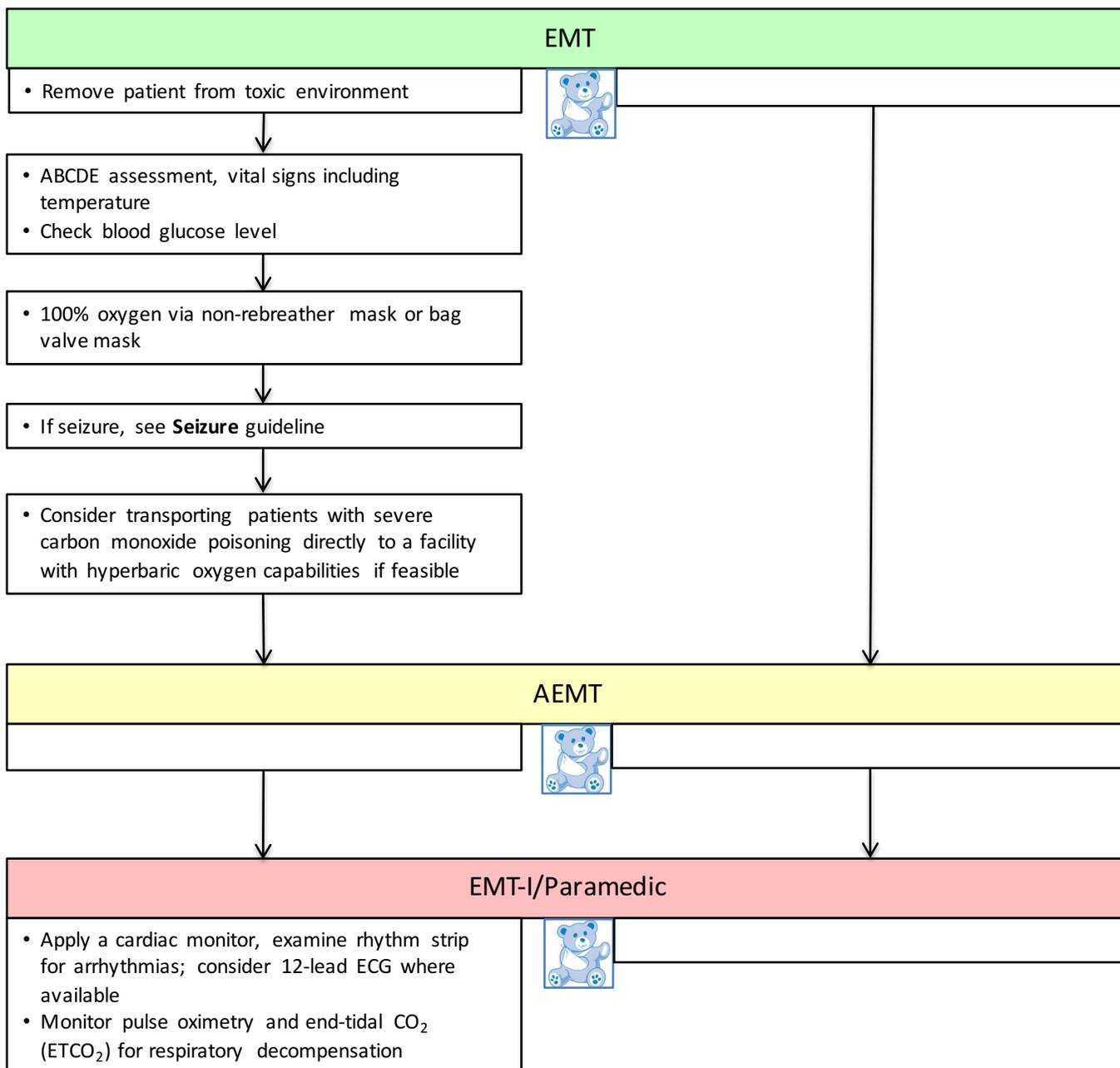


# Carbon Monoxide/Smoke Inhalation: Adult & Pediatric

Known or suspected exposure to carbon monoxide or smoke from fire, propane or charcoal stoves/heaters, or combustion engines.

