



Medical Direction Commission

Date: September 19, 2019 - **Time:** 12:00 hrs

Location: ADHS, 150 N. 18th Ave, 2nd Floor, 215 A&B, Phoenix, AZ 85007

Via computer with call back: azgov.webex.com, meeting code 807 296 147, password MDC2019

Via telephone: dial 415-655-0003, meeting code 807 296 147 (#)

AGENDA

- I. Call to Order – Gail Bradley, MD, Chair
- II. Roll Call - Shelley Bissell (12 members, 7 required for quorum)
- III. Chair Report – Gail Bradley, MD
 - a. Attendance report (Attachment III.a.)
 - b. Vacancy report
 - c. New members: Jason Johnson, MD, and Julie Augenstein, MD
- IV. Bureau Report
 - a. Rules Update – Chief Mullins
 - b. Linkage project updates – Ben Fisher, MPA, NRP
 - c. AZ-PIERS Portal update – Ben Fisher, MPA, NRP
 - d. Tableau Trauma Dashboard – Vatsal Chikani, MPH
 - e. 2020 Meeting Schedule (Attachment IV.e.)
 - f. New Bureau Staff: Lance Bevins; Julia Vinton, MPH; and SriVidya Mahankali, MS in Biomedical Informatics
 - g. Treat & Refer Standards update – Ben Fisher, MPA, NRP
 - h. Services Section Update - Ben Fisher, MPA, NRP
 - i. Cactus Report
- V. Standing Committee Reports
 - a. Trauma and EMS Performance Improvement Standing Committee – Gail Bradley, MD
 - b. Education Standing Committee – Gail Bradley, MD
 - c. Protocols, Medications, and Devices Standing Committee – Josh Gaither, MD
- VI. Discussion and Action Items
 - a. Discuss, amend, approve MDC Meeting Minutes from May 23, 2019 (Attachment VI.a.)
 - b. Discuss, amend, approve PMD’s proposed updates to Triage, Treatment and Transport Guidelines (T3G) (Attachment VI.b.) – Dr. Bradley
 - c. Discuss, amend, approve PMD’s proposed change to Table 1: EMCT Drug Box (midazolam) (Attachment VI.c. and d.) – Dr. Gaither

- d. Discuss, amend, approve proposed change to Table 1: EMCT Drug Box (calcium gluconate) (Attachment VI.c. and d.) – Dr. Bradley
- e. Discuss, amend, approve PMD’s proposed changes to Table 3: Agents Eligible for Administration and Monitoring During Interfacility Transport (add pantoprazole) (Attachment VI.e.) – Dr. Gaither
- f. Discuss, amend, approve name change to Table 1: EMCT Drug Box
- g. Discuss, amend, approve updates to Ketamine Drug Profile (Attachment VI.g.) – Dr. Gemar
- h. Discuss orotracheal intubation STR for EMT and AEMT – Dr. Bradley

VII. Agenda items to be considered for next meeting

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 Commission 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)

Persons with disabilities may request a reasonable accommodation such as a sign language interpreter, by contacting Angie McNamara, angie.mcnamara@azdhs.gov, 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.

IX. Summary of Current Events

- September 27 – [Annual Stand Up to Falls Symposium](#) – Phoenix
- October 24-25 – [Way Out West EMS Conference](#) – Flagstaff
- October 29-30 – AzDEMA’s [Pediatric Disaster Response and Emergency Preparedness-MGT439-001 Training](#) – dematraining.az.gov - Flagstaff
- November 6 – [EMS|MVP Symposium 2019 Making the Valley Prepared](#) (formerly EMS4K) - Phoenix
- November 14-15 – [11th Annual Southwest Trauma and Acute Care Symposium](#) - Scottsdale

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

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

X. Next Meeting

January 23, 2020 @ 12:00 hrs at ADHS, 150 N 18th Ave., Conference Rooms 215 A&B, Phoenix, AZ 85007

XI. Adjournment

Committee Attendance Report

Medical Direction Commission

		Present	Tele	Absent
Daniel Spaitte	Emergency Medicine Physician - Southe			
	9/28/2017	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1/18/2018	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	5/24/2018	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	9/27/2018	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11/15/2018	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	5/23/2019	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frank Walter	Physician Specializing in Toxicology			
	9/28/2017	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	1/18/2018	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	5/24/2018	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	9/27/2018	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11/15/2018	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	5/23/2019	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Gail Bradley	Physician Specializing in Cardiac Care/Vi			
	9/28/2017	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	1/18/2018	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5/24/2018	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	9/27/2018	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11/15/2018	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5/23/2019	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Glynnis Zieman	Physician Specializing in Acute Head Inj			
	9/27/2018	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	11/15/2018	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	5/23/2019	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Jason Johnson	Physician with Full-Time Practice in a Ru			
	5/23/2019	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Jonathan Maitem	Emergency Medicine Physician - Central			
	9/28/2017	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1/18/2018	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	5/24/2018	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	9/27/2018	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	11/15/2018	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5/23/2019	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Joshua Gaither	Faculty Representative of Emergency M			
	9/27/2018	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11/15/2018	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5/23/2019	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kevin Foster	Physician Specializing in Trauma Surger			
	9/28/2017	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	1/18/2018	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5/24/2018	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	9/27/2018	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	11/15/2018	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	5/23/2019	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Michele Preston	Emergency Medicine Physician - Wester			
	9/28/2017	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	1/18/2018	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Medical Direction Commission

		Present	Tele	Absent
Michele Preston	Emergency Medicine Physician - Wester			
	5/24/2018	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	9/27/2018	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	11/15/2018	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	5/23/2019	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Rianne Page	Emergency Medicine Physician - Northe			
	9/28/2017	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1/18/2018	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	5/24/2018	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	9/27/2018	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	11/15/2018	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	5/23/2019	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Bureau of Emergency Medical Services and Trauma System
2020 Statutory/Standing Committee Meetings**

Date	Time	Meeting	Conference Room
January 23, 2020	9:00 a.m.	State Trauma Advisory Board (STAB)	540A – 5 th Floor 150 Bldg
January 23, 2020	10:30 a.m.	Emergency Medical Services Council (EMSC)	540A – 5 th Floor 150 Bldg
January 23, 2020	12:00 p.m.	Medical Direction Commission (MDC)	540A – 5 th Floor 150 Bldg
March 19, 2020	9:00 a.m.	Trauma and EMS Performance Improvement (TEPI)	215A & 215B – 2nd Floor 150 Bldg
March 19, 2020	10:30 a.m.	Education Committee (EDU)	215A & 215B – 2nd Floor 150 Bldg
March 19, 2020	12:00 p.m.	Protocols, Medications and Devices Committee (PMD)	215A & 215B – 2nd Floor 150 Bldg
March 19, 2020	1:30 p.m.	Pediatric Advisory Council for Emergency Services (PACES)	215A & 215B – 2nd Floor 150 Bldg
May 21, 2020	9:00 a.m.	State Trauma Advisory Board (STAB)	215A & 215B – 2nd Floor 150 Bldg
May 21, 2020	10:30 a.m.	Emergency Medical Services Council (EMSC)	215A & 215B – 2nd Floor 150 Bldg
May 21, 2020	12:00 p.m.	Medical Direction Commission (MDC)	215A & 215B – 2nd Floor 150 Bldg
July 16, 2020	9:00 a.m.	Trauma and EMS Performance Improvement (TEPI)	215A & 215B – 2nd Floor 150 Bldg
July 16, 2020	10:30 a.m.	Education Committee (EDU)	215A & 215B – 2nd Floor 150 Bldg
July 16, 2020	12:00 p.m.	Protocols, Medications and Devices Committee (PMD)	215A & 215B – 2nd Floor 150 Bldg
July 16, 2020	1:30 p.m.	Pediatric Advisory Council for Emergency Services (PACES)	215A & 215B – 2nd Floor 150 Bldg
September 17, 2020	9:00 a.m.	State Trauma Advisory Board (STAB)	215A & 215B – 2nd Floor 150 Bldg
September 17, 2020	10:30 a.m.	Emergency Medical Services Council (EMSC)	215A & 215B – 2nd Floor 150 Bldg
September 17, 2020	12:00 p.m.	Medical Direction Commission (MDC)	215A & 215B – 2nd Floor 150 Bldg
November 19, 2020	9:00 a.m.	Trauma and EMS Performance Improvement (TEPI)	215A & 215B – 2nd Floor 150 Bldg
November 19, 2020	10:30 a.m.	Education Committee (EDU)	215A & 215B – 2nd Floor 150 Bldg
November 19, 2020	12:00 p.m.	Protocols, Medications and Devices Committee (PMD)	215A & 215B – 2nd Floor 150 Bldg
November 19, 2020	1:30 p.m.	Pediatric Advisory Council for Emergency Services (PACES)	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 possible.

sb 7/18/2019



ARIZONA DEPARTMENT
OF HEALTH SERVICES

PREPAREDNESS

Bureau Of Emergency Medical Services & Trauma System

150 N. 18th Avenue, Suite 540

Phoenix, Arizona 85007-3248

602-364-3150

Medical Direction Commission

Date: May 23, 2019 - **Time:** 12:00 hrs

Location: ADHS, 150 N. 18th Ave, 2nd Floor, 215 A&B, Phoenix, AZ 85007

Via computer with call back: azgov.webex.com, meeting code 804 242 115, password MDC2019

Via telephone: dial 240-454-0879, meeting code 804 242 115 (#)

Draft MINUTES

- I. Call to Order – Gail Bradley, MD, Vice Chair
 - The meeting began at 12:11 hrs.
- II. Chairman's Report – Gail Bradley, MD
 - Dr. Bradley acknowledged advances in patient care and mentoring contributions from Dr. Bobrow's leadership at the Bureau over the last 15 years.
 - a. Attendance report
 - As presented for the members. Dr. Bradley reported the Bureau was notified of two new members appointed recently: Julie Augenstein, MD, and Jason Johnson, MD.
Dr. Bradley also recognized Jill McAdoo and thanked her for her work on Bureau committees. Ms. McAdoo had resigned from her committee roles recently.
 - b. Vacancy report
 - Dr. Bradley reported the following vacancy: Medical Director for the Bureau of EMS & Trauma System.
- III. Bureau Report – Chief Terry Mullins
 - Chief Mullins advised there were some applicants interviewing for the Medical Director position, and he hoped they would be filling the role soon. CMS guidance for ET3 Ambulance program was shared with people subscribed to the Bureau's GovDelivery. He also advised that Tomi St. Mars was no longer with DHS and praised her work with EMS for Children. The EMS for Children program will move to the Bureau of EMSTS, and DHS will be hiring a coordinator. The National Highway Traffic Safety Administration updated national scope of practice, and he plans to collaboratively see if Arizona should incorporate any of those elements.
- IV. Roll Call - Shelley Bissell (12 members, 7 required for quorum)
 - Quorum was obtained.

Present		Absent
Gail Bradley, MD	Joshua Gaither, MD	Rianne Page, MD
Frank Walter, MD*	Jon Maitem, DO	Glynnis Ziemann, MD
Kevin Foster, MD*	Dan Spaite, MD	
Michele Preston, DO*	Jason Johnson, MD*	
	*Indicates teleconference	

(Bureau report resumed.)

- a. Regulatory Section Update - Ithan Yanofsky
 - a. Rule Writing
 - Mr. Yanofsky reported that Article II Medical Direction updates go into effect July 1.
 - b. Certificate of Necessity (CON)
 - Updates were reported.
 - c. Trauma and Base Hospitals
 - He advised on June 26th there is a Base Hospital Managers' Workshop at Carondelet St. Mary's in Tucson.
 - d. Certification
 - He passed along guidance that provider pictures submitted need to be appropriate and fall within the guidelines.
 - e. Education
 - Mr. Yanofsky reported that pass rates were improving.
- b. Services Section Update - Ben Fisher, MPA, NRP
 - a. Linkage Projects
 - Mr. Fisher reported that the two linkage projects are progressing.
 - b. Data Completeness Measurement update
 - DQA portal has reports for the premiere agencies.
 - c. Motor Vehicle Traffic-Related Trauma Report
 - He reported that the report is located on the DHS website and that data is available for quality assurance on the zip code level.
 - d. Dataset Revision Methodology - a Refresher
 - He advised that the Bureau is accepting feedback at EMSRUG, TEPI, and then moves to EMS Council for approval or not September 19.
 - e. EMS Registry
 - No update.
 - f. Trauma Registry
 - Working with vendor to resolve a known issue.
 - g. Recognition Programs
 - He reported that to apply for the Premiere EMS Agency Program (PEAP) with the recently-updated standards, to contact Dr. Harden. He also encouraged all to take part in Traffic Incident Management (TIM) Training to improve safety on scene for police, fire, and EMS.
 - h. EMS Resiliency, Wellness & Safety
 - Ms. Welch is hosting a conference in Kingman July 12.

V. Standing Committee Reports

"Health and Wellness for all Arizonans"

- a. Trauma and EMS Performance Improvement Standing Committee – Gail Bradley, MD
 - Dr. Bradley reported on TEPI’s discussion to look at different quality measures for future review, future updates to the air ambulance report, and the progression of Cactus Data Set stakeholder input for annual update.
- b. Education Standing Committee – Gail Bradley, MD
 - Dr. Bradley reported that the Use of Naloxone by Law Enforcement for Opioid Overdose PowerPoint Training was updated by the Education Committee. The Spinal Motion Restriction Training workgroup met to update the content and will be voting on those updates in July. The Committee renamed one of the posted trainings for better functionality: What Should Go In Your ePCR? Next they will look at Acute Pain updates. They have also arranged a schedule for timely review of posted trainings to keep content valid.
- c. Protocols, Medications, and Devices Standing Committee – Josh Gaither, MD
 - Dr. Gaither reported updates on new members and that the Triage, Treatment, and Transport Guidelines (TTTGs) are being worked on. Future topics include updating Drug Table 3 to discuss/add antivenom and Proton-Pump Inhibitors (PPI).

