



MEDICAL DIRECTION COMMISSION

Date: September 15, 2016 - **Time:** 12:00 PM

Location: 150 N. 18th Ave., **Conference Room 215A & 215B**

Conference Call: 1-877-820-7831 - **Code:** 450908#

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

You must register prior to joining the web conference session

AGENDA

- I. Call to Order – Ben Bobrow, MD
- II. Roll Call - Tammy Gagnon (12 members, 7 required for quorum)
- III. Chairman’s Report – Ben Bobrow, MD
 - a. Attendance Report (Attach. III.a.)
 - b. 2017 Meeting Schedule (Attachment III.b.)
 - c. Vacancies
 - i. Faculty Representative of Emergency Medicine Residency Program
 - ii. Physician Specializing in Acute Head Injury/Spinal Cord Care
- IV. Bureau Report – David Harden, JD
 - a. Trauma Rules Revisions – Noreen Adlin
- V. Discussion and Action Items
 - a. Discuss, amend, approve MDC Minutes from May 19, 2016 (Attachment V.a.)
 - b. Discuss, amend, approve Treatment Guidelines (Attachment V.b.) – Toni Gross, MD
 - c. Discuss Medical Director’s Recognition Program – Gail Bradley, MD/Franco Castro-Marin, MD
 - d. Ketamine Use for Delirium/Pain Control/Adverse Effects – Gail Bradley, MD
- VI. Reports
 - a. Protocols, Medications, and Devices Committee – Toni Gross, MD
 - b. Trauma and EMS Performance Improvement Standing Committee – Gail Bradley, MD
 - c. Education Standing Committee – Gail Bradley, MD
 - d. Data and Quality Assurance – Terry Mullins, MPH/Vatsal Chikani, MPH
 - e. Medication Administration Report – Anne Vossbrink, MS
 - f. STAB Annual Report 2016 – Vatsal Chikani, MPH
 - g. Treat & Refer Recognition Program – David Harden, JD
- VII. Agenda Items for Next Meeting

Persons with disabilities may request a reasonable accommodation such as a sign language interpreter, by contacting Angie McNamara, Program Project Specialist II, at 602-364-3156; State TDD Number 1-800-367-8939; or Voice Relay Number 711. Request should be made as early as possible to allow time to arrange accommodations

“Health and Wellness for all Arizonans”

VIII. 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. The Committee 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)

IX. Summary of Current Events

- a. September 26, 2016 – Extreme Medicine for EMS , Casa Grande, Arizona - Barbara.bovee@mihs.org; <http://www.azdhs.gov/documents/preparedness/emergency-medical-services-trauma-system/news-conferences/mihs-ems-conference-sept-26-2016.pdf>
- b. October 13, 2016 – 10th Annual EMS Conference – Level 1 Trauma Center Dignity Health, St. Joseph’s Hospital and Medical Center michael.medina@dignityhealth.org; <https://contact.dignityhealth.org/WLP2/#!/classes/info/EMS1016>;
- c. November 3 – 4, 2016 – Emergency Pediatric Interdisciplinary Care Conference <http://www.epiccaz.org/>
- d. November 10 – 11, 2016 – 8th Annual Southwest Trauma and Acute Care Symposium <http://www.aztracc.org/symposium/>

Visit the Bureau’s News & Conferences page for upcoming events:

<http://www.azdhs.gov/preparedness/emergency-medical-services-trauma-system/index.php#news-conference-home>

Visit the Bureau’s Training Programs page for upcoming CE opportunities:

<http://www.azdhs.gov/documents/preparedness/emergency-medical-services-trauma-system/training/continuing-education.pdf>

X. Next Meetings: January 19, 2017 @ 12:00 PM in rooms 215A & 215B 150 Building

XI. Adjournment

Persons with disabilities may request a reasonable accommodation such as a sign language interpreter, by contacting Angie McNamara, Program Project Specialist II, at 602-364-3156; State TDD Number 1-800-367-8939; or Voice Relay Number 711. Request should be made as early as possible to allow time to arrange accommodations

“Health and Wellness for all Arizonans”

Committee Attendance Report

Medical Direction Commission

Present Tele Absent

		Present	Tele	Absent
Bentley Bobrow	Chair/ADHS BEMS Medical Director			
	9/25/2014	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	1/29/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5/21/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	9/17/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	1/21/2016	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Daniel Spaite	Emergency Medicine Physician - Southe			
	9/25/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1/29/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	5/21/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	9/17/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1/21/2016	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Frank Walter	Physician Specializing in Toxicology			
	9/25/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	1/29/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5/21/2015	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	9/17/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1/21/2016	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Gail Bradley	Physician Specializing in Cardiac Care/Vi			
	9/25/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1/29/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5/21/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	9/17/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1/21/2016	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jonathan Maitem	Emergency Medicine Physician - Central			
	9/25/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1/29/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5/21/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	9/17/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1/21/2016	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kevin Foster	Physician Specializing in Trauma Surger			
	9/25/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	1/29/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	5/21/2015	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	9/17/2015	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	1/21/2016	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Michele Preston	Emergency Medicine Physician - Wester			
	5/21/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	9/17/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	1/21/2016	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Nicholas Theodore	Physician Specializing in Acute Head Inj			
	9/25/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	1/29/2015	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	5/21/2015	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	9/17/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	1/21/2016	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Phillip Richemont	Physician with Full-Time Practice in a Ru			

Medical Direction Commission

Present Tele Absent

		Present	Tele	Absent
Phillip Richemont	Physician with Full-Time Practice in a Ru			
	9/25/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	1/29/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	5/21/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	9/17/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	1/21/2016	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rianne Page	Emergency Medicine Physician - Northe			
	1/29/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5/21/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	9/17/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	1/21/2016	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Toni Gross	Physician Specializing in Pediatric Medic			
	9/25/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1/29/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5/21/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	9/17/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1/21/2016	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



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

Date	Time	Meeting	Conference Room
January 19, 2017	9:00 a.m.	State Trauma Advisory Board	215A & 215B – 2nd Floor, 150 Bldg
January 19, 2017	10:30 a.m.	Emergency Medical Services	215A & 215B – 2nd Floor, 150 Bldg
January 19, 2017	12:00 p.m.	Medical Direction Commission	215A & 215B – 2nd Floor, 150 Bldg
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.”

05/16/16

Douglas A. Ducey | Governor Cara M. Christ, MD, MS | Director

Bureau of Emergency Medical Services and Trauma System

150 North 18th Avenue, Suite 540, Phoenix, AZ 85007-3248 P | 602-364-3150 F | 602-364-3568 W | azhealth.gov

Health and Wellness for all Arizonans

MEDICAL DIRECTION COMMISSION

May 19, 2016 - 12:00 PM

150 N. 18th Ave., Conference Room 215A&B

Meeting Minutes

Present

Ben Bobrow, MD
 Gail Bradley, MD
 Toni Gross, MD
 Jon Maitem, DO
 Rianne Page, MD*
 Bob Ramsey
 Dan Spaite, MD*
 Frank Walter, MD*

Absent

Phillip Richemont*

*Indicates teleconference

- I. Call to Order – Ben Bobrow, MD-12:00 pm
- II. Roll Call - Tammy Gagnon (12 members, 7 required for quorum) – Quorum met
- III. Chairman’s Report – Ben Bobrow, MD
 - a. Attendance Report (Attach. III.a.)
 - b. Vacancies – Faculty Representative of Emergency Medicine Residency Program
Physician Specializing in Acute Head Injury/Spinal Cord Care
- IV. Bureau Report – David Harden, JD
 - a. AZ-STEMI Survey Summary Data Report
 - b. Epinephrine Drug Shortage – Noreen Adlin
 - c. [Drug Shortage Guideline](#) (Attach. IV.b) – Noreen Adlin
- V. Discussion and Action Items
 - a. Discuss, amend, approve MDC Minutes from January 21, 2016 (Attachment V.a.) A motion to approve was made by Jon Maitem, DO and seconded by Gail Bradley, MD. **Motion carries.**
 - b. Discuss, amend, approve Lidocaine for IO Pain Management Drug Profile (Attach. V. b.) A motion to approve was made by Jon Maitem, DO and seconded by Toni Gross, MD. **Motion carries.**
 - c. Discuss, amend, approve minimum supplies for the following in Table 5.2 TTTGs (Attach. V.c.) A motion to approve was made by Jon Maitem, DO and seconded by Toni Gross, MD. **Motion carries.**
 - i. Glucagon – Gail Bradley, MD
 - ii. Thiamine – Gail Bradley, MD
 - iii. Atropine – Gail Bradley, MD
 - iv. Epi Pens – Josh Gaither, MD
 - d. Discuss, amend and approve the Arizona Treat and Refer Participation Manual (Attach. V.d) A motion to approve was made by Jon Maitem, DO and seconded by Toni Gross, MD. **Motion carries.**