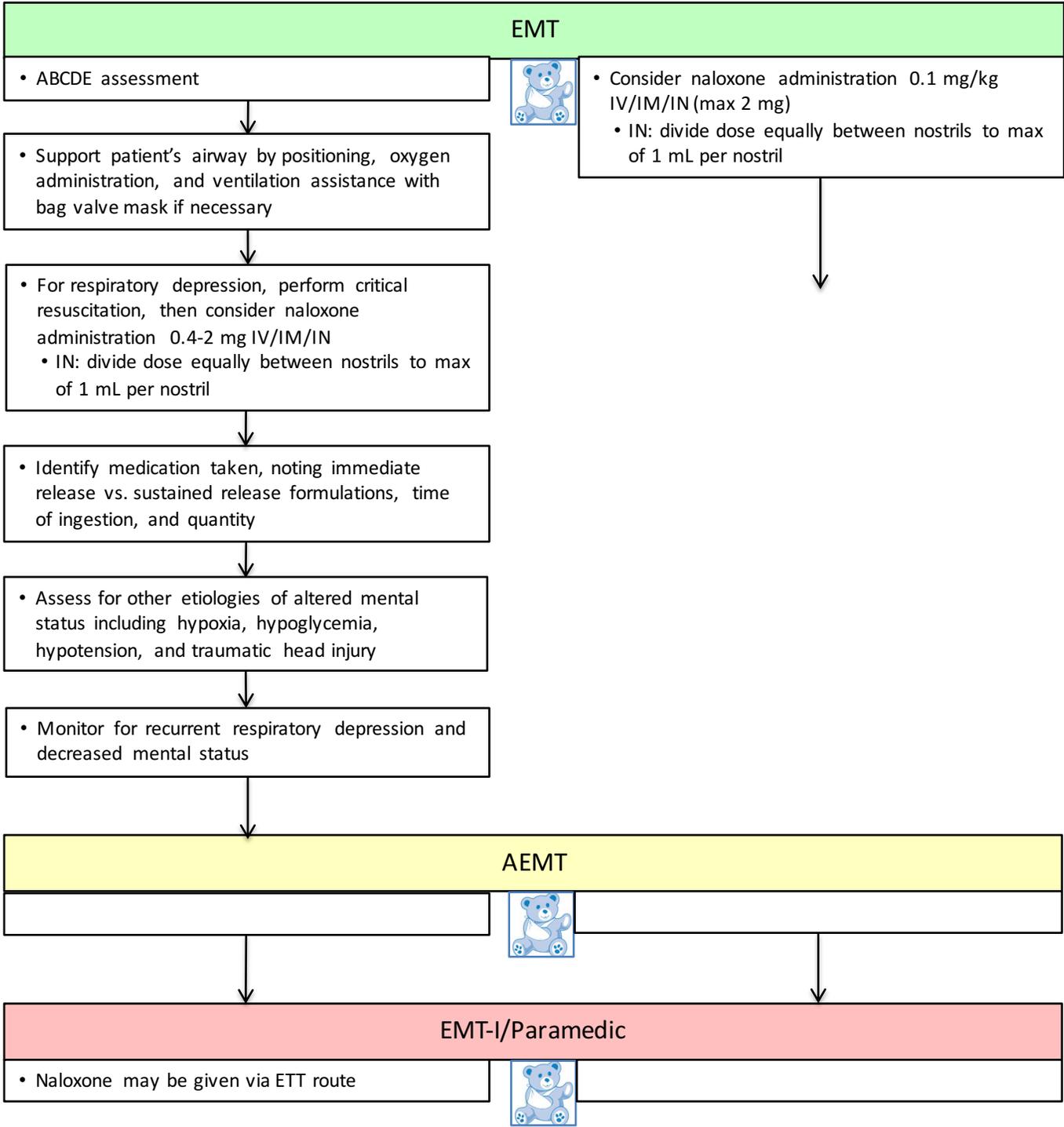
Patients may present with:

- |                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> <li>1. Mild             <ol style="list-style-type: none"> <li>a. Nausea</li> <li>b. Fatigue</li> <li>c. Headache</li> <li>d. Vertigo</li> <li>e. Lightheadedness</li> </ol> </li> </ol> | <ol style="list-style-type: none"> <li>2. Moderate to Severe             <ol style="list-style-type: none"> <li>a. Altered Mental Status</li> <li>b. Tachypnea</li> <li>c. Tachycardia</li> <li>d. Convulsion</li> <li>e. Cardiopulmonary Arrest</li> </ol> </li> </ol> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