VI. Discussion and Action Items

- a. Discuss, amend, approve MDC Meeting Minutes from September 27, 2018
 - Motion to approve the minutes made by Dr. Maitem, seconded by Dr. Gaither. With no amendments, the **minutes were approved.**
- b. Discuss, amend, approve MDC Special Meeting Minutes from November 15, 2018
 - Motion to approve made by Dr. Maitem, seconded by Dr. Gaither. With no amendments, the **minutes were approved.**
- c. Discuss TTTG Updates and Format – Dr. Bradley
 - Dr. Bradley gave background on the State protocols and reported on the current undertaking by a PMD workgroup led by Dr. Castro-Marin. She reported that the workgroup is editing them to be more functional for medical directors. The PMD-approved version will come to this body for approval in September. The hope is to align with NASEMSO guidelines, where appropriate, and to create a version that people will utilize statewide.

Chief Mullins added that, on occasion or due to legislation, there is a push to adopt a guideline for a specialty topic, for example, stroke, and the state TTTGs can act as a buffer between entities and allow the regions to have flexibility as we move forward. Regions and medical directors will still retain the option of implementing. She reminded members that should any changes occur, the TTTGs are a topic for ongoing review.
- d. Discuss, amend, approve Protocols, Medications & Devices Committee’s proposed changes to Table 1: EMCT Drug Box
 - Motion to discuss and approve made by Dr. Maitem, seconded by Dr. Gaither. Dr. Bradley and Dr. Gaither gave background on the updates. The members and audience went through the updates in red, line by line, guiding Ms. Bissell to adjust where needed for content clarity. Pros and cons regarding norepinephrine IP were discussed. Friendly amendment was approved to use the word “Optional” and bracket the minimum dose for the purpose of BLS rigs to have the option to carry.

The Chair performed a roll call vote on the sole issue of adding Norepinephrine Infusion Pump as an Optional agent.

(Quorum lost due to members by phone dropping off.)

(Quorum regained.)

Members voted to approve adding norepinephrine: Dr. Spaite, no; Dr. Walter, yes; Dr. Bradley, yes; Dr. Maitem, yes; Dr. Gaither, yes; Dr. Foster, yes; Dr. Preston, yes; Dr. Johnson, yes.

(Quorum lost.)

Dr. Bradley asked Dr. Spaite to share his presentation. Dr. Spaite agreed and whittled it down to two slides to show increased survival and improved outcomes after implementing EPIC-TBI treatment protocols. He thanked all the partners in Arizona: UA, DHS, and the providers and agencies.

(Quorum regained.)

The Chair called for a vote to approve Table 1 as amended for clarity. With no nay votes, **Table 1 was approved.**

- e. Discuss, amend, approve Protocols, Medications & Devices Committee's proposed changes to Table 2: Agents Eligible for Administration During a HazMat Incident
 - Motion to discuss and approve made by Dr. Maitem, seconded by Dr. Walter. Dr. Bradley gave background on the changes shown in red. With edits for clarity, the members voted, and **Table 2 was approved.**
- f. Discuss, amend, approve Education Committee's updated training: Use of Naloxone by Law Enforcement for Opioid Overdose
 - Motion to discuss and approve made by Dr. Maitem, seconded by Dr. Gaither. Dr. Bradley gave the background behind this training and the update to the training. With no members opposed, the **training was approved.**
- g. Discuss, amend, approve updates to Ketamine Drug Profile
 - Dr. Gemar gave background on this topic as some adjustments were desired by PMD's TTTG Updates Workgroup in order to align with the NASEMSO guidelines. Motion to table made by Dr. Gaither, seconded by Dr. Maitem. **The Members approved tabling this item until the next meeting.**

- VII. Presentation - Dan Spaite, MD, UA's Arizona Emergency Medicine Research Center
- a. Report on the conclusions of the Excellence in Prehospital Injury Care – Traumatic Brain Injury Project (EPIC-TBI)
 - (See above.)

- VIII. Agenda items to be considered for next meeting
- Updates to Ketamine drug profile.

- IX. Call to the Public
- None.

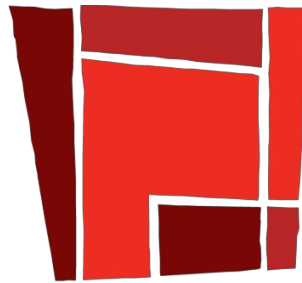
- X. Summary of Current Events
- As presented on the agenda.

- XI. Next Meeting
- September 19, 2019 @ 12:00 hrs at ADHS, 150 N 18th Ave., Conference Rooms 215 A&B, Phoenix, AZ 85007

- XII. Adjournment
- The meeting ended at 13:28 hrs.

Triage, Treatment and Transport Guidelines (T3G)

As Recommended by the Bureau of EMS and Trauma System



ADHS

PREPAREDNESS

Arizona Department of Health Services

**Revised by MDC 5/18/2017. Updated and approved
(minus the drug profiles) by PMD August 23, 2019.**

Title	Page	Title	Page
Universal Care: Adult & Pediatric		Pediatric Stridor (e.g., Croup)	
Functional Needs: Adult & Pediatric		Pediatric Brief Resolved Unexplained Event (BRUE)/ Pediatric Apparent Life Threatening Event (ALTE)	
Patient Refusals: Adult & Pediatric		Neonatal Resuscitation (2 pages)	
Abuse and Maltreatment: Adult & Pediatric		Childbirth	
Agitated or Violent Patient/Behavioral Emergency: Adult & Pediatric		Obstetrical/Gynecological Conditions	
Management of Acute Pain: Adult & Pediatric		General Trauma Management: Adult & Pediatric	
Syncope and Presyncope: Adult & Pediatric		Burns: Adult & Pediatric	
Chest Pain/Acute Coronary Syndrome/ST-segment Elevation Myocardial Infarction (STEMI): Adult		External Hemorrhage Management: Adult & Pediatric	
Bradycardia: Adult & Pediatric		Extremity Trauma: Adult & Pediatric	
Implantable Ventricular Assist Devices: Adult & Pediatric		Traumatic Brain Injury (EPIC-TBI): Adult & Pediatric	
Tachycardia with a Pulse: Adult & Pediatric		Spinal Motion Restriction (SMR): Adult & Pediatric	
Suspected Stroke/Transient Ischemic Attack: Adult & Pediatric		Poisoning/Overdose Universal Care: Adult & Pediatric	
Bronchospasm (Due to Asthma and Obstructive Lung Disease): Adult & Pediatric		Acetylcholinesterase Inhibitor Poisoning (Nerve Agents, Organophosphates, and Carbamates): Adult & Pediatric	
Pulmonary Edema: Adult & Pediatric		Radiation Exposure: External and/or Internal Contamination: Adult & Pediatric	
Anaphylaxis and Allergic Reaction: Adult & Pediatric		Dermal Chemical Burns: Adult & Pediatric	
Altered Mental Status: Adult & Pediatric		Stimulant Toxicity: Adult & Pediatric	
Hypoglycemia: Adult & Pediatric		Suspected Cyanide Poisoning: Adult & Pediatric	
Hyperglycemia: Adult & Pediatric		Carbon Monoxide/Smoke Inhalation: Adult & Pediatric	
Seizures: Adult & Pediatric		Opioid Poisoning/Overdose: Adult & Pediatric	
Nausea/Vomiting: Adult & Pediatric		Bites and Envenomations: Adult & Pediatric	
Shock: Adult & Pediatric		Hyperthermia/Heat Exposure: Adult & Pediatric	
Sepsis: Adult & Pediatric		Drowning: Adult & Pediatric	
Cardiac Arrest (VF/VT/Asystole/PEA): Age 8 and Older (2 pages)		Conducted Electrical Weapons (TASER): Adult & Pediatric	
Cardiac Arrest (VF/VT/Asystole/PEA): Pediatric Age < 8		Appendix: Abnormal Vital Signs	
Post-Cardiac Arrest and Return of Spontaneous Circulation (ROSC) Care, Transport to Cardiac Receiving Center (CRC): Adult		Appendix: Neurologic Status Assessment: Adult & Pediatric (2 pages)	
Obvious/Apparent Death: Adult & Pediatric		Appendix: Prehospital Stroke Scales	
Do Not Resuscitate (DNR) Status/Advanced Directives/ Healthcare Power of Attorney (POA) Status: Adult & Pediatric		Appendix: Guidelines for Field Triage of Injured Patients - United States, 2011	
Non-Traumatic Termination of Resuscitation (TOR) Efforts: Adult & Pediatric		Appendix: Burn Triage and Burn Estimation Charts (2 pages)	
Traumatic Cardiac Arrest Termination of Resuscitation (TOR) Efforts: Adult & Pediatric		Appendix: Drug Profiles <u>DISREGARD PER PMD 8/23/2019</u>	
Airway Management: Adult & Pediatric		Appendix: Drip Calculation & Energy Chart	
Pediatric Respiratory Distress - Wheezing if <2 years old (Bronchiolitis)		Appendix: ECG Changes in Hyperkalemia	

These guidelines are designed to be a resource document for use by Medical Direction Authorities, as defined by A.R.S. § 36-2205, responsible for the administrative, organizational and on-line medical direction of pre-hospital Emergency Medical Care Technicians (EMCTs). It is specifically recognized that documented regional or local variations from the guidelines contained within are not only acceptable, but also appropriate, depending on the individual circumstances of the involved areas and organizations.

By Statute and Rule, all advanced life support pre-hospital EMCTs shall have administrative and on-line medical direction. These guidelines are not meant to act as a substitute, proxy or alternative to that medical direction. Any conflict between these guidelines and the EMCT's medical direction shall default to the Administrative or on-line medical direction.

These guidelines are deemed by the Bureau of EMS and Trauma System to be within the acceptable standard of medical care. It is specifically recognized that there are acceptable documented regional or local variations from these procedures and protocols, which may also satisfy the standard of care. This manual does NOT define, limit, expand, or otherwise purport to establish the legal standard of care.


HOW TO USE THESE GUIDELINES

These guidelines have been adapted from the National Association of State EMS Officials (NASEMSO) Model EMS Clinical Guidelines published online in January 2019. These algorithms include specific recommendations for evaluation and treatment.


Inclusion and exclusion patient criteria are listed under the title of each guideline.

The recommendations within each guideline are listed in order by provider level scope of practice. It is assumed that more advanced levels of EMCT will perform all recommended evaluations and treatments included in the preceding level of care.

STR stands for Special Training Required. "STR skill" means "Specialty Training Requirement skill," defined as a medical treatment, procedure, or technique or administration of a medication for which an EMCT needs specific training beyond the training required in 9 A.A.C. 25, Article 4 in order to perform or administer.

The guidelines include specific pediatric recommendations, highlighted by the EMS for Children bear logo, where specific pediatric recommendations differ from those for adults. It is assumed that children will receive the evaluation and care recommended for all patients, unless specific pediatric recommendations are included in the algorithm. 

A pediatric patient is defined as age less than 15 years. Age 15 and above is considered an adult patient in regard to treatment guidelines.

The guidelines include specific energy/shock recommendations for cardioversion and defibrillation highlighted by the lightning bolt symbol. 

The Universal Care treatment guideline should be applied to all patient encounters, and encompasses both adult and pediatric patients. All initial patient care is included in this guideline to reduce the need for extensive reiteration of basic assessment and other considerations in every guideline.

On-line medical direction may be utilized at any time during the patient encounter per local protocols.

The appendix contains additional reference material applicable to these guidelines, such as burn assessment and neurologic assessment tools.

The NASEMSO model guidelines include additional information that medical direction authorities may find helpful for education, training, and quality improvement activities, including patient safety considerations, educational pearls, performance measures, and literature references:

<https://nasemso.org/wp-content/uploads/National-Model-EMS-Clinical-Guidelines-2017-PDF-Version-2.2.pdf>

Version 2.2 Updated January 5, 2019.

These general recommendations apply to all patient encounters. Patient care goals are to facilitate appropriate initial assessment and manage treatment of any EMS patient.

EMT

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| <ul style="list-style-type: none"> Assess scene safety Use appropriate personal protective equipment (PPE) Determine number of patients Determine need for formal triage and additional resources Determine mechanism of injury Determine SMR needs | <ul style="list-style-type: none"> 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. Use commercially available tool for weight estimate |
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Primary Survey (Airway, Breathing, Circulation, Disability, Exposure)

- Open airway as indicated
 - Consider position, suction, and use of airway adjuncts as indicated
- Administer oxygen as appropriate
- Assess circulatory status
 - Control any major external bleeding
 - Initiate chest compressions as indicated
- Evaluate patient responsiveness: AVPU/GCS
- Evaluate gross motor and sensory function in all extremities
- Expose patient as appropriate to the chief complaint

Secondary Survey

- Obtain baseline vital signs
- Assess blood glucose as indicated
- OPQRST history
- SAMPLE history
- Check temperature as indicated, treat environmental hyperthermia/hypothermia

Ongoing Reassessment

- Proceed to the appropriate guideline as indicated
- Determine need for transport, resources available, and location of most appropriate destination - transport as indicated
- Reassess chief complaint, assessment findings, and response to treatment
- Assess vital signs at least every 5 minutes for unstable patients; every 15 minutes for stable

AEMT

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| <ul style="list-style-type: none"> Consider appropriate airway management adjuncts. IV/IO access as indicated Initiate IV fluids as indicated | <ul style="list-style-type: none"> Use commercially available tool for medication dosing and equipment size selection. |
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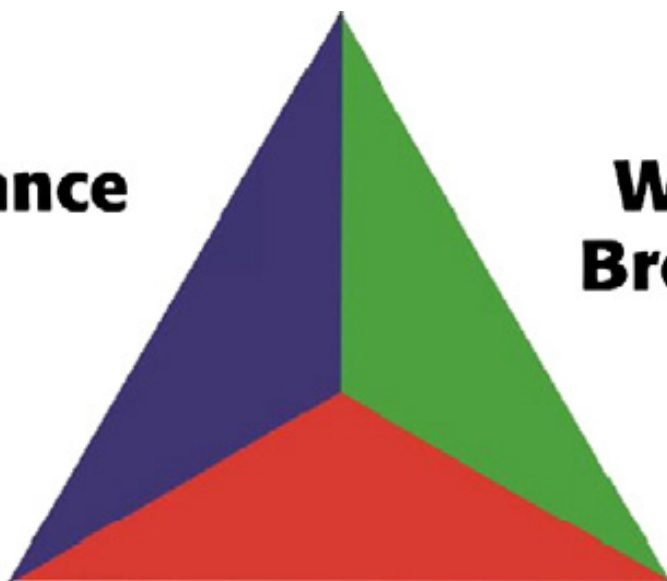
EMT-I/Paramedic

- Consider appropriate airway management adjuncts, escalate as indicated.
- 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 (EtCO₂) in addition to pulse oximetry (SaO₂)



Appearance

Abnormal Tone
↓ Interactiveness
↓ Consolability
Abnormal Look/Gaze
Abnormal Speech/Cry



Work of Breathing

Abnormal Sounds
Abnormal Position
Retractions
Flaring
Apnea/Gasping

Circulation to Skin

Pallor
Mottling
Cyanosis

Includes: Patients 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
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- 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
 - Transport patients with all assistance adjuncts and service animals if feasible

AEMT

EMT-I/Paramedic

Patient Refusals: Adult & Pediatric

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

Decision-Making Capacity


An individual who is alert, oriented, and has the ability 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 should be demonstrated and documented as defined by the presence of all 4 criteria. The patient must be able to:

- 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 individual's own value system.