VI. Reports

- a. Excellence in Prehospital Injury Care Traumatic Brain Injury Project – Ben Bobrow, MD
- b. Trauma and EMS Performance Improvement Standing Committee – Gail Bradley, MD
- c. Education Standing Committee – Gail Bradley, MD
- d. Protocols, Medications and Devices Standing Committee - Toni Gross, MD
- e. Data and Quality Assurance - Rogelio Martinez, MPH

VII. Agenda Items for Next Meeting: Ketamine use for-delirium/pain control/adverse effects.

VIII. 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. The Committee 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)

IX. Summary of Current Events

- a. May 25, 2016 -8th Annual EMS Conference - Tucson Medical Center, Tucson
http://www.azambulance.org/component/docman/doc_download/542-tmc-8th-annual-ems-conference.html
- b. June 9 – 10, 2016 EMS Odyssey – Desert Willow Conference Center, Phoenix (pre-conference June 8, 2016, Two topic's Human Trafficking and EMS Kiddie Kamp
<http://www.aems.org/ems-odyssey>
- c. July 14 – 15, 2016 – Trauma Conference International – Hotel Coronado, Coronado, CA
<http://traumacon.org/>
- d. August 4 – 5, 2016 – 27th Annual Southwest Trauma Conference, Presented by the University of Arizona and Banner- University Medical Center– JW Marriott Starr Pass, Tucson <https://www.facebook.com/swtrauma/posts/1712960188984114>
- e. November 10 – 11, 2016 – 8th Annual Southwest Trauma and Acute Care Symposium
<http://www.aztracc.org/symposium/>

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X. Next Meetings: September 15, 2016 @ 12:00 PM in rooms 215A & 215B 150 Building

XI. Adjournment 1:11pm

VISITORS PLEASE SIGN IN

Medical Direction Commission - May 19, 2016 @ 12:00 pm

Name (PLEASE PRINT)	Organization & Position
1 LES CAID	Rio Rico Med & Fire
2 WAT Eckhoff	" " " "
3 Franco Castro-Marin	Navar Health
4 DAVID MAREL	ADHS/STANDS
5 Jennifer	Danner
6 Kimberly Bostum	ADHS
7 Ryan Herald	Mesa Fire/Medical
8 Matt Crankell	Mesa Fire/Medical
9 Rebecca Haro	No. County Fire & Medical
10 BRIAN SMITH	FMC
11 VAC GING	CITY OF CHANDLER
12 Paul Honeywell	Peoria Hills - Medical
13 Jill Masado	AMR
14	
15	
16	
17	

Universal Care: Adult & Pediatric

These general recommendations apply to all patient encounters with EMS personnel and all care delivered by EMS personnel.

Patient care goals are to facilitate appropriate initial assessment and management of any EMS patient and link to appropriate specific guidelines as dictated by the findings within the universal care guideline.

EMT

- Assess scene safety
- Determine number of patients
- Determine mechanism of injury
- Request additional resources if necessary
- Use appropriate personal protective equipment (PPE)



- It is preferable for minors to have a parent or legal guardian who can provide consent for treatment on behalf of the child; however, EMS providers may provide emergency treatment when a parent is not available to provide consent

- Primary survey (Airway, Breathing, Circulation, Disability, Exposure)
 - Open airway as indicated
 - Head tilt, chin lift
 - Jaw thrust
 - Suction
 - Consider use of airway adjuncts: oral airway, nasopharyngeal airway
 - Administer oxygen as appropriate with a goal of $\text{SaO}_2 \geq 94\%$ for most acutely ill patients
 - Assess pulse and capillary refill
 - Control any major external bleeding
 - Evaluate patient responsiveness: AVPU scale
 - Obtain baseline vital signs: Pulse, Blood Pressure, Respiratory Rate, Pulse Oximetry
 - Evaluate gross motor and sensory function in all extremities
 - Expose patient as appropriate to the chief complaint; be considerate of modesty and keep patient warm

OPQRST History

- O: onset of symptoms
- P: provocation – location; any exacerbating or alleviating factors
- Q: quality of pain
- R: radiation of pain
- S: severity of symptoms - pain scale
- T: time of onset and circumstances around onset

SAMPLE History

- S: symptoms
- A: allergies - medication, environmental, and foods
- M: medications - both prescription and over-the-counter; bring all containers to hospital if possible
- P: past medical history
 - Look for medical alert tags, portable medical records, advance directives;
 - Look for medical devices/implants (dialysis shunt, insulin pump, pacemaker, central venous access port, gastric tubes, urinary catheter)
- L: last oral intake
- E: events leading up to the 911 call
 - In patient with syncope, seizure, altered mental status, or acute stroke, consider bringing witness to the hospital or obtain their contact phone number to provide to ED care team

- Secondary survey (should not delay transport in critical patients)
- Assess blood glucose if altered mental status

- OPQRST history

- SAMPLE history

AEMT

- Consider appropriate airway management adjuncts: supraglottic airway device, laryngeal mask airway



- Use length-based tape for weight estimate

EMT-I/Paramedic

- Consider appropriate airway management adjuncts: endotracheal tube
- 12-lead ECG should be performed early, where available, in patients with suspected cardiac complaints, goal within 5 minutes of patient contact
- In patients with cardiac or respiratory complaints:
 - Continuous cardiac monitoring
 - Consider waveform capnography (EtCO_2)



Functional Needs: Adult & Pediatric

Patients who are identified by the World Health Organization's International Classification of Functioning, Disability, and Health (ICF) that have experienced a decrement in health resulting in some degree of disability. According to the U.S. Department of Health and Human Services, this includes, but is not limited to, individuals with physical, sensory, mental health, and cognitive and/or intellectual disabilities affecting their ability to function independently without assistance.

EMT

- Identify the functional need by means of information from the patient, the patient's family, bystanders, medic alert bracelets or documents, or the patient's adjunct assistance devices
- The physical examination should not be intentionally cut short, although the manner in which the exam is performed may need to be modified to accommodate the specific needs of the patient
- Medical care should not intentionally be reduced or abbreviated during the triage, treatment and transport of patients with functional needs, although the manner in which the care is provided may need to be modified to accommodate the specific needs of the patient



- For patients with communication barriers (language or sensory), it may be desirable to obtain secondary confirmation of pertinent data (e.g. allergies) from the patient's family, interpreters, or written or electronic medical records. The family members can be an excellent source of information and the presence of a family member can have a calming influence on some of these patients