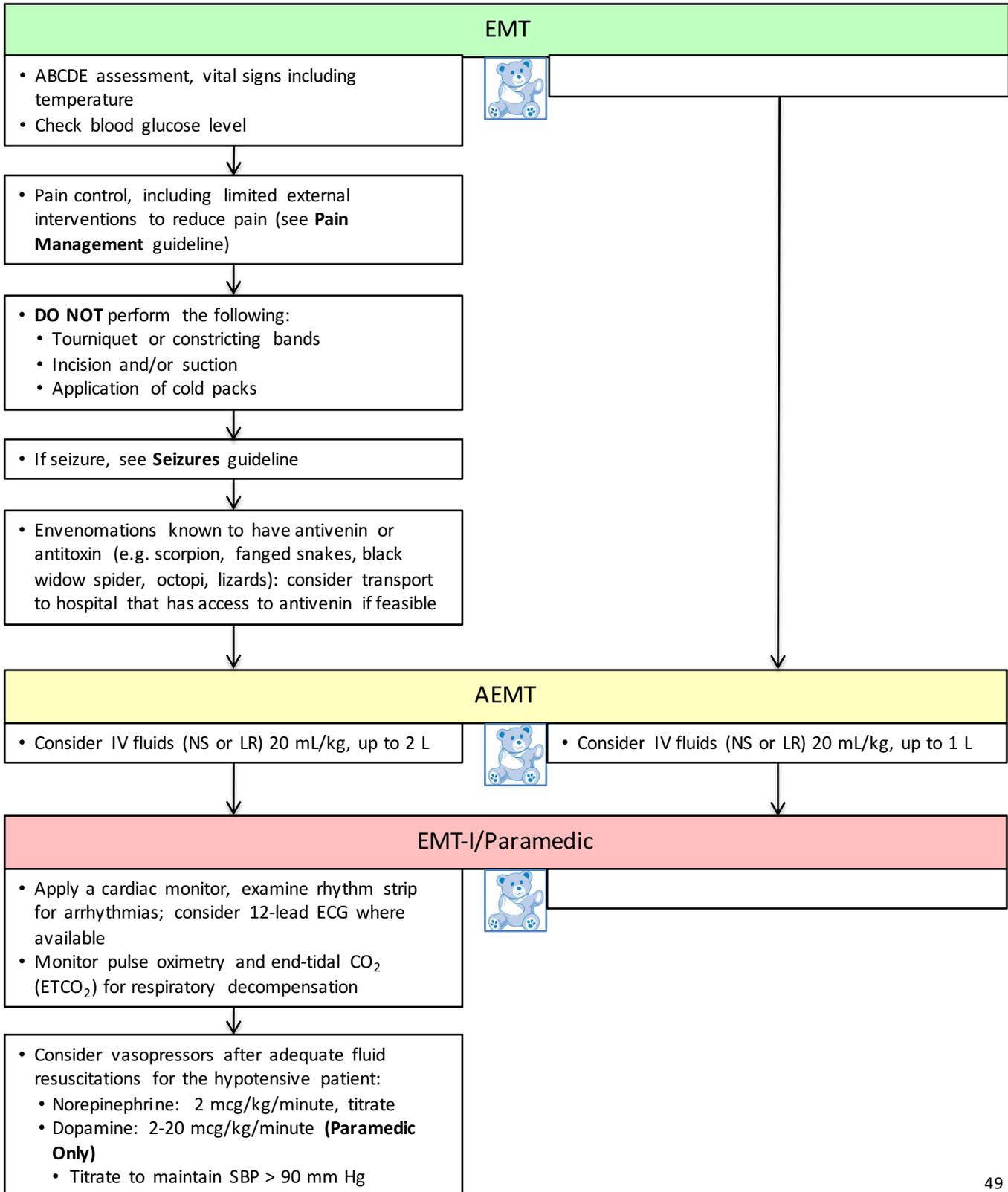
# Opioid Poisoning/Overdose: Adult & Pediatric

Includes patients of all ages with access to opioids and known or suspected opioid use or abuse.  
Excludes patients with altered mental status exclusively from other causes (e.g. head injury, hypoxia, or hypoglycemia)



# Bites and Envenomation: Adult & Pediatric

Bites, stings, and envenomations can come from a variety of marine and terrestrial animals and insects causing local or systemic effects. Patients may present with toxin specific reactions. There is a spectrum of toxins or envenomations and limited EMS interventions that will have any mitigating effect on the patient in the field. The critical intervention is to get the patient to a hospital that has access to the antivenin if applicable.