The individual's judgement must not be impaired by illness, injury, or clinically apparent drug/alcohol intoxication. GCS score must be normal (15).

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

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| <ul style="list-style-type: none"> • EMS providers should make all reasonable efforts to avoid danger to themselves. • Obtain a complete set of vital signs. • Complete an initial assessment with particular attention to neurologic and mental status. • Perform appropriate medical care with the consent of the individual. | <ul style="list-style-type: none"> • It is preferable for a minor to have a parent or legal guardian who can provide consent for treatment on behalf of the minor. However, EMS providers may provide emergency treatment when a parent is not available to provide consent. • Parent or legal guardian must refuse care on behalf of a minor. • Parents may not refuse care if abuse or neglect is suspected. Notify law enforcement as necessary to facilitate transport to the hospital. • Emancipated minors must provide state-issued emancipated identification card.  |
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- Individuals must be advised of the risks and consequences resulting from refusal of medical care.
- Assess the patient's understanding of the medical emergency: the possible medical problems, the proposed medical care, the benefits of medical care and risks of refusal.
- Contact on-line medical direction based on local protocol.
- Provider must document patient encounter.

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EMT-I/Paramedic

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 and stabilize potentially serious injuries,
 - Disclose concerns to the appropriate authorities (hospital *and* law enforcement or state authorities).
 - EMS personnel are mandatory reporters of any suspicion for abuse, maltreatment, neglect, or suspected human trafficking of a minor per A.R.S. §13-3620.A
 - Notify one or more of the following:
 - a. Law enforcement
 - b. Arizona Department of Child Safety (1-888-SOS-CHILD (1-888-767-2445))
 - c. Adult Protective Services Central Intake Unit (1-877-SOS-ADULT (1-877-767-2385))
 - d. <https://www.azdes.gov/landingforms.aspx?form=13004>
 - e. A tribal law enforcement or social services agency for any Native American minor who resides on an Indian reservation
- NOTE:** Reporting to hospital personnel *does not* qualify as having fulfilled the mandatory reporting requirement.
- 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 or accuse anyone suspected of perpetrating abuse/maltreatment.

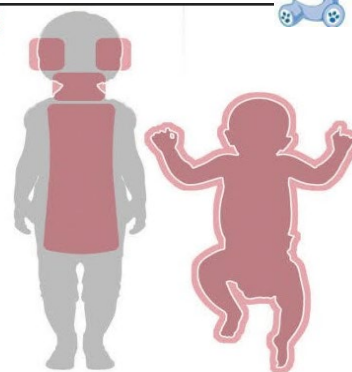
EMT

- **Primary survey**
 - Identify potentially life-threatening issues.
 - Refer to General Trauma Management 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 there is no medical indication for transport if possible.
- 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.

- Scenarios that call for a high index of suspicion for abuse in children include:
 - **Brief Resolved Unexplained Event (BRUE)**
 - Any bruising on a patient <4 months, or any bruising on the torso, ears, neck on a patient < 4 years.

BRUISING RULES

Torso Ears Neck
4 years & under
OR ANY BRUISING ON AN INFANT
4 MONTHS OR YOUNGER



Agitated or Violent Patient/Behavioral Emergency: Adult & Pediatric

Includes: patients 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:

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

EMT

- Dispatch law enforcement immediately when necessary to secure and maintain scene safety. Do not attempt to enter scene before safety is ensured.
- Initiate **Universal Care**.
- Obtain blood glucose level (if possible).
- 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.

- 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.
- Do not apply restraints that restrict the 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 at all times.

AEMT

EMT-I/Paramedic

- Apply cardiac monitor as soon as possible, particularly when chemical restraints have been administered.
- Utilize EtCO₂ if available for all patients receiving chemical restraints.
- Consider chemical restraints based upon patient's clinical condition; use caution as all these medications can cause respiratory depression/compromise. Time intervals for repeat dosing will vary; refer to specific drug profile.
- Benzodiazepines:
 - **Midazolam:** 5 mg IM/IN/IV/IO
Max total dose 20 mg
 - **Lorazepam:** 2-4 mg IM or 2 mg IV/IO
Max total dose 4 mg
- **Ketamine** (Paramedic only):
 - 4 mg/kg IM/IN, max initial dose of 250 mg
 - 2 mg/kg IV/IO, max initial dose 150 mg

- Chemical restraints should be a later consideration for pediatric patients. Call for medical direction.
- Consider chemical restraints based upon patient's clinical condition; use caution as all these medications can cause respiratory depression/compromise. Time intervals for repeat dosing will vary; refer to specific drug profile.
- Benzodiazepines:
 - **Midazolam:** 0.1-0.15 mg/kg IM or 0.05-0.1 mg/kg IV/IO or 0.3 mg/kg IN. Max initial dose 5 mg
 - **Lorazepam:** 0.05 mg/kg IM/IV/IO. Max initial dose 2 mg IV/IO and 4 mg IM



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

Caution: Multi-system trauma patients.

Excludes:

- Hypotension for age
- SaO₂ < 90%
- Hypoventilation
- Allergy to morphine or fentanyl
- Active labor

EMT

- Initiate **Universal Care**.
- Use an age-appropriate pain scale to assess pain, such as Numeric Rating Scale.
- 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%.

- Use an age-appropriate pain scale to assess pain:
- Age < 4 years: Consider using an observational scale such as FLACC (face, legs, activity, cry consolability) or CHEOPS (Children’s Hospital of Eastern Ontario Pain Scale).
 - Age 4-12 years: Consider using a self-report scale such as Faces Pain Scale-revised or Wong-Baker Faces.
 - Age > 12 years: Consider using a self report scale such as Numeric Rating Scale.



AEMT

- **Morphine:** 0.1 mg/kg/dose IV/IO, max 2-5 mg increments, max total dose 15 mg.
- Reassess pain every 5 minutes.
- Evidence of serious adverse effects should preclude further morphine administration.
- If still in significant pain, re-dose at the original dose.
- Additional analgesics per local protocol.
- Reassess pain every 5 minutes, observe for adverse effects, and re-dose as above.

EMT-I/Paramedic

- **Fentanyl:** 1 mcg/kg/dose IN/IV/IO, max initial dose 100 mcg, max total dose 200 mcg.
- **Ketamine** (Paramedic only): 0.25 mg/kg IV/IO, max per dose 25 mg, max total dose 100 mg.

- Consider intranasal route for medication if available.
- **Fentanyl:** 1 mcg/kg/dose IN/IV/IO, max initial dose 100 mcg, max total dose 200 mcg.



Includes: patients presenting 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” and should be considered to have the same or similar risk for significant illness as any patient who has lost consciousness.

Excludes:

- Patients with trauma – refer to [Traumatic Brain Injury \(EPIC-TBI\)](#).
- Patients with ongoing mental status changes or coma should be treated per the [Altered Mental Status](#).
- Evidence of other alternate etiology. Refer to appropriate guideline: [Seizures](#), [Suspected Stroke](#), [Hypoglycemia](#).

EMT

- Initiate [Universal Care](#).
- Assess blood glucose, refer to [Hypoglycemia](#) as indicated.

AEMT

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| <ul style="list-style-type: none"> • If symptoms of poor perfusion, give 500 mL IV/IO fluid bolus, and repeat as necessary. Max 30 ml/kg. Titrate to SBP > 90. • Refer to Shock as needed. | <ul style="list-style-type: none"> • If symptoms of poor perfusion, give 20 mL/kg IV/IO fluid bolus, repeat as needed. Titrate to age appropriate SBP (Abnormal Vital Signs) using push-pull methods. • Refer to Shock as needed. |
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EMT-I/Paramedic

- Place on cardiac monitor – treat arrhythmias if present.
 - [Bradycardia](#)
 - [Tachycardia with a Pulse](#)
 - [Cardiac Arrest \(VF/VT/Asystole/PEA\)](#)
- Perform 12-lead ECG.

Chest Pain/Acute Coronary Syndrome/ST-segment Elevation Myocardial Infarction (STEMI): Adult

Includes: patients with non traumatic chest pain or anginal equivalents. This includes discomfort in the arm, jaw, or epigastric region 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. Patients may also present with CHF, syncope, and/or shock.

Caution: do not give **Nitroglycerin** to any patient who has taken PDE5-inhibitor medication (sildenafil, tadalafil) for erectile dysfunction or pulmonary hypertension within 24-48 hours.

EMT

- Initiate **Universal Care**.
- If short of breath, hypoxic, or with obvious signs of heart failure, administer oxygen and titrate to SaO₂ of ≥ 94%
- Administer **Aspirin** 325 mg PO (chewed).
- Assist patient in self-administration of **Nitroglycerin** 0.4 mg tablets or spray if prescribed to patient and SBP > 100 mm Hg.
 - Repeat every 3-5 minutes x 2, until pain resolves, as blood pressure allows.
 - Contraindicated with erectile dysfunction medication (sildenafil, tadalafil) within 24-48 hours.





AEMT

- Administer **Nitroglycerin** 0.4 mg SL tablets or 1 full spray if SBP > 100 mm Hg.
 - May repeat every 3-5 minutes x 2, until pain resolves, as blood pressure allows.
 - Contraindicated with erectile dysfunction medication within 24-48 hours.
- For STEMI only: consider treating chest pain unresponsive to nitrates.
 - **Morphine** 0.05 mg/kg/dose IV, max of single dose of 3 mg. May repeat in 10 minutes to a total max of 10 mg if pain unresolved, if blood pressure allows.
 - Morphine should be used with caution in unstable angina/non-STEMI due to an association with increased mortality.

EMT-I/Paramedic

- Additional treatment option for STEMI chest pain unresponsive to nitrates:
 - **Fentanyl** 0.5 mcg/kg/dose IN/IV/IO, max total dose 200 mcg.
- Obtain 12 lead ECG and transmit, goal within 5 minutes of patient contact.
- Use caution administering nitroglycerin to patients that demonstrate inferior STEMI patterns (STE in II, III, aVF).
- Transport patient to Cardiac Receiving or Referral Center per local protocol or procedure
- Notify receiving facility immediately for STEMI.
- Transmit 12 lead ECG to receiving facility if possible.
- Performance of serial ECGs is recommended if not diagnostic or change in patient condition.

Bradycardia: Adult & Pediatric

<p>Includes: Heart rate < 60 with either symptoms (altered mental status, chest pain, congestive heart failure, seizure, syncope, shock, pallor, diaphoresis) or evidence of hemodynamic instability.</p>	
<p>EMT</p>	
<ul style="list-style-type: none"> Initiate Universal Care. 	<ul style="list-style-type: none"> For age \leq 6 months and heart rate <60 and signs of poor perfusion, initiate chest compressions and refer to Cardiac Arrest (VF/VT/Asystole/PEA): Pediatric Age <8. 
<p>AEMT</p>	
<ul style="list-style-type: none"> If signs of poor perfusion, give 500 mL IV/IO fluid bolus (unless signs of fluid overload). May repeat to maximum of 30 mL/kg. 	<ul style="list-style-type: none"> If signs of poor perfusion, give 20 mL/kg IV/IO fluid bolus (unless signs of fluid overload). May repeat as needed to a max 60 mL/kg. 
<p>EMT-I/Paramedic</p>	
<ul style="list-style-type: none"> Place on cardiac monitor. Perform 12-lead ECG. 	
<ul style="list-style-type: none"> If bradycardia and symptoms of hemodynamic instability continue, consider the following: <ul style="list-style-type: none"> Atropine Sulfate 0.5 mg IV/IO every 3-5 min, max total dose 3 mg. Epinephrine: <ul style="list-style-type: none"> Drip 0.02 - 0.2 mcg/kg/min. Push 10-20 mcg boluses (1-2 mL) every 2 minutes. 	<ul style="list-style-type: none"> If bradycardia and symptoms or hemodynamic instability continue, consider the following: <ul style="list-style-type: none"> Epinephrine :Push 0.01 mg/kg IV/IO. Max single dose 10 mcg (1 mL) every 3-5 minutes. Atropine Sulfate: 0.02 mg/kg IV/IO (min dose 0.1 mg), max initial dose 0.5 mg, max total dose 3 mg. 
<p>Push dose epinephrine preparation: mix 1 mL of 0.1 mg/mL epinephrine to 9 mL of NS. This results in 10 mcg/mL concentration.</p>	
<ul style="list-style-type: none"> If bradycardia and symptoms of hemodynamic instability continue, consider transcutaneous pacing. If pacing is performed, consider sedation or pain control per Management of Acute Pain. Utilize EtCO₂ if available for all patients receiving sedation. 	
<ul style="list-style-type: none"> Sedation (if age > 60 consider reducing dose by half): <ul style="list-style-type: none"> Midazolam 1 mg IV slowly every 2-3 minutes, max dose 5 mg. Lorazepam 1 mg IV every 5-10 minutes, max dose 4 mg. 	<ul style="list-style-type: none"> Sedation: <ul style="list-style-type: none"> Midazolam 0.08 mg/kg IV slowly, every 2-3 minutes, max dose 0.5 mg/kg. Lorazepam 0.1 mg/kg IV every 10 minutes, max dose 4 mg.