AEMT



EMT-I/Paramedic



Patient Refusals: Adult & Pediatric

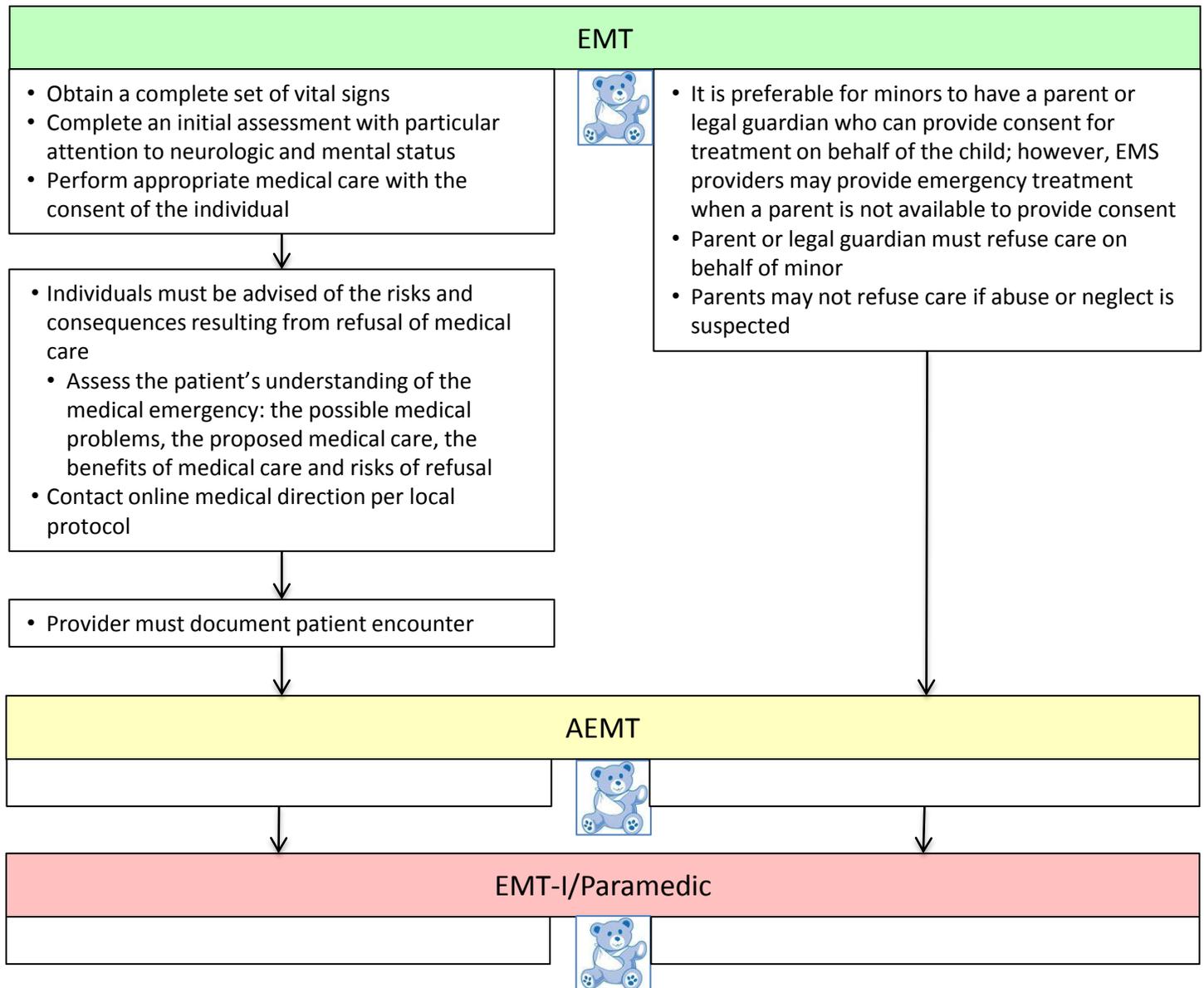
If an individual (or the parent or legal guardian of the individual) refuses secondary care and/or ambulance transport to a hospital after EMS providers have been called to the scene, providers should determine the patient's capacity to make decisions.

Decision-Making Capacity – An individual who is alert, oriented, and has the capacity to understand the circumstances surrounding his/her illness or impairment, as well as the possible risks associated with refusing treatment and/or transport, typically is considered to have decision-making capacity. Decision making capacity must be demonstrated and documented as defined by these abilities:

- Receive and comprehend information needed to make a decision
- Process and deliberate a decision and its potential consequences
- Make and articulate a decision that is consistent over time
- Justify that decision with logic that fits the persons own value system

The individual's judgement must not be **significantly** impaired by illness, injury or drugs/alcohol intoxication.

Individuals who have attempted suicide, verbalized suicide intent, or have other factors that lead EMS providers to suspect suicidal intent may not decline transport to a receiving facility. In addition, patients with court order for medical or psychiatric care may not refuse care.

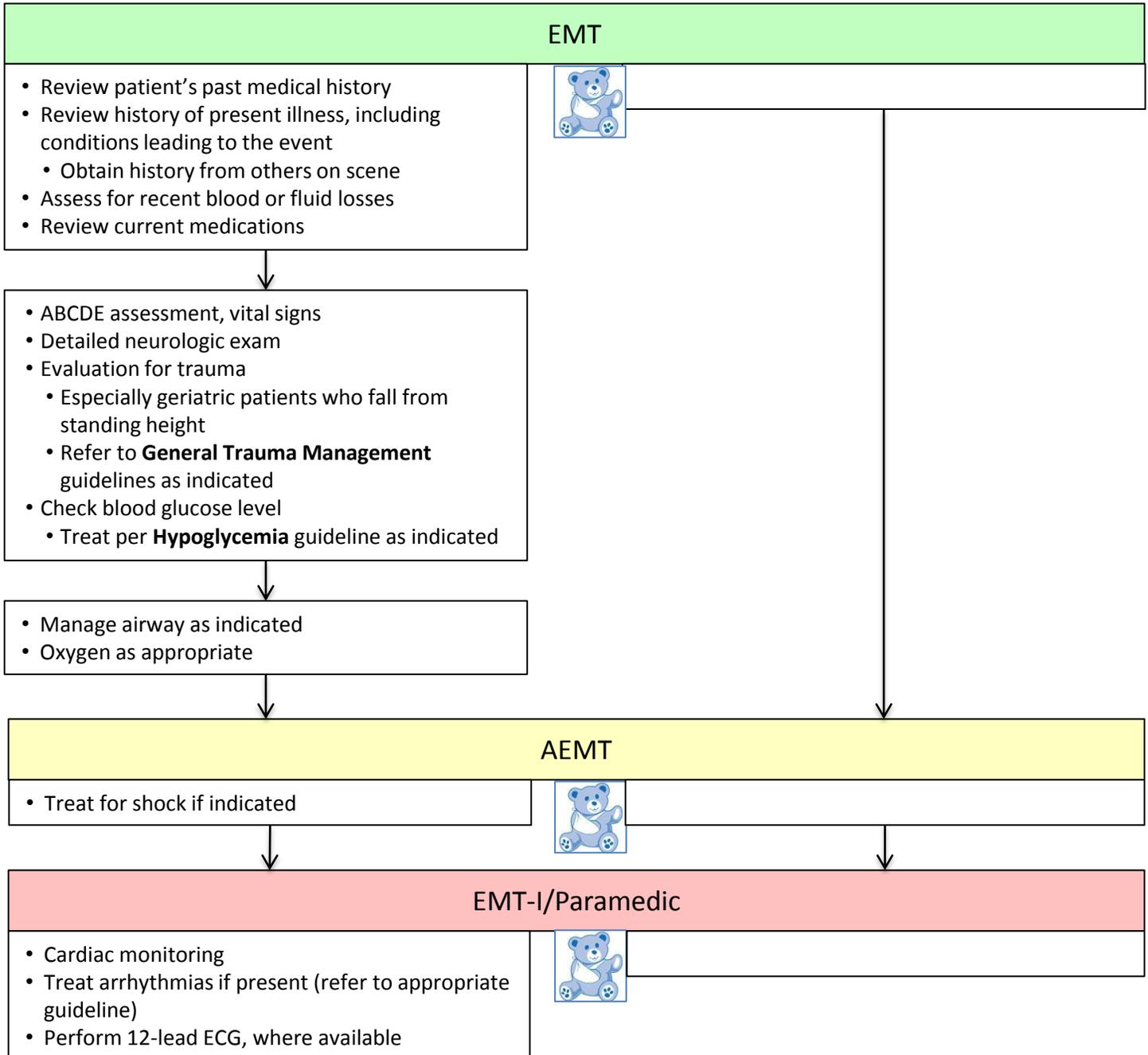


Syncope and Presyncope: Adult & Pediatric

Patients with syncope present with both abrupt loss of consciousness and loss of postural tone. Presyncope or prodromal symptoms may be described as “nearly blacking out” or “nearly fainting.”

Excludes: conditions other than the above.