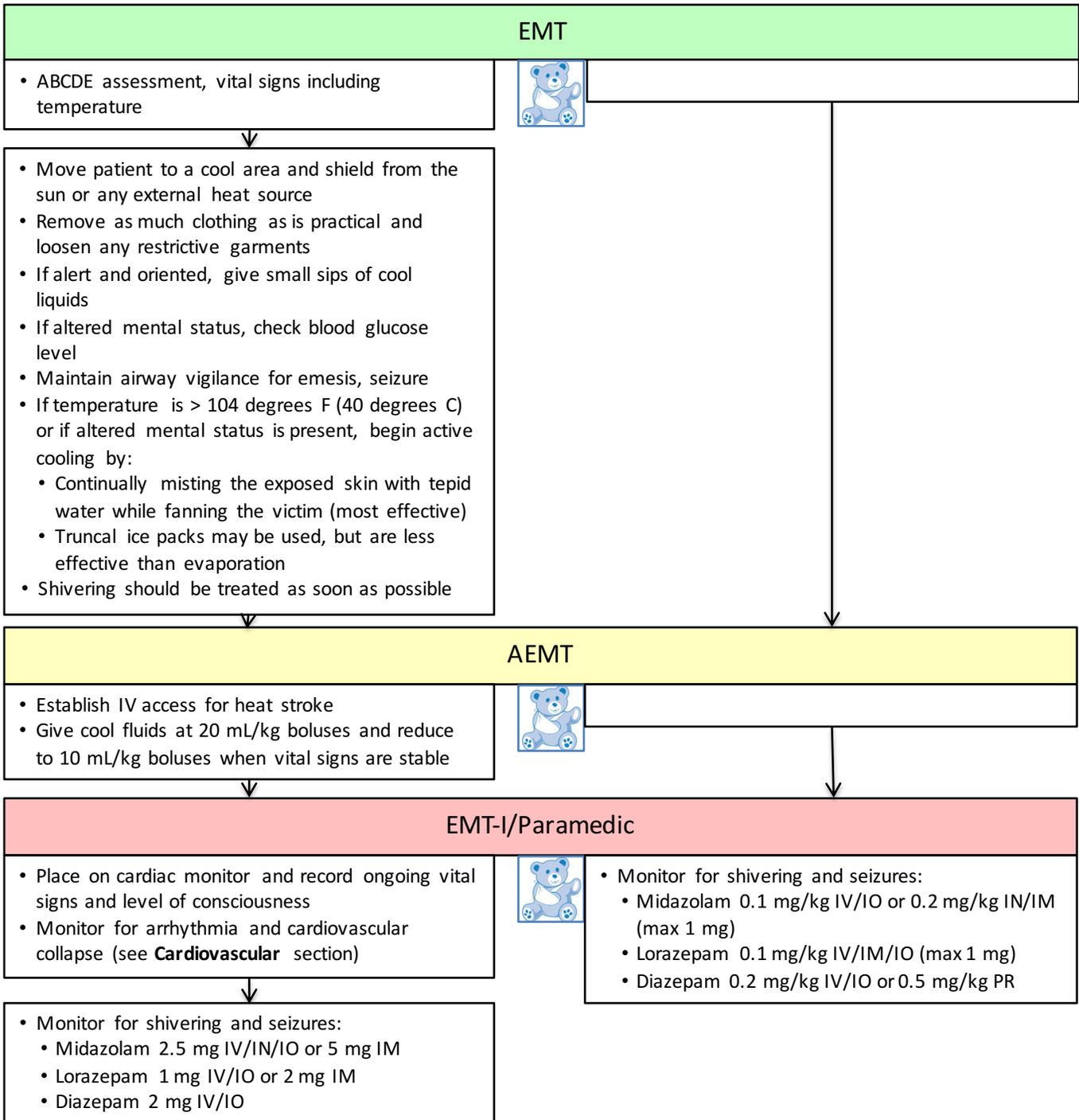
# Hyperthermia/Heat Exposure: Adult & Pediatric

**Heat cramps** are minor muscle cramps usually in the legs and abdominal wall. Temperature is normal.

**Heat exhaustion** has both salt and water depletion usually of a gradual onset. As it progresses tachycardia, hypotension, elevated temperature, and very painful cramps occur. Symptoms of headache, nausea and vomiting occur. Heat exhaustion can progress to heat stroke.

**Heat stroke** occurs when the cooling mechanism of the body (sweating) ceases due to temperature overload and/or electrolyte imbalances. Temperature is usually >104 F. When no thermometer is available, it is distinguished from heat exhaustion by altered level of consciousness.

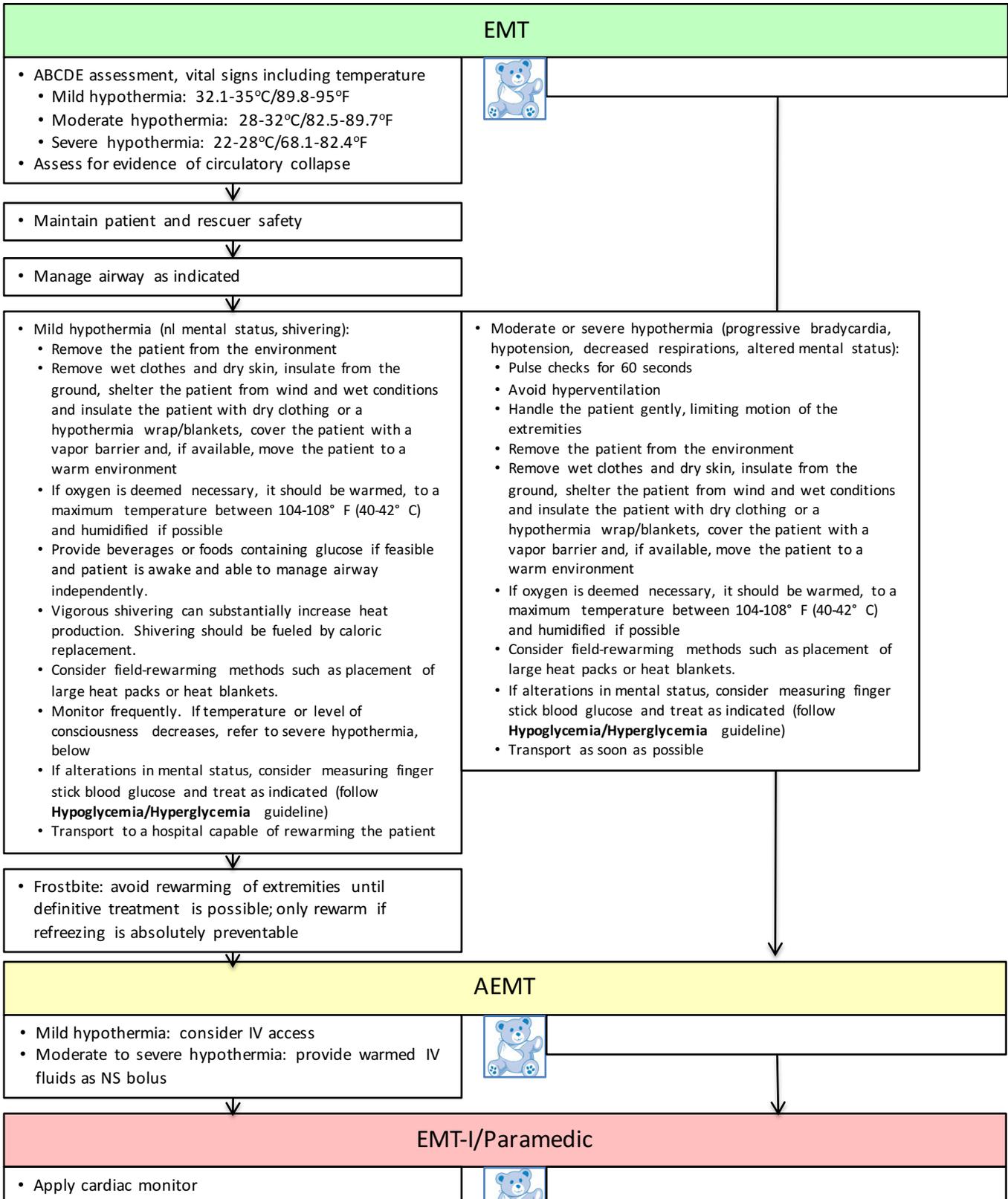
Excludes: Fever from infectious or inflammatory conditions, malignant hyperthermia, neuroleptic malignant syndrome