Implantable Ventricular Assist Devices (VAD, LVAD, etc.): Adult & Pediatric

Includes: patients that have had an implantable ventricular assist device (VAD), including a left ventricular assist device (LVAD), right ventricular assist device (RVAD), or biventricular assist device (BiVAD).

EMT

- Initiate **Universal Care**.
- BP measurement will require manual cuff and doppler to obtain mean arterial pressure (MAP), assess patient for signs of hypoperfusion, pallor, altered LOC.
- Pulse is variable and not clinically significant in VAD patients.
- Pulse oximetry can be unreliable – look for physical signs and symptoms .
- Contact the patient’s VAD program on-call coordinator using the phone number on the device; follow coordinator’s advice.
 - Banner University Phoenix VAD -----602-819-7910
 - Banner University Tucson VAD ----- 520-694-6000
 - Dignity St. Joseph’s VAD----- 602-406-8000
 - Mayo VAD ----- 480-342-2999
- Decision to perform CPR should be made in consultation with patient’s VAD-trained companion and VAD coordinator. CPR may be initiated only where:
 - Confirmation that the pump has stopped and troubleshooting efforts have failed, and
 - Patient is unresponsive and has no detectable signs of life.

- Assess for alarms.
- Assess for possible pump malfunction – mechanical hum should be present on auscultation.
- Contact the patient’s VAD-trained companion, if available.
- Check all the connections to system controller, change VAD batteries, and/or change system controller if indicated.
- Follow appropriate cardiovascular condition-specific protocol(s) as indicated.
- If patient is experiencing VAD-related complications or cardiovascular problems, transport destination preference is his/her VAD program, nearest VAD-trained facility, nearest appropriate facility.

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- Establish IV/IO.
- If patient has a functioning VAD and is hypoperfusing (pale, diaphoretic, delayed capillary refill, altered mental status), administer 30 mL/kg IV/IO fluid bolus, maximum 1 L, over < 15 minutes, using push-pull method.
- May repeat up to 3 times based on patient’s condition and clinical impression.
- **Do not administer nitroglycerin.**

EMT-I/Paramedic

- Apply cardiac monitor.
- Acquire 12-lead EKG.
- Patient’s baseline may be arrhythmia; obtain VAD coordinator’s advice prior to administering antiarrhythmics.

Includes: 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. Rate-related symptoms are uncommon when heart rate <150.

EMT

- Initiate **Universal Care**. Search for underlying causes (medications, drugs, history of dysrhythmia, CHF, etc.)

AEMT

EMT-I/Paramedic

All Unstable tachycardias

- Deliver a synchronized cardioversion.

Consider the following if stable symptomatic tachycardia (if known WPW contact on-line medical direction):

Stable SVT

- Perform vagal maneuvers.
- Adenosine**
 - 6 mg IV/IO.
 - If tachycardia continues, give 12 mg IV.
 - Always follow with 10 mL fluid bolus.
- Diltiazem** (Paramedic only)
 - 0.25 mg/kg IV/IO.
 - Give half of dose slowly over 2 minutes.
 - May give remainder of dose in 10 minutes as needed and as blood pressure allows.
 - Patients > 65 years old, max initial dose 10 mg.

Irregular narrow complex tachycardia (A-fib, A-flutter, multifocal atrial tachycardia), Stable

- Diltiazem** (Paramedic only)
 - 0.25 mg/kg IV/IO
 - Give half of dose slowly over 2 minutes.
 - May give remainder of dose in 10 minutes as needed and as blood pressure allows.
 - Patients > 65 years old, max initial dose 10 mg.

Regular wide complex tachycardia, Stable

- Adenosine**
 - 6 mg IV/IO.
 - If tachycardia continues, give 12 mg IV.
 - Always follow with 10 mL fluid bolus.
- Amiodarone** (Paramedic only)
 - 150 mg IV/IO over 10 minutes; may repeat.
- Lidocaine**
 - 1-1.5 mg/kg IV/IO repeated every 5 minutes, max total dose 3 mg/kg. May repeat at half the original dose.

Irregular wide complex tachycardia, Stable

- Amiodarone** (Paramedic only)
 - 150 mg IV over 10 minutes; may repeat.

Torsades (In addition to above)

- Magnesium sulfate** (Paramedic only)
 - 1-2 g IV over 15 minutes.

Unstable SVT or unstable wide complex tachycardia

- Deliver a synchronized cardioversion 1 J/kg.
- Repeat doses should be 2 J/kg.

Consider the following if stable symptomatic tachycardia (if known WPW contact on-line medical direction):

Stable SVT

- Perform vagal maneuvers.
- Adenosine**
 - 0.1 mg/kg IV/IO, max 6 mg.
 - May repeat with 0.2 mg/kg IV/IO, max 12 mg.
 - Always follow with 10 mL fluid bolus.

Wide complex tachycardia, stable

- Adenosine** (for SVT with aberrancy)
 - 0.1 mg/kg IV/IO, max 6 mg.
 - May repeat with 0.2 mg/kg IV/IO, max 12 mg.
 - Always follow with 10 mL fluid bolus.
- Amiodarone** (Paramedic only)
 - 5 mg/kg IV/IO over 10 minutes, max 150 mg over 10 minutes.



Suspected Stroke/Transient Ischemic Attack: Adult & Pediatric

Includes:

Acute neurologic deficit such as facial droop, localized weakness, gait disturbance, slurred speech, altered mental status that fall within 24 hours of onset or last known well time eligible for stroke treatment and transport to a stroke center as outlined by local protocol.

Excludes:

If trauma and GCS < 14, refer to [Traumatic Brain Injury \(EPIC-TBI\)](#) and [General Trauma Management](#). If seizure activity present, refer to [Seizures](#).

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| <ul style="list-style-type: none"> • Initiate Universal Care. • Use a validated prehospital stroke scale. • Document patient weight and last known well time or time of onset. • Obtain blood glucose level. | <ul style="list-style-type: none"> • Although rare, pediatric patients can have strokes. • Higher risk in sickle cell anemia patients. • Stroke scales are not validated for pediatric patients. • <u>Per local protocols</u>, call receiving facility or base hospital to ensure appropriate destination decision. |
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EMT-I/Paramedic

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| <ul style="list-style-type: none"> • Transport to Stroke Center: <ul style="list-style-type: none"> – Acute Stroke Ready Hospital. – Primary Stroke Center. – Comprehensive Stroke Center or other healthcare institution participating in a recognized stroke telemedicine program <u>if approved by local protocol/medical direction</u>. • Notify receiving facility as soon as possible. | <ul style="list-style-type: none"> • Transport to most appropriate facility, <u>per local protocols</u>. • Notify receiving facility as soon as possible. |
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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

- Initiate **Universal Care**.
- Provide supplemental O₂ as needed to maintain SaO₂ \geq 94%.
- Assist patient with own medication: albuterol by nebulization or metered dose inhaler.

- Initiate **Universal Care**.
- Assist patient with own medication: albuterol by nebulization or metered dose inhaler.
- Maintain position of comfort.
- Suction the nose and/or mouth (via bulb, Yankauer or catheter) if excessive secretions are present.



AEMT

- **Albuterol**
 - 5 mg nebulized; Repeat as needed.
- **Epinephrine** (consider for severe respiratory distress without clinical improvement)
 - 1 mg/mL, 0.01 mg/kg IM, max dose 0.3 mg.

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



EMT-I/Paramedic

- Initiate EtCO₂ monitoring.
- **Ipratropium:** 0.5 mg nebulized with albuterol, may repeat x 2
- Steroids:
 - **Methylprednisolone**
 - 2 mg/kg IV/IM max dose 125 mg
 - **Dexamethasone**
 - 0.6 mg/kg IV/IM/PO, max dose 16 mg
- **Magnesium sulfate** (consider for severe respiratory distress) (Paramedic only)
 - (40 mg/kg, max dose =2 g) IV over 15-30 minutes
- **NIPPV: Non-invasive positive pressure ventilation** (Paramedic Only)
 - CPAP/B-PAP.
 - Should be administered for severe respiratory distress or if not improving with less invasive support.
 - Discontinue NIPPV for shock or altered LOC.
 - If NIPPV is contraindicated or if no improvement with less invasive support, refer to **Airway Management**.
 - Supraglottic devices and intubation should be utilized only if BVM ventilation fails.
- BVM ventilation is reasonable for pediatric patients or when non-invasive positive pressure ventilation is not available.

Pulmonary Edema: Adult & Pediatric

Includes:

- Respiratory distress with signs of pulmonary edema and fluid overload .

Excludes:

- Clinical impression consistent with infection (e.g. fever).
- Clinical impression consistent with asthma/COPD.

EMT

- Initiate **Universal Care**.
- Manage airway as necessary.
- Provide supplemental O₂ as needed to maintain SaO₂ ≥ 94%.

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| <ul style="list-style-type: none"> • Nitroglycerin: 0.4 mg SL tablets or 1 full spray if SBP > 100 <ul style="list-style-type: none"> – Repeat every 3 minutes as blood pressure allows – Contraindicated when patients have taken an PDE5-inhibitor medication (sildenafil, tadalafil) for erectile dysfunction or pulmonary hypertension within 24-48 hours. | <ul style="list-style-type: none"> • Nitroglycerin not indicated in pediatric patients. |
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EMT-I/Paramedic

- Initiate EtCO₂ monitoring.
- Apply cardiac monitor.
- Perform 12-lead ECG.
- **NIPPV: Non-invasive positive pressure ventilation (Paramedic Only)**
 - CPAP/B-PAP.
 - Should be administered for severe respiratory distress or if not improving with less invasive support.
 - Discontinue NIPPV for shock or development of altered LOC.
 - If NIPPV is contraindicated or if no improvement with less invasive support, refer to **Airway Management**.

Anaphylaxis and Allergic Reaction: Adult & Pediatric

Includes: patients of all ages with known or suspected allergic reaction and/or anaphylaxis.

EMT

- Initiate **Universal Care**.
- Evaluate for patent airway and presence of oropharyngeal edema.
- Auscultate for wheezing and assess level of respiratory effort.
- Assess adequacy of perfusion.

Determine whether:

- **Anaphylaxis:**
 - severe and acute onset (and)
 - respiratory compromise (dyspnea, wheeze, stridor, hypoxemia)
 - decreased BP (SBP<90), (or)
 - combination of 2 of the following:
 - Urticaria
 - Swollen tongue and lips
 - Vomiting
 - abdominal pain
 - Syncope
 - Incontinence
- **Non-anaphylactic allergic reaction:**
 - localized symptoms,
 - localized angioedema without airway or GI symptoms,
 - hives alone.

- Hypotension: Minimum SBP = $70 + 2x$ (age in years.) (Refer to **Abnormal Vital Signs**)



- Any patient with concern for anaphylaxis or who has received epinephrine IM, patient should be transported to the ED, even if symptoms have resolved.
- If signs of anaphylaxis, assist with patient's own auto-injector, when available.

AEMT

- If signs of anaphylaxis and no auto-injector available, administer **Epinephrine** 1 mg/mL, 0.3 mg IM (anterolateral thigh).
- 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 mg/mL
 - If < 25 kg, 0.15 mg IM (anterolateral thigh).
 - If ≥ 25 kg, 0.3 mg IM (anterolateral thigh).
- If signs of anaphylaxis persist, additional IM **Epinephrine** can be repeated every 5-15 minutes.



- If respiratory distress with wheezing, consider administering:
 - **Albuterol** 5 mg nebulized (or)
 - **Epinephrine** 1 mg/mL, 5 mL nebulized.
- For stridor, consider administering **Epinephrine** 1 mg/mL, 5 mL nebulized.

Assess for sign of **Shock**, fluid bolus IV/IO as indicated.

EMT-I/Paramedic

- For urticaria, rash, itching, or anaphylaxis, administer:
 - **Diphenhydramine:** 1 mg/kg IV/IM/PO, max dose of 50 mg (IV preferred if patient in severe shock).
- If signs of cardiovascular collapse (persistent hypotension with altered mental status, pallor, diaphoresis, or delayed capillary refill) despite administration of IM **Epinephrine** along with at least 60 mL/kg IV fluid bolus, start **Epinephrine** IV drip, 0.5 mcg/kg/minute.

Altered Mental Status: Adult & Pediatric

Excludes: Traumatic Brain Injury (EPIC-TBI).

Assessment: Evaluate for treatable causes, refer to specific guidelines when applicable.

- Shock
- Dysrhythmia
- Hypoglycemia, Hyperglycemia, acidosis, metabolic disorder
- Intoxication
- Hyperthermia, hypothermia
- Opioid poisoning/Overdose
- Agitated or Violent Patient/Behavioral Emergency
- Seizures

EMT

- Initiate Universal Care.
- Check blood glucose, treat Hypoglycemia or Hyperglycemia if indicated.
- Assess for possible stroke using a validated prehospital stroke scale.
- Check temperature – refer to Sepsis as needed.

- **Naloxone:** 0.4-2 mg IM/IN, if indicated. SPECIAL TRAINING REQUIRED (STR).

- **Naloxone:** 0.1 mg/kg, max 2 mg IM/IN, if indicated. SPECIAL TRAINING REQUIRED (STR).



AEMT

- IVF if indicated refer to Shock.
- **Naloxone:** 0.4-2 mg IV/IM/IN, if indicated.

- Consider IV/IO refer to Shock.
- **Naloxone:** 0.1 mg/kg, max 2 mg IV/IM/IN if indicated.