1. Patients with alternate and obvious cause of loss of consciousness (such as trauma – see **Traumatic Brain Injury** guideline).
2. Patients with ongoing mental status changes or coma should be treated per the **Altered Mental Status** guideline.



Chest Pain/Acute Coronary Syndrome/ST-segment Elevation Myocardial Infarction: Adult & Pediatric

Patients with chest pain or discomfort in other areas of the body (e.g. arm, jaw, epigastrium) of suspected cardiac origin, shortness of breath, sweating, nausea, vomiting, and dizziness. Atypical or unusual symptoms are more common in women, the elderly and diabetic patients. May also present with CHF, syncope and/or shock.

Some patients will present with non-STEMI chest pain and otherwise have a low likelihood of ACS (e.g. blunt trauma to the chest of a child). For these patients, defer the administration of aspirin and nitrates and refer to **Pain Management** guideline.

EMT

- Obtain a complete set of vital signs



- Initiate cardiopulmonary resuscitation (CPR) or defibrillation with AED, if indicated



- If dyspnea or hypoxemic or obvious signs of heart failure, administer oxygen and titrate to SaO₂ of ≥ 94% (per **Universal Care** guideline)



- Administer aspirin 160 to 325 mg PO
- Assist patient in self-administration of nitroglycerin tablets or spray if SBP > 100 mm Hg
 - Contraindicated when patients have taken an erectile dysfunction PDE5-inhibitor medication (sildenafil, tadalafil) within 24-48 hours
 - May administer every 3-5 minutes



AEMT

- Treat pulseless rhythms, tachycardia, or symptomatic bradycardia (see **Cardiovascular** and **Resuscitation** guideline sections)
- Establish IV access



- Administer nitroglycerin doses (tablets or spray) if SBP > 100 mm Hg
 - Contraindicated when patients have taken an erectile dysfunction PDE5-inhibitor medication (sildenafil, tadalafil) within 24-48 hours
 - May administer every 3-5 minutes
- Treat chest pain unresponsive to nitrates
 - Morphine IV (0.1 mg/kg/dose, not to exceed 1-3 mg increments)
 - ★ Use with caution in unstable angina/NSTEMI



EMT-I/Paramedic

- Perform 12-lead ECG as soon as possible, where available, goal within 5 minutes of patient contact
- Assess cardiac rhythm
- If STEMI present, transmit ECG if available
- Pre-notify receiving facility
- Performance of serial ECGs is suggested
- **Nitrates contraindicated if right-sided or inferior ST elevation**



Bradycardia: Adult & Pediatric

Heart rate < 60 with either symptoms (altered mental status, chest pain, congestive heart failure, seizure, syncope, shock, pallor, diaphoresis) or evidence of hemodynamic instability.

Major ECG rhythms classified as bradycardia include:

- a. Sinus bradycardia
- b. Second-degree AV block
- c. Type I – Wenckenbach/Mobitz I
- d. Type II – Mobitz II
- e. Third-degree AV block complete block
- f. Ventricular escape rhythms

EMT

- Manage airway as necessary
- Provide supplemental O₂ as needed to maintain SaO₂ ≥ 94%



- Treatment is only indicated for patients who are symptomatic (pale/cyanotic, diaphoretic, altered mental status, hypoxic)

- Check blood glucose level
- Treat hypoglycemia per **Hypoglycemia** guideline

- Initiate chest compressions

- Manage airway and assist ventilations as necessary with minimally interrupted chest compressions using a compression to ventilation ratio 15:2 (30:2 if single provider is present)
- Provide supplemental O₂ to maintain SaO₂ ≥ 94%

- Check blood glucose level
- Treat hypoglycemia per **Hypoglycemia** guideline

AEMT

- Establish IV access



- Establish IV access

EMT-I/Paramedic

- Place on cardiac monitor
- Perform 12-lead ECG, where available



- Place on cardiac monitor
- Perform 12-lead ECG, where available

- If bradycardia and symptoms or hemodynamic instability continue, consider the following:
 - Atropine 0.5 mg IV/IO every 3-5 min (max 3 mg)
 - Chronotropic medication:
 - Epinephrine 2-10 mcg/min IV or
 - Dopamine 2-20 mcg/kg/min IV (**Paramedic Only**)

- If bradycardia and symptoms or hemodynamic instability continue, consider the following:
 - Epinephrine (1:10,000) 0.01 mg/kg IV/IO every 3-5 minutes
 - Atropine 0.01-0.02 mg/kg IV/IO (min dose 0.1 mg) if increased vagal tone or cholinergic drug toxicity

- Transcutaneous pacing
- Consider sedation or pain control

- Transcutaneous pacing
- Consider sedation or pain control

Tachycardia with a Pulse: Adult & Pediatric

Elevated heart rate for age, with or without associated symptoms such as palpitations, dyspnea, chest pain, syncope/near-syncope, hemodynamic compromise, altered mental status or other signs of end organ malperfusion.
 Adults: HR > 100.
Excludes: sinus tachycardia

EMT

- Manage airway as necessary
- Provide supplemental O₂ as needed to maintain SaO₂ ≥ 94%



- Manage airway as necessary
- Provide supplemental O₂ as needed to maintain SaO₂ ≥ 94%

- Check blood glucose level
- Treat hypoglycemia per **Hypoglycemia** guideline

- Check blood glucose level
- Treat hypoglycemia per **Hypoglycemia** guideline

AEMT

- Establish IV access



- Establish IV access

EMT-I/Paramedic

- Place on cardiac monitor
- Perform 12-lead ECG, where available



- Place on cardiac monitor
- Perform 12-lead ECG, where available

- Consider the following if tachycardia and symptoms or hemodynamic instability continue:
 - Stable SVT
 - Perform vagal maneuvers
 - Adenosine 6 mg IV followed by 10 mL fluid bolus; if tachycardia continues, give 12 mg IV;
 - Diltiazem (**Paramedic only**) 0.25 mg/kg IV slowly over 2 minutes; after 15 minutes a second dose of 0.35 mg/kg IV may be given
 - Irregular narrow complex tachycardia (A-fib, A-flutter, multifocal atrial tachycardia), Stable
 - Diltiazem (**Paramedic only**) 0.25 mg/kg IV (if > 65yo, max 10 mg) slowly over 2 minutes; after 15 minutes a second dose of 0.35 mg/kg IV (if > 65yo, max 10 mg) may be given
 - Verapamil (**Paramedic only**) 2.5-5 mg IV slowly over 2-3 minutes; after 15-30 minutes a second dose of 5-10 mg IV may be given (max dose 30 mg)
 - Regular wide complex tachycardia, Stable
 - Adenosine 6 mg IV followed by 10 mL fluid bolus; if monomorphic tachycardia continues, give 12 mg IV
 - Amiodarone 150 mg IV over 10 minutes; may repeat
 - Lidocaine 1-1.5 mg/kg IV, repeated every 5 minutes (max 3 mg/kg)
 - Irregular wide complex tachycardia, Stable
 - Amiodarone 150 mg IV over 10 minutes; may repeat
 - If torsades, give magnesium 1-2 gm IV over 15 minutes
 - Unstable SVT
 - Deliver a synchronized shock
 - Irregular narrow complex tachycardia, Unstable
 - Deliver a synchronized shock

- Consider the following if tachycardia and symptoms or hemodynamic instability continue:
 - Stable SVT
 - Perform vagal maneuvers
 - Adenosine 0.1 mg/kg IV (max 6 mg); may repeat with 0.2 mg/kg IV (max 12 mg)
 - Wide complex tachycardia, stable
 - Amiodarone 5 mg/kg IV over 10 minutes
 - Consider adenosine 0.1 mg/kg IV for SVT with aberrancy
 - Unstable SVT
 - Deliver a synchronized shock 0.5-1 J/kg
 - Repeat doses should be 2 J/kg
 - Wide complex tachycardia, unstable
 - Synchronized cardioversion 0.5-1 J/kg

Suspected Stroke/Transient Ischemic Attack: Adult & Pediatric

Presentation could include:

1. Neurologic deficit such as facial droop, localized weakness, gait disturbance, slurred speech, altered mental status.
2. Hemiparesis or hemiplegia.
3. Dysconjugate gaze, forced or crossed gaze.
4. Severe headache, neck pain/stiffness, difficulty seeing.