# Hypothermia/Cold Exposure: Adult & Pediatric

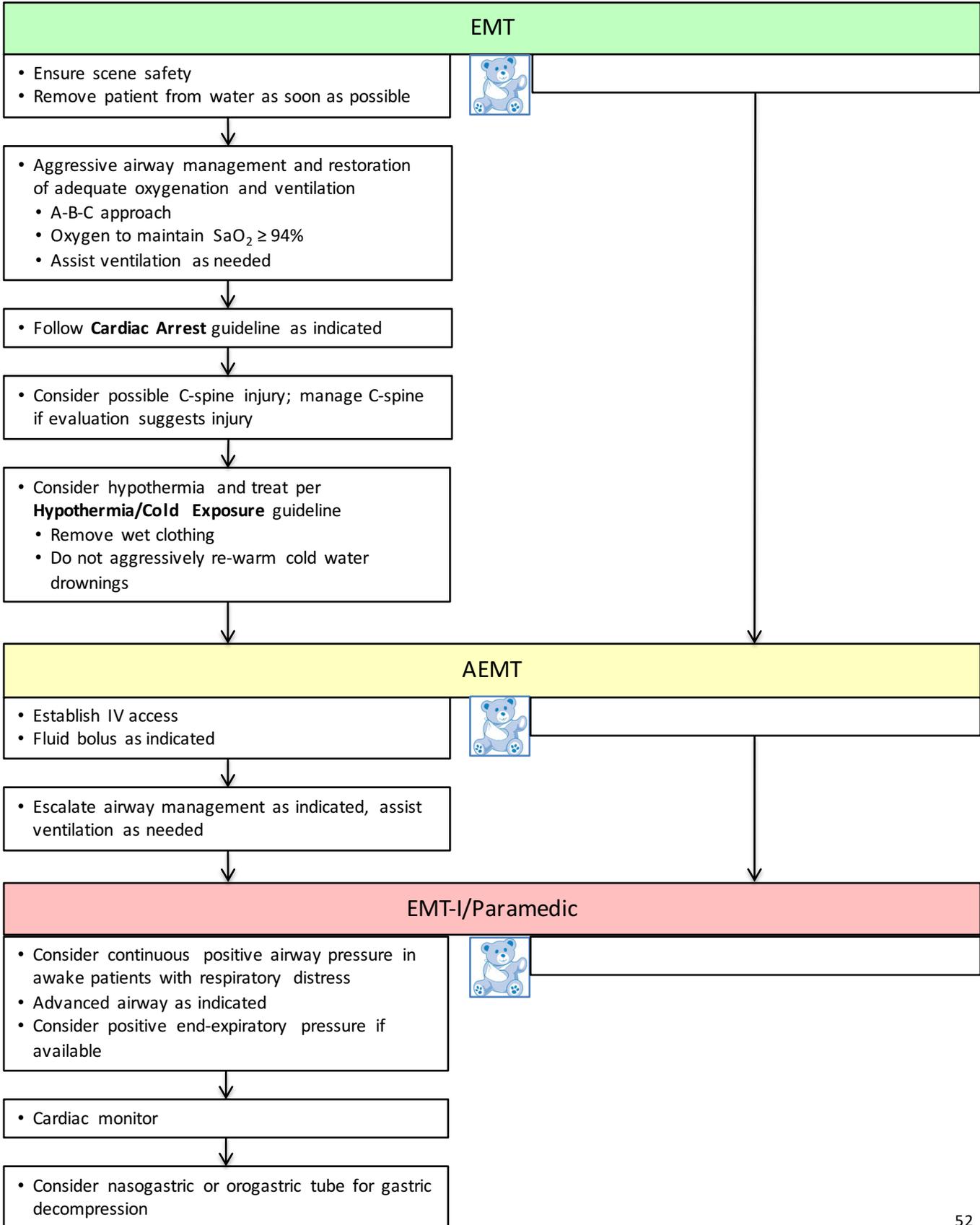
Patients suffering systemic or localized cold injuries.