EMT-I/Paramedic

- Treat dysrhythmias as indicated.
- Treat Shock as indicated.

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



Hypoglycemia: Adult & Pediatric

<p>Includes: Adult or pediatric patient with blood glucose < 60 mg/dL with symptoms of hypoglycemia.</p>	
<p>EMT</p>	
<ul style="list-style-type: none"> Initiate Universal Care. Assess GCS, mental status, stroke tool (FAST) and refer to Altered Mental Status or Suspected Stroke as needed. 	
<ul style="list-style-type: none"> If hypoglycemia (glucose < 60 mg/dL), administer Glucose 25 g PO (ONLY if Alert level of consciousness). 	<ul style="list-style-type: none"> If hypoglycemia (glucose < 60 mg/dL), administer Glucose 0.5-1 g/kg PO, max dose 25 g (ONLY if Alert level of consciousness). 
<ul style="list-style-type: none"> Reassess vital signs, mental status, finger stick blood glucose. 	
<ul style="list-style-type: none"> Criteria for release without transport: <ul style="list-style-type: none"> Patient returns to normal mental status, with no focal neurologic signs/symptoms after receiving glucose/dextrose, Repeat glucose is > 80 mg/dL, Patient takes insulin or metformin (use caution with patients taking long-acting insulins or other oral diabetic medications), Tolerating oral intake, Patient or legal guardian refuses transport, A reliable adult will be staying with patient, No major co-morbid symptoms exist (chest pain, dyspnea, seizures, intoxication). Document patient's current medications and doses. 	
<p>AEMT</p>	
<ul style="list-style-type: none"> If hypoglycemia (glucose < 60 mg/dL), administer <ul style="list-style-type: none"> Dextrose 25 g IV/IO <ul style="list-style-type: none"> D₁₀ – max dose 250 mL, titrate to effect (or) D₅₀ – 50 mL (or) Glucagon 1 mg IM/IN Reassess VS, mental status, finger stick blood glucose. 	<ul style="list-style-type: none"> If hypoglycemia (glucose < 60 mg/dL), administer <ul style="list-style-type: none"> Dextrose 0.5 g/kg IV/IO (or) <ul style="list-style-type: none"> D₁₀ – 5 mL/kg (or) Glucagon <ul style="list-style-type: none"> 1 mg IM/IN (if > 20 kg or > 5 yo) 0.5 mg IM/IN (if < 20 kg or < 5 yo) 
<ul style="list-style-type: none"> If continued altered mental status and hypoglycemia, may repeat dose of dextrose or glucagon until symptoms have resolved. Patients with Insulin pump: <ul style="list-style-type: none"> ALOC/AMS – stop insulin pump or disconnect at insertion site. GCS 15 and able to take oral glucose – leave connected with pump running. 	
<p>EMT-I/Paramedic</p>	

Hyperglycemia: Adult & Pediatric

Includes:

- Adult or pediatric patient with symptoms of hyperglycemia (e.g. polyuria, polydipsia, weakness, dizziness, abdominal pain, tachypnea).
- Adult or pediatric patient with history of diabetes and other medical symptoms.

Excludes: Patient in [Cardiac Arrest age 8+](#), [Cardiac Arrest age < 8](#).

EMT

- Initiate [Universal Care](#).
- Obtain blood glucose level.
- Assess GCS, mental status, [prehospital stroke scale](#), and refer to [Altered Mental Status](#) or [Suspected Stroke](#) accordingly.
- Evaluate for possible sepsis and septic shock, refer to [Sepsis](#) or [Shock](#) as needed.

AEMT

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| <ul style="list-style-type: none"> • If hyperglycemia (glucose >250 mg/dL) with symptoms of dehydration, vomiting, or altered level of consciousness, give 20mL/kg IV/IO fluid bolus. | <ul style="list-style-type: none"> • If hyperglycemia (glucose >250 mg/dL) with symptoms of dehydration, vomiting, or altered level of consciousness, give 10mL/kg IV/IO fluid bolus. |
|---|---|



- Reassess and repeat fluid bolus to max of 30 mL/kg.
- Transport to closest appropriate receiving facility.

EMT-I/Paramedic

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|--|---|
| <ul style="list-style-type: none"> • Obtain 12-lead ECG to assess for peaked T waves or other findings consistent with hyperkalemia. Refer to ECG Changes in Hyperkalemia as needed. • If findings of hyperkalemia are present, maintain continuous cardiac monitoring, administer IV fluids and: <ul style="list-style-type: none"> – Calcium Gluconate (Paramedic only) 2 g IV/IO over 5 minutes (or) – Calcium Chloride (Paramedic only) 1 g IV/IO over 5 minutes, ensure IV patency and do not exceed 1 mL/minute (and) – Albuterol 5 mg nebulized. | <ul style="list-style-type: none"> • Maintain ventilatory support in least invasive way possible. • BVM ventilation is reasonable for pediatric patients. • Obtain 12-lead ECG to assess for peaked T waves or other findings consistent with hyperkalemia. Refer to ECG Changes in Hyperkalemia as needed. • If findings of hyperkalemia are present, maintain continuous cardiac monitoring, administer IV fluids and: <ul style="list-style-type: none"> – Calcium Gluconate (Paramedic only) 100 mg/kg IV/IO over 5 minutes , max dose 2 g (or) – Calcium Chloride (Paramedic only) 20 mg/kg (0.2 mL/kg) IV/IO over 5 minutes, max dose 1 g, ensure IV patency and do not exceed 1 mL/minute (and) – Albuterol 5 mg nebulized. |
|--|---|



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 up to six weeks postpartum (regardless of the age of the patient) are managed with magnesium sulfate. See below.

EMT

- Initiate **Universal Care**.
- Provide airway support as needed.
- Assess neurologic status (AVPU/GCS).
- If pregnant, place in left lateral recumbent position.
- Check blood glucose – refer to **Hypoglycemia**.

AEMT



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| <ul style="list-style-type: none"> • Establish IV access. • If blood glucose <60 mg/dL, refer to Hypoglycemia. | <ul style="list-style-type: none"> • If blood glucose <60 mg/dL, refer to Hypoglycemia. |
|--|--|



EMT-I/Paramedic

- Administer **benzodiazepines**. If age >60, consider reducing dose by half.
- **Midazolam 0.2 mg/kg IM/IN**
 - Max 5 mg if <40kg.
 - Max 10 mg if ≥40kg.
- **Lorazepam, Midazolam 0.1 mg/kg IV**
 - Administer slowly over 2 minutes.
 - Max single dose 4 mg.
 - May repeat for total of 2 doses regardless of route.
- If in 3rd trimester of pregnancy or postpartum up to six weeks, administer **Magnesium sulfate** 4 g slow push IV/IO over 5 minutes (Paramedic only). Refer to **Obstetrical/Gynecological Conditions**.
- Initiate continuous cardiac and EtCO₂ monitoring.

Nausea/Vomiting: Adult & Pediatric

Includes: Patients currently nauseated and/or vomiting.	
EMT	
<ul style="list-style-type: none"> Initiate Universal Care. 	
AEMT	
<ul style="list-style-type: none"> Consider 500 mL IV/IO fluid bolus, unless contraindicated (history of CHF, renal failure). May repeat as indicated to a max of 30 mL/kg. 	<ul style="list-style-type: none"> Consider 10-20 mL/kg IV/IO fluid bolus, unless contraindicated (history of CHF, renal failure). May repeat as indicated. 
EMT-I/Paramedic	
<ul style="list-style-type: none"> Ondansetron 4 mg PO/SL/IV. Contraindicated for known or suspected prolonged QT syndrome. 	<ul style="list-style-type: none"> Patients 6 mo. – 14 yo.: <ul style="list-style-type: none"> – Ondansetron 0.15 mg/kg PO/SL/IV, max 4 mg. Contraindicated for known or suspected prolonged QT syndrome. 

Shock: Adult & Pediatric

For shock due to suspected trauma, refer to [General Trauma Management](#) section guidelines. For shock due to anaphylaxis, refer to [Anaphylaxis/Allergic Reaction](#).

Emergency medical conditions can trigger signs of poor perfusion such as these:

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

EMT

- Initiate [Universal Care](#).
- Check blood glucose, treat per [Hypoglycemia/Hyperglycemia](#).
- If pregnant, place in left lateral recumbent position.

AEMT

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|--|---|
| <ul style="list-style-type: none"> • Administer 30 mL/kg, max 1 L, IV/IO fluid bolus over < 15 minutes. • May repeat up to 3 times until either: <ul style="list-style-type: none"> - Vital signs/perfusion normal (or) - Rales, crackles or respiratory distress. | <ul style="list-style-type: none"> • Administer 30 mL/kg, max 1 L, IV/IO fluid bolus over <15 minutes, using push-pull methods. • May repeat up to 3 times until either: <ul style="list-style-type: none"> - Vital signs/perfusion normal (or) - Rales, crackles or respiratory distress or hepatomegaly. |
|--|---|



- Reassess after each IVF bolus.

- If history of adrenal insufficiency (congenital adrenal hyperplasia, daily steroid use) refer to Adrenal Insufficiency treatment under EMT-I/Paramedic below. Assist with patient's own hydrocortisone.

EMT-I/Paramedic

- | | |
|---|---|
| <ul style="list-style-type: none"> • For shock unresponsive to IV fluids, or cardiogenic shock with signs of fluid overload, consider vasopressors: <ul style="list-style-type: none"> - Epinephrine 0.05-0.3 mcg/kg/min IV/IO - Norepinephrine 0.05-0.5 mcg/kg/min IV/IO (Paramedic Only) (Pump Only) - Dopamine 2-20 mcg/kg/min IV/IO (Paramedic Only) | <ul style="list-style-type: none"> • For shock unresponsive to IV fluids, or cardiogenic shock with signs of fluid overload, consider vasopressors: <ul style="list-style-type: none"> - Epinephrine 0.05-0.3 mcg/kg/min IV/IO - Norepinephrine 0.05-0.5 mcg/kg/min IV/IO (Paramedic Only) (Pump Only) - Dopamine 2-20 mcg/kg/min IV/IO (Paramedic Only) |
|---|---|



Adrenal Insufficiency Treatment:






- Patient's hydrocortisone (Solu-Cortef) is preferred:
 - ≥ 12 years: 100 mg IM.
- **Methylprednisolone**
 - 2 mg/kg IV/IO, max 125 mg.

Adrenal Insufficiency Treatment:

- 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.

Sepsis: Adult & Pediatric

Includes: patients meeting sepsis criteria (Elements from Boxes 1 and 2) as well as severe sepsis or septic shock (Elements from Boxes 1, 2, and 3).

1	<ul style="list-style-type: none"> Suspected Infection or immunosuppression Open wounds, sores, cellulitis UTI Pneumonia Meningitis Indwelling medical device Vomiting, diarrhea Recent surgery/procedure Chemotherapy < 6 weeks Chronic steroid use 	<p><u>Suspected Infection</u></p> <ul style="list-style-type: none"> Temperature abnormality on assessment or within 4 hours of assessment Open wounds, sores, cellulitis UTI or Pneumonia Meningitis <p><u>High-Risk Criteria</u></p> <ul style="list-style-type: none"> Malignancy Asplenia or sickle cell disease Bone marrow transplant Indwelling medical device Solid organ transplant Severe intellectual disability or cerebral palsy Immunocompromise, chronic steroid use 																													
2	<p><u>Two or more markers of Systemic Inflammatory Response Syndrome (SIRS)</u></p> <ul style="list-style-type: none"> Temp ≥ 100 or ≤ 97 HR ≥ 90 RR ≥ 20 Glucose > 140 in non-diabetic Altered mental status 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"><u>Exam Criteria</u> </td> <td style="text-align: center;">0-2 y</td> <td style="text-align: center;">$\geq 2-10$ y</td> <td style="text-align: center;">$\geq 10-14$ y</td> </tr> <tr> <td style="text-align: center;">HR</td> <td style="text-align: center;">>190</td> <td style="text-align: center;">>140</td> <td style="text-align: center;">>100</td> </tr> <tr> <td style="text-align: center;">RR</td> <td style="text-align: center;">>50</td> <td style="text-align: center;">>34</td> <td style="text-align: center;">>30</td> </tr> <tr> <td style="text-align: center;">Pulses</td> <td colspan="3" style="text-align: center;">Decreased, weak, or bounding</td> </tr> <tr> <td style="text-align: center;">Cap refill</td> <td colspan="3" style="text-align: center;">Delayed (> 2 sec) or flash (< 1 sec)</td> </tr> <tr> <td style="text-align: center;">Skin</td> <td colspan="3" style="text-align: center;">Mottled, ruddy, petechiae</td> </tr> <tr> <td style="text-align: center;">Mental status</td> <td colspan="3" style="text-align: center;">Decreased, irritability, confusion, inappropriate crying, poor interaction, diminished arousability</td> </tr> </table>	<u>Exam Criteria</u> 	0-2 y	$\geq 2-10$ y	$\geq 10-14$ y	HR	>190	>140	>100	RR	>50	>34	>30	Pulses	Decreased, weak, or bounding			Cap refill	Delayed (> 2 sec) or flash (< 1 sec)			Skin	Mottled, ruddy, petechiae			Mental status	Decreased, irritability, confusion, inappropriate crying, poor interaction, diminished arousability			
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3	<p><u>Findings of Shock</u></p> <ul style="list-style-type: none"> SBP < 90 or MAP < 65 or SBP drop of 40 mmHg from prior baseline EtCO₂ ≤ 25 O₂ sat $\leq 92\%$ on RA Mottled or cold extremities Central cap refill ≥ 3 seconds Purpuric rash No radial pulse 	<ul style="list-style-type: none"> SBP < 70 + (age in yr X 2). 3 or more exam criteria. 2 or more exam criteria in patient meeting high-risk criteria. 																													

EMT

- Initiate **Universal Care**.