If glucose < 60, refer to **Hypoglycemia/Hyperglycemia** guideline.

If trauma and GCS < 14, refer to **Traumatic Brain Injury** and **General Trauma Management** guidelines.

If seizure activity present, refer to **Seizures** guideline.

EMT

- Use a validated prehospital stroke scale
- ABCDE assessment, vital signs
- Check blood glucose level
- Note on physical exam:
 - SBP > 185 or DBP > 110
 - Evidence of active bleeding
- Obtain history:
 - When was patient "last seen normal"?
 - Previous cerebral hemorrhage
 - Current anticoagulant therapy
 - Head trauma or prior stroke in last 3 months
 - Symptoms of subarachnoid hemorrhage
 - Arterial puncture at noncompressible site in last 7 days
 - History of previous intracranial hemorrhage
 - Seizure at onset
 - Major surgery or serious trauma within past 14 days
 - GI or urinary tract hemorrhage within past 21 days
 - Acute MI within last 3 months
- Neurologic status assessment
- Provide oxygen only if O₂ saturation < 94%
- Ensure airway is patent, avoid aspiration
 - Elevate head of stretcher 15-30 degrees if SBP > 100 mm Hg
- Protect paralyzed limbs from injury



- Although rare, pediatric patients can have strokes
 - Higher risk in sickle cell anemia patients
- Stroke scales are not validated for pediatric patients
- Per local protocols, call receiving facility or base hospital to ensure appropriate destination decision

AEMT

- Avoid multiple IV attempts



EMT-I/Paramedic

- Place on cardiac monitor
- Perform 12-lead ECG, where available
- Do not treat hypertension



- Transport to nearest stroke center or stroke-capable facility, per local protocols
- Prenotify receiving facility

Abuse and Maltreatment: Adult & Pediatric

Be aware of potential clues to abuse/maltreatment from caregivers, the general environment, and the patient's physical condition.
 Recognize any act or series of acts of commission or omission by a caregiver or person in a position of power over the patient that results in harm, potential for harm, or threat of harm to a patient.

EMS role is to:

- Document concerns
- Assess potentially serious injuries
- Disclose concerns to the appropriate authorities
 - EMS personnel are mandatory reporters of any suspicion for abuse, maltreatment, or neglect (ARS §13-3620.A)
 - Notify law enforcement, the Arizona Department of Child Safety (**1-888-SOS-CHILD** (1-888-767-2445)), or Adult Protective Services Central Intake Unit (**1-877-SOS-ADULT** (1-877-767-2385) or <https://www.azdes.gov/landingforms.aspx?form=13004>)
- Take appropriate safety steps to protect the responders and bystanders
- Get patient away from immediate danger
- Leave the investigation to law enforcement
- Ensure patient, EMS, and bystander safety
- Do not confront suspected perpetrators of abuse/maltreatment

EMT

- Primary survey
 - Identify potentially life-threatening issues
 - Refer to appropriate **Trauma** guidelines as needed
- Secondary survey
- Assess physical issues, document any statements made spontaneously by patient, avoid extensive investigation of the specifics of abuse
- Find a way to get the patient to a safe place even if no medical indication for transport
 - Report concerns immediately about caregivers impeding your ability to assess/transport patient or refusing care for the patient
- Attempt to preserve the evidence, but the overriding concern should be providing emergency care to the patient



- Have a high index of suspicion for abuse in children presenting with an Apparent Life Threatening Event (ALTE)

- Report concerns to hospital in addition to law enforcement or state authorities

AEMT

- Escalate care as needed



- Refer to appropriate guidelines as needed

EMT-I/Paramedic

- Escalate care as needed



- Refer to appropriate guidelines as needed

Agitated or Violent Patient/Behavioral Emergency: Adult & Pediatric

Patients of all ages who are exhibiting agitated, violent, or uncooperative behavior or who are a danger to self or others.

Excludes: Patients exhibiting agitated or violent behavior due to medical conditions including, but not limited to:

- Head trauma
- Metabolic disorders (e.g. hypoglycemia, hypoxia)

EMT

- Maintain and support airway
- Monitor pulse oximetry



- Obtain blood glucose level (if possible)

- Don personal protective equipment (PPE)
- Attempt verbal reassurance and calm patient
- Engage family members/loved ones to encourage patient cooperation if their presence does not exacerbate the patient's agitation

- Dispatch law enforcement immediately when needed to secure and maintain scene safety

- Consider physical restraints:
 - Body:
 - Sheets can be used in addition to stretcher straps; place around the lower lumbar region, below buttocks, or around the thighs, knees and legs
 - Should never restrict patient's chest wall motion
 - Extremities:
 - Soft or leather restraints should not require key
 - Restrain all four extremities to stationary frame of stretcher

- Place stretcher in sitting position
- If in police handcuffs, key must be in ambulance with patient

AEMT



EMT-I/Paramedic

- Apply cardiac monitor as soon as possible, particularly when chemical restraints have been administered
- Utilize capnography if available for all patients receiving chemical restraints



- Chemical restraints should be a later consideration for pediatric patients

- Consider chemical restraints based upon patient's clinical condition, current medications and allergies:
 - Benzodiazepines:
 - Midazolam 5-10 mg IM/IN or 2.5-5 mg IV/IO
 - May repeat IM/IN once, max 20 mg
 - Lorazepam 4 mg IM or 2 mg IV/IO
 - Diazepam 10 mg IM or 5 mg IV/IO

- Consider chemical restraints based upon patient's clinical condition, current medications and allergies:
 - Antihistamines:
 - Diphenhydramine 1 mg/kg IM/IV/PO (max 25 mg)
 - Benzodiazepines (max at adult doses):
 - Midazolam 0.1-0.15 mg/kg IM or 0.05-0.1 mg/kg IV/IO or 0.3 mg/kg IN
 - Lorazepam 0.05 mg/kg IM/IV/IO
 - Diazepam 0.1-0.2 mg/kg IM or 0.05-0.1 mg/kg IV/IO

Anaphylaxis and Allergic Reaction: Adult & Pediatric

Patients of all ages with known or suspected allergic reaction.

EMT

- Evaluate for patent airway and presence of oropharyngeal edema
- Auscultate for wheezing
- Assess level of respiratory effort and adequacy of perfusion
- Determine whether
 - Non-anaphylactic allergic reaction: symptoms involve only 1 organ system – localized angioedema, airway not compromised, no vomiting
 - Anaphylaxis: more severe – Respiratory compromise, decreased BP (SBP<90), or Combination of 2 of the following: urticaria or itchy swollen tongue and lips; dyspnea, wheeze, stridor or hypoxemia; vomiting or abdominal pain; syncope, hypotonia or incontinence



- Hypotension: Minimum SBP = $70 + 2x(\text{age in yrs})$

- If signs of anaphylaxis, assist with patient's own epinephrine via auto-injector when available (EpiPen Jr. or EpiPen)

- If signs of anaphylaxis, assist with patient's own epinephrine via auto-injector when available (EpiPen)

AEMT

- If signs of anaphylaxis and no auto-injector available, administer 0.3 mg epinephrine 1:1,000 IM
- If signs of anaphylaxis persist, additional IM epinephrine can be repeated every 5-15 minutes.



- If signs of anaphylaxis and no auto-injector available, administer epinephrine 1:1,000 IM:
 - If < 25 kg, 0.15 mg IM
 - If ≥ 25 kg, 0.3 mg IM
- If signs of anaphylaxis persist, additional IM epinephrine can be repeated every 5-15 minutes.

- If respiratory distress with wheezing, consider administering aerosolized albuterol (2.5-5 mg) or aerosolized epinephrine (5 ml, 1:1,000)
- For stridor, consider administering aerosolized epinephrine (5 ml, 1:1,000)

- If signs of hypoperfusion: 20 ml/kg isotonic fluid rapidly over 15 min IV/IO
 - Repeat as needed for ongoing hypoperfusion

EMT-I/Paramedic

- For urticaria, rash, itching, or anaphylaxis, administer diphenhydramine 1 mg/kg, max dose of 50 mg IV/IM



- Transport as soon as possible
- Consider cardiac monitoring for those with known heart problems or who received multiple doses of epinephrine

Altered Mental Status: Adult & Pediatric

Patients with impaired decision-making capacity.