Excludes: Patients without cold exposure, or patients with cold exposure but no symptoms referable to hypothermia or frostbite.



# Drowning: Adult & Pediatric

Includes patients suffering from drowning or drowning events independent of presence or absence of symptoms.



# SCUBA Injury/Accidents: Adult & Pediatric

Includes patients with recent history of SCUBA diving exhibiting potential signs and/or symptoms of dive related illness/injury.

## EMT

- Be alert for signs of pulmonary injury (e.g. unequal or abnormal lung sounds, subcutaneous emphysema)
- Monitor vital signs including oxygen saturations
  - If  $\text{SaO}_2 < 92\%$ , provide supplemental oxygen to maintain  $\text{SaO}_2 \geq 94\%$
- Patients with symptoms suspicious for decompression illness should all be placed on supplemental oxygen



- If SCUBA accident includes associated drowning/near-drowning, see **Drowning** guideline

- Manage airway as indicated
- If air embolism suspected, place in left lateral recumbent position

- Consider hypothermia and treat per **Hypothermia/Cold Exposure** guideline

- Consider need for hyperbaric treatment
  - Assess submersion time, greatest depth achieved, ascent rate

## AEMT

- Establish IV access
- Fluid bolus as indicated



- Escalate airway management as indicated

## EMT-I/Paramedic

- Continuous positive airway pressure may be contraindicated in barotrauma; consider contacting online medical direction



- Advanced airway management as indicated

- Cardiac monitor

- Consider analgesia per **Pain Management** guideline

# Altitude Illness: Adult & Pediatric

Patients suffering from altitude illness, including:

- **Acute mountain sickness** (headache plus one or more of the following: anorexia, nausea or vomiting, fatigue or weakness, dizziness or lightheadedness or difficulty sleeping; usually occurs at at least 5,000-7,000 feet)
- **High altitude pulmonary edema** (progressive dyspnea, cough, hypoxia, and weakness; usually at >8,000 feet)
- **High altitude cerebral edema** (mental status changes in patients with symptoms of acute mountain sickness including altered mentation, ataxia, or stupor and progressing to coma; usually at >8,000 feet)

## EMT

- Ensure scene safety for rescuers; descent is often enough to see improvements in patient conditions
- Stop ascent. Patients with signs or symptoms of pulmonary edema or cerebral edema should initiate descent
- Assess ABC's, VS, LOC (ABCDE Assessment); manage airway as necessary
- Oxygen 15 lpm via NRBM (titrate oxygen to SpO<sub>2</sub> ≥ 94%)
- Cardiac monitor, pulse oximetry



## AEMT

- Establish IV access; fluid boluses per local protocol with goal to maintain systolic BP > 90 mm Hg
- Monitor cardiac rhythm



- IVF boluses per local protocol to maintain systolic BP appropriate for age (2x(age in years) + 70)

- Reassess after each IVF bolus

## EMT-I/Paramedic

- Consider alternate causes of altered mental status, including carbon monoxide poisoning, dehydration, exhaustion, hypoglycemia, hyponatremia



- Ondansetron 0.15mg/kg/dose, max 4mg, IV/PO/SL
- Dexamethasone 0.15mg/kg/dose, max 8 mg, IV/IM/PO, every 6 hours