AEMT

- Administer 20 mL/kg IV/IO fluid bolus, refer to treatment for **Shock** as indicated.
- 2 large bore IVs preferred for IV fluids. Consider IO placement early.
- Do not delay transport if unsuccessful.

EMT-I/Paramedic


Cardiac Arrest (VF/VT/Asystole/PEA): Age 8 and Older

Includes: patients with cardiac arrest. For adult patients who obtain return of spontaneous circulation (ROSC), refer to **Adult Post-ROSC**.

Excludes:

- Patients suffering cardiac arrest due to severe hypothermia.
- Patients with identifiable Do Not Resuscitate (or equivalent) order, refer to **Do Not Resuscitate**.
- Patients with traumatic cardiac arrest, refer to **General Trauma Management** and **Traumatic Cardiac Arrest TOR**.


EMT

- For patients with PRESUMED CARDIAC ETIOLOGY for cardiac arrest immediately perform 200 continuous chest compressions (CCR/MICR).
 - Compression rate: 100-120/minute.
 - Depth at least 2 to 2.4 inches (5 cm).
 - Ensure adequate recoil.
 - Chest compressions should resume immediately after defibrillation attempts with no pauses for pulse checks.
 - Initiate passive oxygenation at flush rate O₂ (non-rebreather mask with oral airway).
- If NON-CARDIAC ETIOLOGY, immediately begin manual ventilation (BVM or supraglottic airway (STR)) at rate of 10 breaths per minute.
- Attach AED without interruption of chest compressions.
 - If arrest witnessed by EMS or adequate bystander CPR has been performed, immediately perform rhythm analysis and defibrillation, if appropriate.
 - If arrest is unwitnessed or inadequate bystander chest compressions, perform 200 compressions prior to rhythm analysis. 
- Perform 4 rounds chest compressions. Check rhythm (and pulse when indicated), defibrillate if indicated between rounds.
- CARDIAC ETIOLOGY: If no response after 8 minutes, begin manual ventilation (BVM or supraglottic airway (STR)) at rate of 10 breaths per minute.
 - Airway management should not interrupt compressions.
 - Avoid excessive ventilation volume and pressure.

AEMT

- IV/IO access as soon as possible without interrupting chest compressions.

EMT-I/Paramedic

- Apply cardiac monitor/defibrillator.
- Defibrillate at 360 J monophasic or biphasic equivalent. 
- Place advanced airway after 4 rounds of compressions (or immediately if NON-CARDIAC ETIOLOGY suspected).
- **Epinephrine:** 1 mg (0.1 mg/mL) IV/IO every 3-5 minutes (max 3 total doses of epinephrine).
- For shock-refractory VF/Pulseless VT, consider:
 - **Amiodarone:** 5 mg/kg, max 300 mg IV/IO, repeat at half the original dose (Paramedic Only) (or)
 - **Lidocaine:** 1-1.5 mg/kg IV/IO, may repeat at half the original dose every 5 minutes (max total dose of 3 mg/kg).
- For Torsades de Pointes:
 - **Magnesium sulfate:** 2 g IV/IO (Paramedic only).

Consider reversible causes of cardiac arrest:

- Hyperkalemia
- Hypovolemia
- Tricyclic antidepressant overdose
- Tension pneumothorax
- If patient remains unresponsive to treatment – refer to **Non-Traumatic TOR**.

- If findings of hyperkalemia are present, administer IV fluids and:
 - **Calcium Gluconate** : 2 g IV/IO over 5 minutes (Paramedic only) (or)
 - **Calcium Chloride:** 1 g IV/IO over 5 min (Paramedic only), ensure IV patency and do not exceed 1 mL/minute.

Cardiac Arrest (VF/VT/Asystole/PEA): Pediatric Age < 8



Includes: pediatric patients aged < 8 with cardiac arrest.

Excludes:

- Patients suffering cardiac arrest due to severe hypothermia.
- Patients with identifiable Do Not Resuscitate (or equivalent) order, refer to [Do Not Resuscitate](#).
- Patients in arrest due to traumatic etiology, refer to [General Trauma Management](#).
- Newborns, refer to [Neonatal Resuscitation](#).

EMT

- Initiate chest compressions.
 - Compression rate: 100-120/minute.
 - Depth: at least greater than or equal to one-third AP chest diameter. No deeper than 2.4 inches.
 - Ensure adequate recoil.
 - Chest compressions should resume immediately after defibrillation attempts with no pauses for pulse checks.
- Attach AED.
 - If arrest witnessed by EMS or adequate bystander CPR has been performed, immediately perform rhythm analysis and defibrillation, if appropriate.
 - An AED equipped with a pediatric attenuator is preferred for infants and children; if not available, may use adult AED.



- Ensure patent airway.
 - Airway management should not interrupt compressions.
- Begin assisted ventilation. If advanced airway placed, ventilate at 12-20 breaths/minute.
- Compression-to-breath ratio, if ventilating with BVM:
 - Single rescuer = 30:2
 - 2-rescuers = 15:2

AEMT

- IV/IO access as soon as possible without interrupting chest compressions.

EMT-I/Paramedic

- Apply cardiac monitor/defibrillator.
- If arrest witnessed by EMS or adequate bystander CPR has been performed, immediately perform rhythm analysis and defibrillation, if appropriate.
- Defibrillate at 2 J/kg, second shock 4 J/kg, subsequent shocks greater than or equal to 4 J/kg, max 10 J/kg.



- Epinephrine: every 3-5 minutes
 - 0.1 mg/mL, 0.01 mg/kg IV/IO (or)
 - 1 mg/mL, 0.1 mg/kg ETT.

- For VF/Pulseless VT, consider:
 - **Amiodarone** (Paramedic only): 5 mg/kg IV/IO (max 300 mg) (or)
 - **Lidocaine:** 1 mg/kg IV/IO.
- For Torsades de Pointes:
 - **Magnesium sulfate:** 25-50 mg/kg IV/IO (Paramedic only).

Consider reversible causes of cardiac arrest:

- Hyperkalemia
- Hypovolemia
- Tension pneumothorax

- If [ECG Changes in Hyperkalemia](#) are present, administer IV fluids and:
 - **Calcium Gluconate:** 100 mg/kg IV/IO over 5 minutes, max dose 2 g (Paramedic only) (or)
 - **Calcium Chloride:** 20 mg/kg (0.2 mL/kg) IV/IO over 5 min, max dose 1 g (Paramedic only), ensure IV patency and do not exceed 1 mL/minute.

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

Includes: patients with return to spontaneous circulation following cardiac arrest resuscitation.
EMT
<u>Support Airway/Oxygenation/Ventilation.</u> <ul style="list-style-type: none"> • Titrate oxygen to SaO₂ of ≥ 94%. Avoid hyperoxygenation. • Maintain ventilation rate of 8 bpm if no spontaneous respirations. Avoid hyperventilation.
<u>Evaluate and treat hypoglycemia.</u> <ul style="list-style-type: none"> • Check blood glucose. • If hypoglycemic (BG <60 mg/dL), refer to Hypoglycemia. • If hyperglycemic, notify hospital on arrival, refer to Hyperglycemia.
<ul style="list-style-type: none"> • Notify receiving facility as soon as possible. • Transport to a recognized Cardiac Receiving Center when feasible and resources available.
Exclusion Criteria for Transport to a Recognized Cardiac Receiving Center:
Transport to the closest appropriate facility, if any of the following apply: <ul style="list-style-type: none"> • Traumatic cardiac arrest, • Ongoing CPR without ROSC, • If transport to CRC will add >15 <u>additional</u> minutes to transport time, • Age < 15 years.
AEMT
<ul style="list-style-type: none"> • Advanced airway as indicated (supraglottic/esophageal).
<u>Maintain hemodynamic stability.</u> <ul style="list-style-type: none"> • If systolic BP < 90 mmHg consider fluid bolus IV/IO, refer to Shock. • While administering fluid boluses, frequently reassess perfusion for improvement and/or fluid overload. If patient develops signs of fluid overload, discontinue IVF infusion.
<ul style="list-style-type: none"> • Prevent hyperthermia. • Do not warm patient unless environmental hypothermia is suspected.
EMT-I/Paramedic
<ul style="list-style-type: none"> • Advanced airway as indicated. • If EtCO₂ available, maintain at 35-45 mmHg. Avoid hyperventilation. • Perform 12-lead ECG. • For persistent hypotension unresponsive to IV fluids, refer to Shock.

Obvious/Apparent Death: Adult & Pediatric

At a likely crime scene, disturb as little potential evidence as possible.

Excludes:

- Hypothermia, drowning, or lightning strikes.
- If patient does not meet the criteria below, refer to [Traumatic Cardiac Arrest TOR](#) or [Non-Traumatic TOR](#) or [Do Not Resuscitate Status/Advanced Directives/Healthcare Power of Attorney \(POA\) Status](#) as indicated.

EMT

- If the patient meets the criteria listed below, no resuscitative efforts need to be initiated. On-line medical direction is NOT necessary. Contact PD and initiate grief support. An EMS provider must remain with the patient until released to PD.
- For these conditions documentation of asystole by monitor or rhythm analysis by AED is not needed:
 - Decapitation
 - Decomposition
 - Transection of the torso
 - Incineration: 90% of body surface area with full thickness burns as exhibited by ash rather than clothing and complete absence of body hair with charred skin
 - Dependent lividity
 - Rigor mortis
 - Pulseless and apneic with extrusion of brain matter
 - Injuries incompatible with life (such as massive crush injury, complete exsanguination, severe displacement of brain matter)
- For all others that do not meet above criteria:
 - Refer to [Traumatic Cardiac Arrest TOR](#) or [Non-Traumatic TOR](#) or [Do Not Resuscitate Status/Advanced Directives/Healthcare Power of Attorney \(POA\) Status](#) as indicated.

AEMT

EMT-I/Paramedic

Power of Attorney (POA) Status: Adult & Pediatric

1. Patients must have one of the following documents or a valid alternative (such as identification bracelet indicating wishes) immediately available:
 - **Do Not Resuscitate (DNR)** order: identifies that CPR and intubation are not to be initiated if the patient is in arrest or peri-arrest. The interventions covered by this order and the details around when to implement them can vary widely.
 - **Provider Orders for Life Sustaining Treatment (POLST) or Medical Orders for Life Sustaining Treatment (MOLST)**: explicitly describes acceptable interventions for the patient in the form of medical orders, must be signed by a physician or other licensed medical provider to be valid.
 - **Advanced directives**: document that describes acceptable treatments under a variable number of clinical situations including some or all of the following; what to do for cardiac arrest, whether artificial nutrition is acceptable, organ donation wishes, dialysis, etc. Frequently does not apply to emergent or potentially transient medical conditions.
 - In the absence of formal written directions (MOLST, POLST, DNR, advanced directives), a person on scene with power of attorney for healthcare, or healthcare proxy, may prescribe limits of treatment.
2. Any of the documents described above are valid when they meet all of the following criteria:
 - Intact condition; it should not been cut, broken or shows signs of being repaired (and)
 - Displays the patient's name and the physician's name.
3. If there is question about the validity of the document/instrument, the best course of action is to proceed with the resuscitation until additional information can be obtained to clarify the best course of action and contact on-line medical direction.

EMT

- If the patient has a valid DNR, no CPR or airway management should be attempted. Comfort measures should still be offered. If resuscitative efforts were initiated and a valid DNR was recovered later, efforts may be discontinued.
- If the patient has a MOLST, POLST, or advanced directive, initiate CPR and airway management and contact on-line medical direction for consideration or termination of resuscitation.

- If there is a valid DNR and there are signs of life (pulse and respirations), EMS providers should provide standard, appropriate treatment under existing protocols according to the patient's condition.
- If the patient has a MOLST or POLST, contact on-line medical direction for specific guidance on how to proceed in this situation.
- Contact on-line medical direction if for any reason an intervention that is prohibited by an advanced directive is being considered.

AEMT

EMT-I/Paramedic

Non-Traumatic Termination of Resuscitative Efforts (TOR):

Adult & Pediatric

Includes:

- Any **non-traumatic** cardiac arrest patient that has received resuscitation in the field, but has not responded to treatment. After termination, do not alter body condition in any way or remove equipment (lines, tubes, etc.). Doing so may compromise potential Medical Examiner investigation.

Excludes:

- Patients in cardiac arrest associated with medical conditions that may have better outcome despite prolonged efforts, such as hypothermia, lightning strikes, submersion/drowning. Consider continuing efforts in such cases or contact on-line medical direction.
- Patients meeting criteria for **Obvious/Apparent Death**.

EMT

- Initiate resuscitation, refer to **Cardiac Arrest (VF/VT/Asystole/PEA)**. If a valid DNR is available refer to **Do Not Resuscitate Status/Advanced Directives/Healthcare Power of Attorney (POA) Status**.
- Perform 4 rounds of CCR/MICR or ACLS. Focus on resuscitation on-scene versus "load and go."
- Apply AED and follow prompts.
- Consider Termination of Resuscitation (TOR) if the following criteria are met:
 - Not Witnessed,
 - No shock advised by AED,
 - No ROSC (return of spontaneous circulation).
- If patient meets all 3 TOR criteria after 4 rounds of CCR/MICR, consider TOR. TOR requires on-line medical direction. If ROSC is achieved, continue treatment and refer to **Post Cardiac Arrest and Return of Spontaneous Circulation (ROSC) Care, Transport to Cardiac Receiving Center (CRC)**.
- Contact on-line medical direction if patient does not meet all TOR criteria or other special circumstances surround resuscitation or if the patient is < 18.

AEMT

- IV/IO access as soon as possible without interrupting chest compressions.

EMT-I/Paramedic

- Apply cardiac monitor/defibrillator.
- For narrow complex PEA with rate > 40 or refractory VF/VT, consider resuscitation for up to 60 minutes from time of dispatch.
- Consider TOR if the following criteria are met:
 - > 30 minute downtime, pulseless >60 sec, non-shockable rhythm (PEA/Asystole) (OR)
 - Witnessed arrest, 20 minutes of resuscitation with PEA and $ETCO_2 < 10$ (OR) on-shockable rhythm (PEA/Asystole)

Traumatic Cardiac Arrest - Termination of Resuscitative (TOR) Efforts: Adult & Pediatric

Includes:

- Any **traumatic** cardiac arrest patient that has received resuscitation in the field but has not responded to treatment.
- After termination, do not alter body condition in any way or remove equipment (lines, tubes, etc.). Doing so may compromise potential Medical Examiner investigation.