Assessment: Evaluate for Treatable Causes, refer to specific treatment guidelines when cause identified.

- **Shock**
- **Head injury**
- Dysrhythmia
- **Hypoglycemia**, acidosis, metabolic disorder
- Intoxication
- **Hyperthermia, hypothermia**
- Excited delirium/**Behavioral Emergency**
- **Seizure**

EMT

- Assess ABC's, VS including temperature, LOC, Cardiac monitor, Blood glucose, stroke tool
 - Airway – keep patent, reposition if necessary
 - Place pulse oximeter
 - Oxygen via face mask or NRBM
 - BVM ventilation as needed
 - Assess signs of perfusion, shock
 - Assess neurologic status (AVPU or GCS), pupils
 - Glucose if indicated, per **Hypoglycemia** guideline
 - Warming/cooling maneuvers as indicated
- Assess skin: track marks, temperature, edema, rash, bleeding, medic alert tags, dialysis shunt
- Assess breath odor: alcohol, ammonia, acidosis
- Assess environment: pill bottles, drug/alcohol paraphernalia, ambient temperature
 - Naloxone if indicated (per local protocol)



- Assess for signs of hypovolemia
- For hypoglycemia (<60 mg/dL) and stable airway, refer to **Hypoglycemia** guideline and:
 - Oral glucose 0.5-1 gm/kg

AEMT

- Escalate airway support as needed
- Establish IV/IO access, IVF if indicated (see **Shock** guideline)
- If FSBG <60 mg/dL, treat per **Hypoglycemia** guideline
- Naloxone 0.4-2mg IV/IM/IN, per local protocol



- Consider IV/IO (see **Shock** guideline)
- Treat glucose if < 60 mg/dL
 - Dextrose 0.5 g/kg (max 25g) IV/IO *or*
 - Glucagon
 - 1 mg IM/IN (if > 20 kg or > 5 yo)
 - 0.5 mg IM/IN (if < 20 kg or < 5 yo)
- Naloxone 0.1 mg/kg, max 2mg IV/IM/IN

EMT-I/Paramedic

- Place EtCO2 monitor
- Consider intubation, per local protocol, if
 - Respiratory rate <8
 - Patient unable to protect airway
 - Condition does not improve
- Anti-dysrhythmic medication (see **Cardiovascular** guidelines)
- Vasopressors, as indicated (see **Shock** guideline)



- Maintain ventilatory support in least invasive way possible
- BVM ventilation is reasonable for pediatric patients

Hypoglycemia: Adult & Pediatric

Includes:

1. Adult or pediatric patient with blood glucose < 60 mg/dl with symptoms of hypoglycemia
2. Adult or pediatric patient with altered level of consciousness (also see **Altered Mental Status** guideline)
3. Adult or pediatric patient with stroke symptoms (e.g. hemiparesis, dysarthria; also see **Suspected Stroke/Transient Ischemic Attack** guideline)
4. Adult or pediatric patient with seizure (also see **Seizures** guideline)
5. Adult or pediatric patient with history of diabetes and other medical symptoms
6. Pediatric patient with suspected alcohol ingestion

EMT

- Obtain blood glucose level
- ABCDE assessment
- Assess GCS and mental status, assess for focal neurologic deficit
 - If altered level of consciousness or stroke, also follow **Altered Mental Status** or **Suspected Stroke** guidelines accordingly



- If hypoglycemia (glucose < 60 mg/dl), administer one of the following:
 - Oral glucose 0.5-1 gm/kg (ONLY if Alert level of consciousness)

- Assess for history of adrenal insufficiency; refer to **Adrenal Insufficiency** guideline if indicated

- If hypoglycemia (glucose < 60 mg/dl), administer
 - Oral glucose 25 gm (ONLY if Alert level of consciousness)

- Reassess VS, mental status

- Assess for history of adrenal insufficiency; refer to **Adrenal Insufficiency** guideline if indicated

- If symptoms resolved, consider release without transport if ALL conditions are true:

***Conditions for release without transport:**

- Repeat glucose is > 80 mg/dl
- Patient takes insulin
- Patient does NOT use oral medications to control blood glucose
- Use caution with patients taking long-acting insulins
- Patient returns to normal mental status, with no focal neurologic signs/symptoms after receiving glucose/dextrose
- Patient can promptly obtain and will eat a carbohydrate meal
- Patient or legal guardian refuses transport or patient and EMS providers agree transport not indicated, with appropriate medical direction per local protocol
- EMS provider documents patient's current medications and doses
- A reliable adult will be staying with patient
- No major co-morbid symptoms exist (chest pain, dyspnea, seizures, intoxication)

AEMT

- If hypoglycemia (glucose < 60 mg/dl), administer
 - Dextrose 25 gm IV/IO
 - 50 mL of D₅₀
 - 250 mL of D₁₀
 - or
 - Glucagon 1 mg IM/IN



- If hypoglycemia (glucose < 60 mg/dl), administer
 - Dextrose 0.5 gm/kg IV/IO
 - 5 mL/kg of D₁₀
 - or
 - Glucagon
 - 1 mg IM/IN (if > 20 kg or > 5 yo)
 - 0.5 mg IM/IN (if < 20 kg or < 5 yo)

- Reassess VS, mental status, and evidence of dehydration
- Repeat blood glucose level if mental status has not returned to normal

- If continued altered mental status and hypoglycemia, give additional dextrose or glucagon using initial dosing

EMT-I/Paramedic

- Refer to **Altered Mental Status** guidelines accordingly



- Refer to **Altered Mental Status** guidelines accordingly

Hyperglycemia: Adult & Pediatric

Includes:

1. Adult or pediatric patient with symptoms of hyperglycemia (e.g. polyuria, polydipsia, weakness, dizziness)
2. Adult or pediatric patient with history of diabetes and other medical symptoms
3. Adult or pediatric patient with altered level of consciousness (also see **Altered Mental Status** guideline)
4. Adult or pediatric patient with stroke symptoms (e.g. hemiparesis, dysarthria; also see **Suspected Stroke/Transient Ischemic Attack** guideline)
5. Adult or pediatric patient with seizure (also see **Seizures** guideline)

EMT

- Obtain blood glucose level
- ABCDE assessment
- Assess GCS and mental status, assess for focal neurologic deficit
 - If altered level of consciousness or stroke, also follow **Altered Mental Status** or **Suspected Stroke** guidelines accordingly



AEMT

- If hyperglycemia (glucose >250 mg/dl) with symptoms of dehydration, vomiting, or altered level of consciousness, administer:
 - NS bolus 1 L IV/IO
 - Reassess and repeat NS 1 L IV/IO if indicated



- If hyperglycemia (glucose >250 mg/dl) with symptoms of dehydration, vomiting, or altered level of consciousness, administer:
 - NS bolus 10 mL/kg IV/IO
 - Reassess and repeat NS bolus if indicated, up to 40 mL/kg total

- Transport to closest appropriate receiving facility

- Transport to closest appropriate receiving facility

EMT-I/Paramedic

- Refer to **Altered Mental Status** guidelines accordingly



- Refer to **Altered Mental Status** guidelines accordingly

Management of Acute Traumatic Pain: Adult & Pediatric

Assess pain as part of general patient care in children and adults.
 Consider all patients as candidates for pain management, regardless of transport interval .