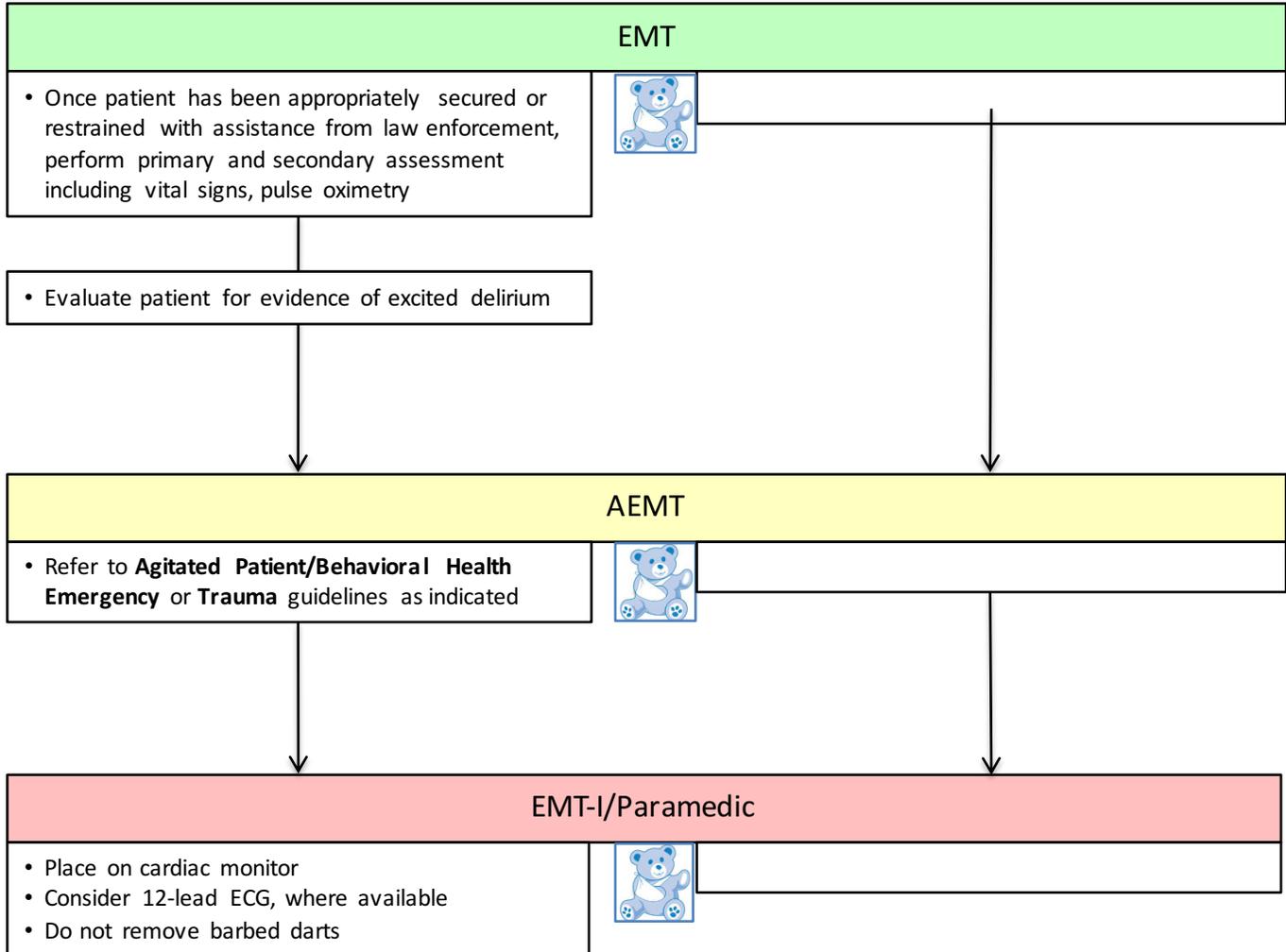
- Descent should always be the primary treatment modality, when conditions permit
- Ondansetron 4mg IV/PO/SL every 6 hours for vomiting
- Dexamethasone 8mg IV/IM/PO followed by 4mg every 6 hours
- Once fluid resuscitation is complete, maintain IV fluids at 125 mL/hr

- If severe respiratory distress is present and pulmonary edema is found on exam, provider should start positive pressure ventilation