Excludes:

- Patients meeting criteria for **Obvious/Apparent Death**.
- Patients who are found in shockable rhythm or whose rhythm changes to shockable. These patients should, in general, have full resuscitation continued.
- Patients in cardiac arrest associated with medical conditions that may have better outcome despite prolonged efforts, such as hypothermia, lightning strikes, submersion/drowning. Consider continuing efforts in such cases or contact on-line medical direction.
- When the mechanism does not correlate with the clinical condition (suggesting a non-traumatic cause of cardiac arrest) standard resuscitative measures should be followed.

EMT

- Provide resuscitation according to **Cardiac Arrest (VF/VT/Asystole/PEA) Age 8+** or **Cardiac Arrest (VF/VT/Asystole/PEA) Age ≤ 8**.

AEMT

EMT-I/Paramedic

Consider Termination of Resuscitation (TOR) if the following criteria are met:

- **Blunt Trauma Arrest:**
 - No response to OPA/NPA and bilateral needle thoracostomy (performed when indicated) (AND)
 - Continued pulseless after consideration/treatment of airway obstruction or tension pneumothorax.
- **Penetrating Trauma Arrest:**
 - No response to OPA/NPA and bilateral needle thoracostomy (performed when indicated) (AND)
 - Pulseless and transport time to Trauma Center exceeds 15 minutes.

Contact on-line medical direction if patient does not meet all TOR criteria or other special circumstances surround resuscitation or if the patient is <18.

Airway Management: Adult & Pediatric

Includes:

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

Excludes:

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

EMT

- Use BVM ventilation in the setting of respiratory failure or arrest.
- Consider the addition of oropharyngeal airways (OPA) or nasopharyngeal airways (NPA) to make BVM more effective.
- Avoid excessive pressures or volumes during BVM ventilation.
- Monitor pulse oximetry

- Use appropriate sized mask with BVM.



AEMT

- Consider the use of a supraglottic airway (SGA) if BVM is not effective in maintaining oxygenation or ventilation.

- Use least invasive means of airway management.



EMT-I/Paramedic

- Non-invasive ventilation techniques for severe respiratory distress or impending respiratory failure **without** decreased level of consciousness:
 - Continuous positive airway pressure (CPAP)
 - Bi-level positive airway pressure (B-PAP)

- Endotracheal intubation should be considered only when less invasive methods fail.
- For children < 8 years old, the only option for cricothyroidotomy is needle cricothyroidotomy.



- When less invasive methods are ineffective, use endotracheal intubation.
- Tubes should be continuously secured with a commercial tube holder or tape.
- Continuously monitor clinical signs and EtCO₂ for the intubated patient.
 - EtCO₂ should be used to verify tube placement and prevent hyper- or hypoventilation.

- Gastric decompression may improve oxygenation and ventilation.

- Consider cricothyroidotomy (**Paramedic only**) when patients cannot be oxygenated/ventilated with above interventions and the risk of death seems to outweigh the risk of a procedural complication.

Pediatric Respiratory Distress – Wheezing < 2 Years Old (Bronchiolitis)



Includes: Child < 2 yo with wheezing or diffuse rhonchi.

Excludes: Suspected **Anaphylaxis**, **Croup**, epiglottitis, foreign body aspiration, submersion/**Drowning**.

EMT

- Initiate **Universal Care**.
- Suction the nose and/or mouth (via bulb, Yankauer or catheter) if excessive secretions are present.
- Supplemental oxygen: escalate from nasal cannula to face mask to non-rebreather mask as needed in order to maintain normal oxygenation.
- BVM ventilation for children with respiratory failure.

AEMT

- IV should only be placed for clinical concerns of severe dehydration requiring immediate treatment or for administration of IV medications.
- For severe respiratory distress, if suctioning and oxygen fail to result in clinical improvement, administer
 - **Epinephrine:** 1 mg/mL, 3 mg (3 mL in 3 mL NS) nebulized.
 - Patients receiving inhaled epinephrine should be transported to definitive care.

EMT-I/Paramedic

- For severe respiratory distress, non-invasive positive pressure ventilation or high flow nasal cannula may be administered, if available.
 - 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.



Includes: History of stridor or barking cough.

Excludes: Suspected Anaphylaxis, foreign body aspiration, submersion/Drowning, Asthma, Bronchiolitis.

EMT

- Initiate **Universal Care**.
- Initiate BVM ventilation for children with respiratory failure.
- Suction the nose and/or mouth (via bulb, Yankauer or catheter) if excessive secretions are present.
- Monitor pulse oximetry.

AEMT

- For severe respiratory distress, if suctioning and oxygen fail to result in clinical improvement, administer
 - **Epinephrine:** 1 mg/mL, 5 mg (5 mL in 3 mL NS) nebulized
 - Repeat epinephrine at the above dose with unlimited frequency for ongoing distress.
 - Patients receiving inhaled epinephrine should be transported to definitive care.

EMT-I/Paramedic

- EtCO₂ should be routinely monitored as an adjunct to other forms of monitoring.
- **Dexamethasone:** 0.6 mg/kg PO/IM/IV/IO, max dose 16 mg.
- For severe respiratory distress, non-invasive positive pressure ventilation may be administered, if available.
 - 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 if there are no signs of clinical improvement after treating respiratory distress.

Pediatric Brief Resolved Unexplained Event (BRUE)/Pediatric Apparent Life Threatening Event (ALTE)



Includes:

A patient with an episode that is frightening to the observer with some combination of the following:

- Absent, decreased or irregular breathing (apnea: central or obstructive) including choking or gagging,
- Color change (usually cyanosis or pallor),
- Marked change in muscle tone (flaccid or rigid).

Excludes:

- Age > 12 months,
- **Seizure**,
- **Respiratory distress**,
- Cardiopulmonary arrest, refer to **Cardiac Arrest age < 8**,
- Trauma with known mechanism of injury, refer to **General Trauma Management**.

EMT

- Initiate **Universal Care**.
- Have high index of suspicion for abuse in children presenting with BRUE/ALTE.
- Check blood glucose; refer to **Hypoglycemia** if appropriate.

AEMT

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

EMT-I/Paramedic

- 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 BRUE/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.



Includes: all neonates immediately following birth.

EMT

- Wait at least 30 – 60 seconds post-delivery before clamping and cutting the umbilical cord.
- Clamp cord in 2 places and cut between clamps if still attached to the mother.
- Warm, dry, and stimulate baby for 30 seconds.
- Wrap infant in dry towel and keep as warm as possible during resuscitation. Keep head covered if possible. If gestational age is less than 32 weeks, additional thermoregulation interventions are recommended (plastic wrap or bag).
- 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, **then** position airway (sniffing position) and clear airway as needed. If thick meconium or secretions **are** present and signs of respiratory distress, suction mouth then nose.
- Consider checking blood glucose for ongoing resuscitation, maternal history of diabetes, ill appearing, or unable to feed. Refer to **Hypoglycemia** as needed.

First 30-60 seconds:

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 BVM ventilation with room air at 40-60 breaths per minute.

If heart rate < 100 beats per minute:

- Initiate BVM 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 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 BVM ventilations (3:1 ratio, 90 compressions and 30 breaths per minute).

AEMT

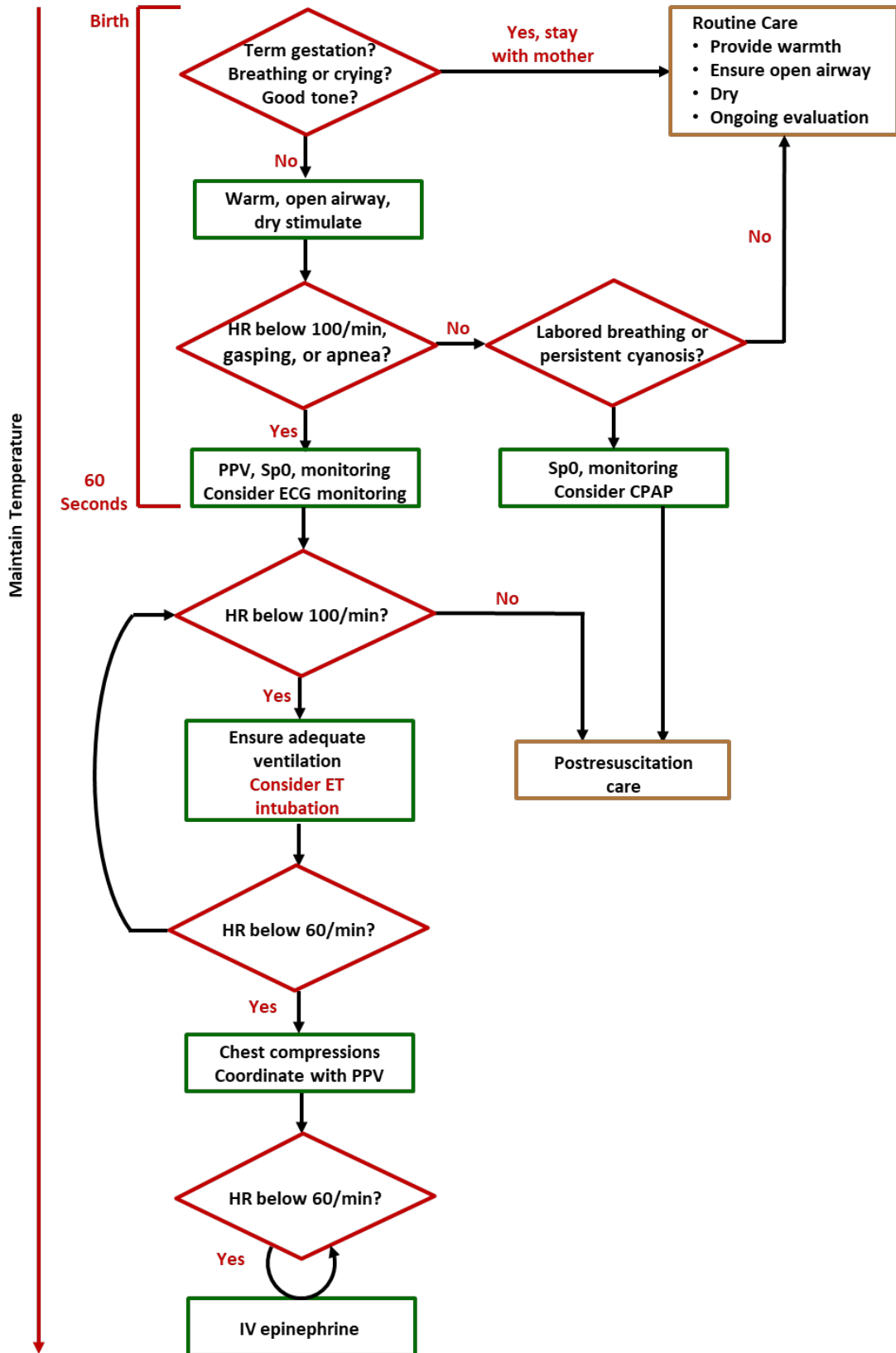
EMT-I/Paramedic

- If apneic or in significant respiratory distress, consider endotracheal intubation as per local protocols.
- Intubation is recommended prior to beginning chest compressions. If intubation is not successful or not feasible, a laryngeal mask may be used.
 - Newborns > 2 kg and greater than 34 weeks gestation require a size 3.5 endotracheal tube.
- **Epinephrine** is indicated if the newborn's heart rate remains less than 60 beats/min after at least 30 seconds of positive-pressure ventilations (PPV) that move the chest, preferably through a properly inserted endotracheal tube or laryngeal mask, and another 60 seconds of chest compressions coordinated with PPV using 100% oxygen.
 - Epinephrine is not indicated before you have established ventilation that effectively inflates the lungs.
 - **Epinephrine:**
 - 0.1 mg/mL, 0.01 mg/kg IV/IO (or)
 - 0.1 mg/mL, 0.1 mg/kg via ETT if no IV/IO access.
- Administer 20 mL/kg IV/IO fluid bolus for signs for shock or post-resuscitative care.

Neonatal Resuscitation page 2 of 2 – Providers to stay within their Scope of Practice



Neonatal Resuscitation Algorithm



Childbirth

Includes: Imminent delivery with crowning.

Excludes: Vaginal bleeding in any stage of pregnancy without signs of imminent delivery, refer to **Obstetrical/Gynecological Conditions**.

Emergencies in first or second trimester of pregnancy, refer to **Obstetrical/Gynecological Conditions**.

Seizure from eclampsia, which can occur up to 6 weeks postpartum, refer to **Seizures**.

EMT

- Delivery should be controlled and support the newborn's head.
- Check the umbilical cord. If surrounding the neck, 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.
- Wait at least 30 – 60 seconds post delivery before clamping and cutting the umbilical cord.
- 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. Refer to **Neonatal Resuscitation** for further care of the infant.

If complications of delivery are identified, perform 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:**
 - Place 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.
 - Refer to **Cardiac Arrest (VF/VT/Asystole/PEA)**.
 - 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:**
 - Place 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 and contact on-line 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.

AEMT

EMT-I/Paramedic

- If signs or symptoms of pre-eclampsia (BP >140/90 and blurred vision, dizziness, headache, altered mental status, peripheral edema, abdominal pain, nausea, or vomiting):
 - **Magnesium sulfate:** 4-6 g IV over 10-15 minutes (Paramedic Only).

Obstetrical/Gynecological Conditions

Includes:

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

Excludes:

- Childbirth and active labor. Refer to [Childbirth](#).
- Seizure related to pregnancy/eclampsia, which can occur up to 6 weeks postpartum, refer to [Seizures](#).
- Post-partum hemorrhage, refer to [Shock](#).