Exclusion Criteria:

- GCS < 15 or mentation not appropriate for age
- Hypotension for age
- SaO₂ < 90%
- Hypoventilation
- Allergy to morphine or fentanyl

Caution:

- Multi-system trauma patients

EMT

- Use an age-appropriate pain scale to assess pain:
 - Age > 12 years: Consider using a self-report scale such as Numeric Rating Scale



- Use an age-appropriate pain scale to assess pain:
 - Age < 4 years: Consider using an observational scale such as FLACC or CHEOPS
 - Age 4-12 years: Consider using a self-report scale such as Faces Pain Scale-revised or Wong-Baker Faces

- If available, consider use of non-pharmaceutical pain management techniques:
- Place patient in position of comfort, while adhering to safe transport recommendations
 - Apply ice packs and/or splints
 - Verbal reassurance (will lower anxiety)
 - Apply a pulse oximeter and administer oxygen as needed to maintain SaO₂ ≥ 94%

AEMT

- Establish IV access if indicated per local protocol



- Use opioid analgesics to relieve moderate to severe pain (pain score 4-10):
 - Morphine IV/IO (0.1 mg/kg/dose, max 5 mg increments)

- Use opioid analgesics to relieve moderate to severe pain (pain score 4-10):
 - Morphine IV/IO (0.1 mg/kg/dose, max 5 mg increments)

- Reassess pain every 5 minutes
- Evidence of serious adverse effects should preclude further morphine administration

Serious Adverse Effects

- GCS < 15
- Hypotension for age
- SaO₂ < 90%
- Hypoventilation
- Evidence of allergy

- If still in significant pain, re-dose **at the original dose**

- Additional analgesics per local protocol

EMT-I/Paramedic

- Use opioid analgesics to relieve moderate to severe pain (pain score 4-10):
 - Morphine IV/IO (as above) or
 - Fentanyl IN/IV/IO (1 mcg/kg/dose, max 50 mcg increments)



- Consider intranasal route for medication if available
 - Fentanyl IN/IV/IO (1 mcg/kg/dose, max 25-50 mcg increments)

- Reassess pain every 5 minutes, observe for adverse effects, and re-dose as above

Seizures: Adult & Pediatric

If actively seizing on EMS arrival or recurrent seizure without return to baseline mental status, while on scene, or in transport.
 Seizures during 3rd trimester of pregnancy or post-partum are managed with magnesium sulfate, per below.
 Seizures due to trauma, hyperthermia, or toxic exposure should be managed according to those condition-specific guidelines.

EMT

- Airway support
 - Chin lift, jaw thrust, suctioning
 - Escalate to NP or OP airway
 - Place pulse oximeter
 - Oxygen via face mask or NRBM
 - BVM ventilation as needed
- Assess signs of perfusion
- Assess neurologic status (AVPU or GCS)
- If pregnant, place in left lateral recumbent position
- Check blood glucose



- Oral glucose if blood glucose <60 mg/dL and stable airway

AEMT

- Establish IV access
- If blood glucose <60 mg/dL, refer to **Hypoglycemia/Hyperglycemia** guideline



- If expected long transport time, consider IV/IO if indicated for other reasons
- If blood glucose <60 mg/dL, refer to **Hypoglycemia/Hyperglycemia** guideline

EMT-I/Paramedic

- Administer benzodiazepines per local protocol
 - If age >60, consider reducing dose by half
 - Midazolam 0.2 mg/kg buccal/IM/IN
 - Max 5mg if <40kg
 - Max 10mg if ≥40kg
 - If IV/IO route utilized, 0.1 mg/kg of Diazepam, Lorazepam, or Midazolam
- If seizure persists, repeat benzodiazepine dose



- If in 3rd trimester of pregnancy or post-partum, administer Magnesium Sulfate 4g IV/IO over 5 minutes (**Paramedic Only**); go to high risk OB guideline

- Use EtCO2 monitor
- Prepare for ventilatory support

Shock: Adult & Pediatric

For shock due to suspected trauma, see **Trauma** section guidelines. For shock due to anaphylaxis, see **Anaphylaxis and Allergic Reaction** guideline.

Signs of poor perfusion due to a medical cause include one or more of the following:

- Tachycardia out of proportion to temperature
- Altered mental status
- Delayed/flash capillary refill >2 seconds
- Hypoxia
- Decreased urine output
- Tachypnea
- Hypotension for age
- Weak, decreased or bounding pulses
- Cool/mottled or flushed/ruddy skin

EMT

- Assess ABC's, VS, LOC (ABCDE Assessment)
- Oxygen 15 lpm via NRBM (titrate oxygen to SpO₂ ≥ 94%)
- Pulse oximetry
- Consider underlying cause
- Check blood glucose
- If pregnant, place in left lateral recumbent position



AEMT

- Establish IV access; if unable to obtain within 2 attempts or 90 seconds, place IO
 - IV/IO fluids (20 ml/kg; max 1 L) over < 15 minutes
- May repeat up to 3 times *until either*
 - Vital signs/perfusion normal
 - Rales, crackles or respiratory distress on exam
- Correct blood glucose if < 60 mg/dl



- May repeat IV/IO fluid bolus up to 3 times *until either*
 - Vital signs/perfusion normal
 - Rales, respiratory distress, or hepatomegaly on exam

- Reassess after each IVF bolus

- If history of adrenal insufficiency (congenital adrenal hyperplasia, daily steroid use) refer to adrenal insufficiency guideline (blue box): Assist with patient's home medication hydrocortisone

EMT-I/Paramedic

- Cardiac monitor
- Perform 12-lead ECG, where available



- Ensure NS bolus up to 60 ml/kg *until either*
 - Vital signs/perfusion normal
 - Rales or hepatomegaly on exam

- For shock unresponsive to IV fluids, Consider pressors:
 - Epinephrine 0.05-0.3 mcg/min IV
 - Dopamine 2-20 mcg/kg/min (**Paramedic Only**)

Adrenal Insufficiency Guideline

- Patient's hydrocortisone (Solu-Cortef) is preferred:
 - 0-3 years: 25 mg IM
 - 3-12 years: 50 mg IM
 - ≥ 12 years: 100 mg IM
- Methylprednisolone
 - 2 mg/kg IV/IO (max 125 mg)

Cardiac Arrest (VF/VT/Asystole/PEA): Adult & Pediatric

Patients with cardiac arrest. For adult patients who obtain ROSC, refer to **Adult Post-ROSC Care** guideline.

Excludes:

1. Patients suffering cardiac arrest due to severe hypothermia (see **Hypothermia/Cold Exposure** guideline).
2. Patients with identifiable Do Not Resuscitate (or equivalent) order (see **Do Not Resuscitate** guideline).
3. Patients with transient loss of consciousness and presence of pulses upon EMS evaluation (see **Syncope** guideline).
4. Patients in arrest due to traumatic etiology (see **General Trauma Management** guideline).

EMT

- Initiate chest compressions or take over chest compressions from bystanders
 - Compression rate: 100-120/minute
 - **Depth at least 2 inches (5 cm)**
- Set up AED
 - If arrest witnessed by EMS or adequate uninterrupted bystander CPR has been performed, immediately proceed with rhythm analysis and defibrillation, if appropriate



- Infant: < 1 year old
- Child: 1 year to puberty

- Compression rate: 100-120/minute
- Depth: at least $\frac{1}{3}$ the AP diameter of the chest **2 inches (5cm) for children or 1.5 inches (4 cm) for infants**

- Compression-to-breath ratio:
 - 30:2 for single rescuer
 - 15:2 for 2-rescuer

- An AED equipped with a pediatric attenuator is preferred for infants and children < 8 years old

- Chest compressions should resume immediately after defibrillation attempts with no pauses for pulse checks

- Ensure patent airway
- Ventilation rate 8-10 breaths/minute
- Airway management should not interrupt compressions

AEMT

- IV/IO access within first 2-minute period of chest compressions



EMT-I/Paramedic

- Set up manual defibrillator
 - If arrest witnessed by EMS or adequate uninterrupted bystander CPR has been performed, immediately proceed with rhythm analysis and defibrillation, if appropriate
- Debrillate at
 - Monophasic: 360 J
 - Biphasic: 120-200 J per manufacturer's recommendations



- Defibrillate at 4 J/kg
- Repeat up to 10 J/kg

- Epinephrine every 3-5 minutes
 - 1:10,000 0.01 mg/kg IV/IO or
 - 1:1,000 0.1 mg/kg ETT

- For recurrent VF/Pulseless VT:
 - Amiodarone 5 mg/kg IV/IO (may repeat twice, max 300 mg) or
 - Lidocaine 1 mg/kg IV/IO
- For torsades de pointes:
 - Magnesium sulfate 25-50 mg/kg IV/IO