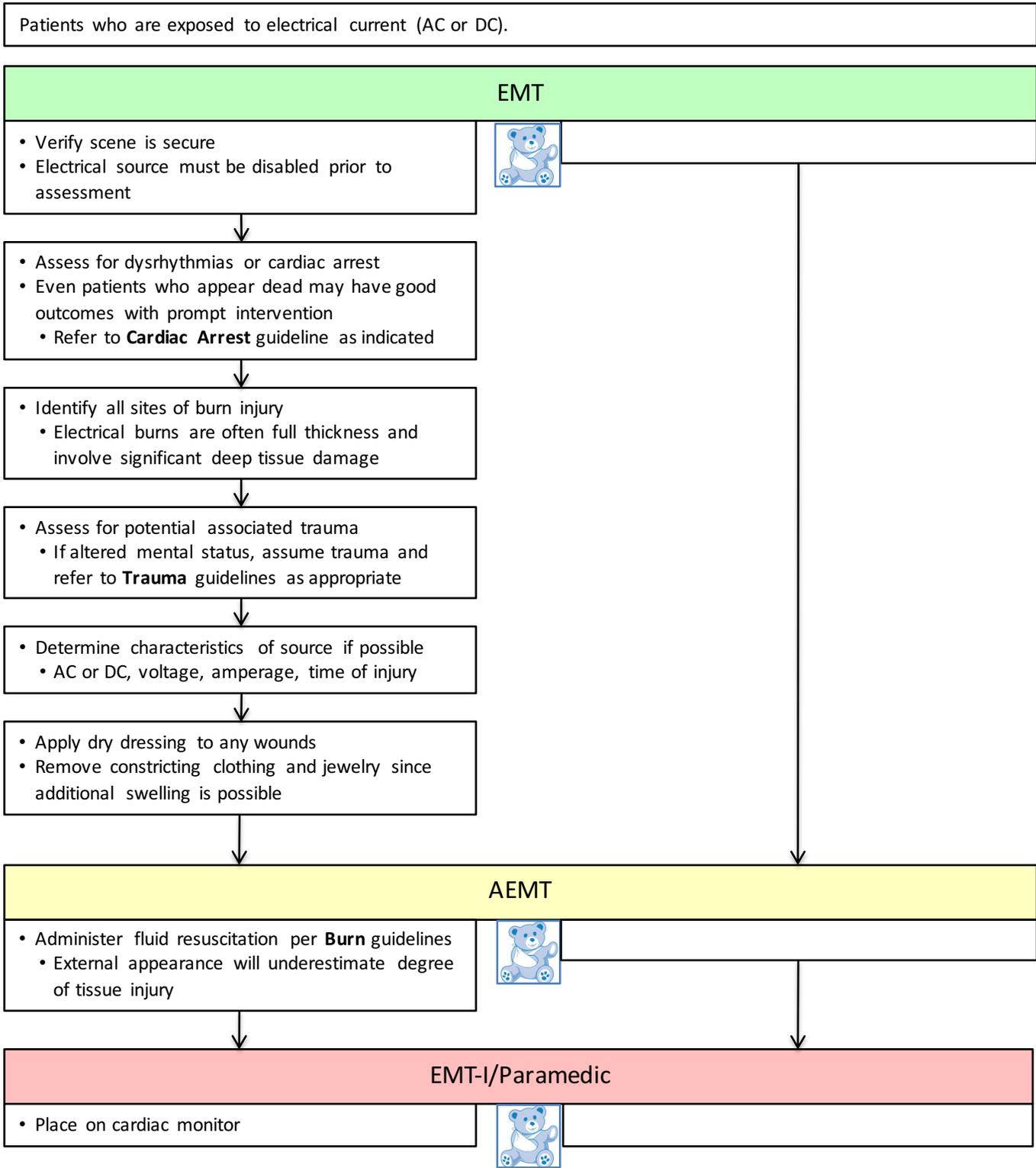
- If severe respiratory distress is present and pulmonary edema is found on exam, provider should start positive pressure ventilation (**Paramedic Only**)

# Conducted Electrical Weapon (e.g. TASER®): Adult & Pediatric

Patients who received either the direct contact discharge or the distance two-barbed dart discharge of the conducted electrical weapon.  
Patient may have sustained fall or physical confrontation trauma.  
Patient may be under the influence of toxic substances and/or may have underlying medical or psychiatric disorder.



# Electrical Injuries: Adult & Pediatric



# Lightning/Lightning Strike Injury: Adult & Pediatric

Patients of all ages who have been the victim of lightning strike injury.

## EMT

- Verify scene is secure; move to safe area



- Assure patent airway
  - If in respiratory arrest only, manage airway as appropriate

- Assess for dysrhythmias or cardiac arrest
  - Refer to **Cardiac Arrest** guideline if in cardiopulmonary arrest

- Assess for potential associated trauma
  - If altered mental status, assume trauma and refer to **Trauma** guidelines as appropriate

- Consider early pain management (see **Pain Management** guideline)

## AEMT

- Consider placing IV



## EMT-I/Paramedic

- Place on cardiac monitor; cardiac monitoring during transport
- Consider 12-lead ECG, where available



# Adrenal Insufficiency: Adult & Pediatric

Includes patients with a known medical history of adrenal insufficiency, such as Congenital adrenal hyperplasia (CAH), Panhypopituitarism, Long-term use of steroids (replacement therapy, asthms, COPD, rheumatoid arthritis, and transplant recipients), who are presenting with illness or injury, including but not limited to:

- Shock/hypoperfusion
- Fever > 100.4°F
- Multi-system trauma
- Multiple long bone fractures
- Hyperthermia or hypothermia
- Respiratory distress
- Partial or full thickness burns > 5% BSA
- Drowning
- Vomiting/Diarrhea with signs/symptoms of dehydration

## EMT

- Assess ABC's, VS, LOC (ABCDE Assessment)
- Oxygen 15 lpm via NRBM (titrate oxygen to SpO<sub>2</sub> ≥ 94%)
- Pulse oximetry
- Check blood glucose
- If pregnant, place in left lateral recumbent position



## AEMT

- Establish IV/IO access
- If hypotensive or no pulse, bolus with IV fluids (20 ml/kg; max 1 L) over 10-20 minutes
  - May repeat up to 3 times
- Correct blood glucose if < 60 mg/dl (refer to **Hypoglycemia** guideline)



- May repeat IV fluid bolus up to 3 times

- Stress dose steroids:
- Assist with patient's home medication hydrocortisone (Solu-Cortef):
  - Adult Adult: 100 mg IM

- Stress dose steroids:
- Assist with patient's home medication hydrocortisone (Solu-Cortef):
  - Child: 2 mg/kg IM or
    - 0 – 3 yo = 25 mg IM
    - 3 – 12 yo = 50 mg IM
    - ≥ 12 yo = 100 mg IM

## EMT-I/Paramedic

- Cardiac monitor



- Stress dose steroids (if home medication not available):
  - Methylprednisolone 2 mg/kg IV (max 125mg)