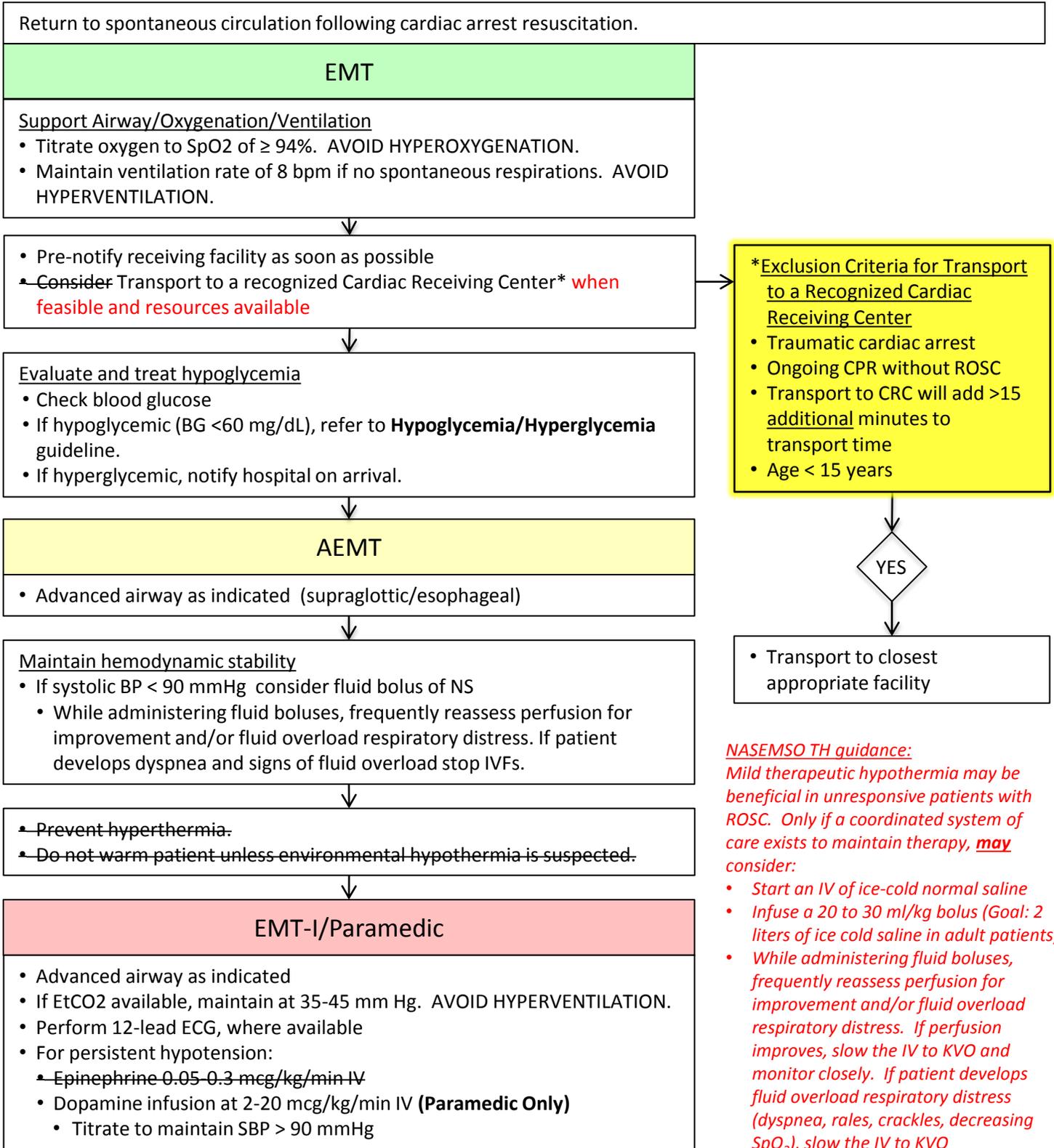
- Epinephrine 1:10,000 1 mg IV/IO every 3-5 minutes

- For recurrent VF/Pulseless VT:
 - Amiodarone 300 mg/kg IV/IO (may give 2nd dose 150 mg) or
 - Lidocaine 1-1.5 mg/kg IV/IO every 5 minutes to total dose of 3 mg/kg
- For torsades de pointes:
 - Magnesium sulfate 2 gm IV/IO

{Defibrillation should be at the maximum output of the defibrillator, based on manufacturer's recommendations, up to 360 J, for initial and subsequent defibrillation attempts}

- Consider reversible causes of cardiac arrest:
 - Hyperkalemia
 - Hypovolemia
 - Tricyclic antidepressant overdose

Adult Post-Cardiac Arrest and Return of Spontaneous Circulation (ROSC) Care, Transport to Cardiac Receiving Center (CRC)



***Exclusion Criteria for Transport to a Recognized Cardiac Receiving Center**

- Traumatic cardiac arrest
- Ongoing CPR without ROSC
- Transport to CRC will add >15 additional minutes to transport time
- Age < 15 years



- Transport to closest appropriate facility

***NASEMSO TH guidance:** Mild therapeutic hypothermia may be beneficial in unresponsive patients with ROSC. Only if a coordinated system of care exists to maintain therapy, **may** consider:*

- Start an IV of ice-cold normal saline
- Infuse a 20 to 30 ml/kg bolus (Goal: 2 liters of ice cold saline in adult patients)
- While administering fluid boluses, frequently reassess perfusion for improvement and/or fluid overload respiratory distress. If perfusion improves, slow the IV to KVO and monitor closely. If patient develops fluid overload respiratory distress (dyspnea, rales, crackles, decreasing SpO₂), slow the IV to KVO
- If patient unresponsive and patient begins shivering, sedate further with benzodiazepines

- NASEMSO Contraindications for Ice Saline:***
- Major trauma
 - Preexisting hypothermia
 - Hypotension ((SBP < 90 mm Hg) unresponsive to vasopressors
 - Known bleeding disorder or liver failure
 - Responsive patient

Difficulty Breathing, Bronchospasm (due to Asthma and Obstructive Lung Disease): Adult & Pediatric

Respiratory distress with wheezing or decreased air entry in patients ≥ 2 years of age

- Includes: asthma exacerbation, COPD exacerbation, wheezing from suspected pulmonary infection (e.g. pneumonia, bronchitis)
- Excludes: anaphylaxis, bronchiolitis, croup, epiglottitis, foreign body aspiration, drowning, congestive heart failure, trauma

EMT

- Assess ABC's, vital signs, LOC (ABCDE Assessment)
- Oxygen: escalate from nasal cannula to simple face mask to non-rebreather mask as needed, to maintain O₂ saturation ≥ 94%
- Assist patient with own medication: albuterol by nebulization or metered dose inhaler
- BVM for inadequate ventilation/altered MS
- Concern for obstruction follow pre-hospital guidelines for **Airway**



- Maintain position of comfort
- Suction the nose and/or mouth (via bulb, Yankauer, suction catheter) if excessive secretions are present

AEMT

- Albuterol 5mg nebulized; repeated at unlimited frequency
- IV placement
- For impending respiratory failure and no clinical signs of improvement, consider Epinephrine 1:1,000 (0.01 mg/kg, max dose=0.3 mg) IM



- IV placement IF:
 - Clinical evidence of dehydration
 - Need for IV medication(s)

EMT-I/Paramedic

- End-tidal CO₂ monitoring
- Ipratropium 0.5mg nebulized should be given up to 3 doses, in conjunction with albuterol
- Steroids:
 - Methylprednisolone (2 mg/kg, max dose=125 mg) IV/IM *or*
 - Dexamethasone (0.6 mg/kg, max dose=16 mg) IV/IM/PO
- If concern for impending respiratory failure, Magnesium sulfate (40 mg/kg, max dose =2 g) IV over 15-30 minutes **(Paramedic Only)**
- Non-invasive positive pressure ventilation should be administered for severe respiratory distress **(Paramedic Only)**
- Supraglottic devices and intubation should be utilized only if bag-valve-mask ventilation fails. The airway should be managed in the least invasive way possible.



- BVM ventilation is reasonable for pediatric patients or when non-invasive positive pressure ventilation not available