EMT

- Initiate [Universal Care](#).
- Check blood glucose. Refer to [Hypoglycemia](#) if needed.
- Monitor pulse oximetry if signs of hypotension or respiratory symptoms.
- If signs of [Shock](#) or orthostasis are present, position patient supine and keep patient warm.
- Patients in third trimester of pregnancy should be transported on left side or with uterus manually displaced to left if hypotensive.
- Do not place hand/fingers into vagina of bleeding patient except in cases of prolapsed cord or breech birth that is not progressing. Refer to [Childbirth](#).


AEMT

- If signs of shock or orthostasis, refer to [Shock](#).
- Reassess vital signs and response to fluid resuscitation.

EMT-I/Paramedic

- Initiate cardiac monitoring and obtain 12-lead ECG if there is history of syncope or lightheadedness.
- Pre-eclamptic symptoms:
 - BP >140/90 and blurred vision
 - dizziness
 - headache
 - altered mental status
 - peripheral edema
 - abdominal pain
 - nausea or vomiting
 - If pre-eclamptic, treat with [Magnesium sulfate](#): 4-6 g IV over 10-15 minutes (Paramedic Only).

General Trauma Management: Adult & Pediatric

Includes: <ul style="list-style-type: none"> • Blunt trauma, • Penetrating trauma, • Burns. 	
EMT	
<ul style="list-style-type: none"> • Initiate Universal Care. Primary survey <ul style="list-style-type: none"> • Establish patent airway with cervical spine precautions (refer to Airway Management and Spinal Motion Restriction as needed). • Hemorrhage control, refer to External Hemorrhage Management. <ul style="list-style-type: none"> – Apply direct pressure or tourniquet (if extremity hemorrhage) as needed to control bleeding. • Monitor oxygen saturation, provide supplemental oxygen. • For open chest wound, place semi-occlusive dressing. • If pelvis is unstable and patient is hypotensive, place pelvic binder or sheet to stabilize pelvis. • Maintain spine precautions per Spinal Motion Restriction. • Splint extremity deformities per Extremity Trauma. • If clinical signs of traumatic brain injury, refer to Traumatic Brain Injury (EPIC-TBI). 	
AEMT	
<ul style="list-style-type: none"> • If SBP < 90 mmHg or HR > 120, give 1 L IV/IO fluid bolus, may repeat as indicated. • Provide pain medications per Management of Acute Pain. 	<ul style="list-style-type: none"> • If tachycardia for age with signs of poor perfusion, give 20 mL/kg IV/IO fluid bolus, may repeat as indicated. • Provide pain medications per Management of Acute Pain. 
EMT-I/Paramedic	
<ul style="list-style-type: none"> • If absent or diminished breath sounds in a hypotensive patient, consider tension pneumothorax. Perform needle decompression. • Avoid hypothermia. • Transport to most appropriate facility <u>per local protocol</u>. 	

Burns: Adult & Pediatric

Includes:

- Patients sustaining thermal burns,
- Patients who are exposed to electrical current (AC or DC),
- Patients of all ages who have been the victim of lightning strike injury.

Excludes:

- Chemical and radiation burns, refer to [Radiation Exposure](#) or [Chemical Burns](#), as needed.

EMT

- Verify scene is secure.
- Initiate [Universal Care](#).
- Assess for cardiac arrest.
 - Even patients who appear dead may have good outcomes with prompt intervention, refer to [Cardiac Arrest \(VF/VT/Asystole/PEA\)](#).
- Determine characteristics of source if possible. AC or DC, voltage, amperage, time of injury.
- Consider pain management, refer to [Management of Acute Pain](#).
- Monitor oxygen saturation, provide supplemental oxygen as needed or if patient rescued from confined space.
- Refer to [Cyanide Poisoning](#) and [Carbon Monoxide/Smoke Inhalation](#) as needed.
- 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.
- Evaluate for high risk burn injuries, refer to [Burn Triage](#).
- Leave blisters intact.
- Cover burns with dry dressing or clean sheet.
- Keep patient warm.
- Estimate BSA burned and depth of burn, refer to [Burn Estimation Charts](#).

AEMT

- If establishing IV access, avoid placement through burned skin.
- Initiate fluid resuscitation:
 - 20 mL/kg IV/IO fluid bolus, repeat as needed.
 - If patient in shock, give fluid per [Shock](#).
 - Manage pain appropriately, refer to [Management of Acute Pain](#).

EMT-I/Paramedic

- Initiate cardiac and EtCO₂ monitoring.
- If thermal burn to airway is suspected, early airway control is vital. Refer to [Airway Management](#).

External Hemorrhage Management: Adult & Pediatric

Includes: patients with uncontrolled bleeding.

EMT

- Apply direct pressure/pressure dressing/wound packing to injury.
- If direct pressure ineffective or impractical (hemorrhage not controlled)
 - Apply a tourniquet.
- If hemorrhage is not controlled (e.g. junctional injury)
 - Apply a topical hemostatic agent with direct pressure or commercially available junction hemorrhage control device.
- If tourniquet applied:
 - Do not release a properly-applied tourniquet until the patient reaches definitive care.
 - Use of tourniquet for extremity hemorrhage is strongly recommended if sustained direct pressure is ineffective or impractical.
 - Use a commercially available, windlass, pneumatic, or ratcheting device that has been demonstrated to reliably occlude arterial flow .
 - Avoid applying narrow, elastic, or bungee-type devices.
 - Utilize improvised tourniquets only if no commercial device is available.
- Apply a topical hemostatic agent, in combination with direct pressure, for wounds in anatomic areas where tourniquets cannot be applied and sustained direct pressure alone is ineffective or impractical.
 - Only apply topical hemostatic agents in a gauze format that supports wound packing.
 - A commercially available junction hemorrhage control device may also be considered.

AEMT

EMT-I/Paramedic

Extremity Trauma: Adult & Pediatric

Includes: patients with amputations or potential extremity fractures or dislocations.

EMT

- For active bleeding, refer to [External Hemorrhage Management](#).
- Evaluate for
 - deformity or instability,
 - neuro status of extremity,
 - pallor,
 - pulse,
 - capillary refill,
 - degree of bleeding/blood loss, with assessment of the color of the blood and if it is pulsatile or not.
- Stabilize suspected fractures/dislocations.
- Apply splint to limit movement of suspected fracture.
 - Reassess distal neurovascular status after any manipulation or splinting.
- Elevate extremity fractures above heart level whenever possible to limit swelling.
- Apply ice/cool packs to limit swelling in suspected fractures or soft tissue injury; do not apply ice directly to skin.
- Amputation:
 - Transport amputated part(s) wrapped in a dry, sterile dressing.
 - Place in a water tight container or plastic bag.
 - Keep cool, but do not place directly on ice.
- Manage pain, refer to [Management of Acute Pain](#).

AEMT

- Strongly consider administering pain medication according to [Management of Acute Pain](#) before attempting to move a suspected fracture.

EMT-I/Paramedic

Crush Injury:

- High flow oxygen.
- Initiate 10-15 mL/kg IV/IO fluid bolus prior to extrication if possible.
- For significant crush injury or prolonged entrapment of extremity, consider
 - **Sodium Bicarbonate:** 1 mEq/kg IV/IO, maximum dose 50 mEq bolus over 5 minutes.
- Apply cardiac monitor to assess for peaked T waves or other findings consistent with hyperkalemia. Refer to [ECG Changes in Hyperkalemia](#) as needed.

- If findings suggestive of hyperkalemia, continue fluid resuscitation with 500-1000 mL/hr IV/IO fluid infusion.
- If findings of hyperkalemia are present, maintain continuous cardiac monitoring, administer IV fluids and:
 - **Calcium Gluconate** (Paramedic only) 2 g IV/IO over 5 minutes (or)
 - **Calcium Chloride** (Paramedic only) 1 g IV/IO over 5 minutes, ensure IV patency and do not exceed 1 mL/minute (and)
 - **Albuterol** 5mg nebulized.

- If findings suggestive of hyperkalemia, continue fluid resuscitation with 10 mL/kg/hr IV/IO fluid infusion.
- If findings of hyperkalemia are present, maintain continuous cardiac monitoring, administer IV fluids and:
 - **Calcium Gluconate** (Paramedic only) 100 mg/kg IV/IO over 5 minutes, max dose 2 g (or)
 - **Calcium Chloride** (Paramedic only) 20 mg/kg (0.2 mL/kg) IV/IO over 5 minutes, max dose 1 g, ensure IV patency and do not exceed 1 mL/minute (and)
 - **Albuterol** 5mg nebulized.



Traumatic Brain Injury (EPIC-TBI): Adult & Pediatric

Includes: Adult or pediatric patient with suspicion of Traumatic Brain Injury (EPIC-TBI) by mechanism, GCS, or exam.

EMT

Airway/Breathing:

- Continuously monitor pulse oximetry.
- Oxygen supplementation 15 L/min; prevent any desaturation < 90%.
- BLS airway maneuvers as indicated.
- BVM 10 breaths/min as needed to maximize SaO₂
- Do not hyperventilate patient.

- BLS airway maneuvers as indicated:

- Infants (0-24 mo): 25 breaths/min
- Children (2-14 yrs): 20 breaths/min
- Adolescents (15-17 yrs): 10 breaths/min (same as adults)



Circulation:

- Frequent blood pressure, SaO₂, HR measurement (every 5 minutes).
- Watch for early signs of shock such as tachycardia, falling systolic blood pressure.

Disability:

- Evaluate blood glucose, refer to **Hypoglycemia**.
- Maintain cervical stabilization (refer to **Spinal Motion Restriction**).
- Control bleeding with direct pressure if no suspected open skull injury.
- Trend neurologic status assessment (GCS).

AEMT

- IV/IO access as needed for fluid administration.
- Avoid hypotension.
- For SBP < 90 mmHg or other signs of shock:
 - Initial treatment: 1 L IV/IO fluid bolus.
 - Repeat 500 mL IV/IO fluid bolus until SBP > 90 mmHg.

- Hypotension in children:
 - 0-9 yrs: SBP < [70 + (age in years x 2)]
 - ≥ 10 yrs: SBP < 90 mmHg
- For hypotension or other signs of shock:
 - 20 mL/kg IV/IO fluid bolus.
 - Repeat until hypotension resolves.



EMT-I/Paramedic

- Initiate EtCO₂ monitoring for hypoventilation and apnea; target EtCO₂ 35-45 mmHg.
- If O₂ saturation < 90% despite BLS airway, consider advanced airway.
- Pre-oxygenate with 100% O₂ BVM, 10 breaths/minute.
- Use with caution and monitor blood pressure if administering medications for intubation/sedation.
- Avoid nasal intubation.

Spinal Motion Restriction (SMR): Adult & Pediatric

Includes: Adult or pediatric patient with potential for spinal injury due to blunt traumatic injury.

Exclusion: Adult or pediatric patient with penetrating spinal injury (SMR not indicated).

EMT

Apply SMR if ANY of the following are present:

- Any altered mental status (GCS < 15) including possible intoxication from alcohol or drugs, agitation.
- Pediatric patients may demonstrate altered mental status with agitation, apnea, hypopnea, or somnolence.
- Midline neck or back pain and/or tenderness.
- Focal neurologic signs and/or symptoms (ie. weakness, tingling, or numbness).
- Anatomic deformity of the spine.
- Torticollis (self-splinting or painful rotation/tilt of the neck).
- Unreliable patient interaction including distraction from painful injury or distressing circumstances.
- Communication/language barrier that prevents accurate assessment.
- Lack of cooperation or contribution during exam.

Consider SMR with ANY high risk characteristics:

- **Guideline for Field Triage** mechanism criteria (Step 3),
- Age > 65,
- Axial load injuries (diving injuries, spearing tackle),
- Sudden acceleration/deceleration, lateral bending forces to neck/torso.

Apply SMR with ANY high risk mechanisms of injury:

- High speed MVC or rollover,
- Axial load injuries (diving injuries, spearing tackle),
- Sudden acceleration/deceleration, lateral bending forces to neck/torso.



- Patients without any of the above findings may be transported without the use of a cervical collar or any other means to restrict spinal motion. Low risk characteristics include:
 - Simple rear end collision,
 - No neck pain on scene,
 - No midline cervical tenderness,
 - Ambulatory on scene at any time.

- Low risk characteristics have not been studied in pediatric patients and should not be used alone to determine need for SMR.



- SMR may be achieved by use of a scoop stretcher, vacuum splint, ambulance stretcher, or long spine board with the patient safely secured.
- Minimize time on backboards.
- SMR cannot be safely performed with a patient in a sitting position.
- If elevation of the head is required, the device used to stabilize the spine should be elevated at the head while maintaining alignment of the neck and torso.

- Children may require additional padding under the shoulders to avoid excessive cervical spine flexion with SMR.



AEMT

EMT-I/Paramedic

Presentation may vary depending on the concentration and type of poison or medication and duration of exposure. Poisoning may occur by:

- Skin or mucous membrane absorption
- Ingestion
- Inhalation
- Injection
- Refer to guidelines for specific agents as indicated
- Arizona Opioid Assistance and Referral Line (OAR) 1-888-688-4222.
- Call the regional poison control center: 1-800-222-1222.

EMT

- Ensure scene is safe.
- Consider Body Substance Isolation or appropriate skin and respiratory personal protective equipment (PPE).
- Safely remove patient from hazardous material environment.
- Remove clothing and decontaminate skin if contaminated.
- Initiate **Universal Care**, including pulse oximetry monitoring for respiratory decompensation.
- Maintain or normalize patient temperature.
- Attempt to record and obtain all involved medications or products. Bring in medication containers or consider taking pictures with camera-equipped, agency-owned device.
- Identify intoxicating agent by history, toxidrome, or environmental testing.
- Identify antidote or mitigating agent.

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



AEMT

- Initiate IV/IO access.
- Administer 20 mL/kg IV/IO fluid bolus if there is evidence of hypoperfusion.

EMT-I/Paramedic

- Initiate EtCO₂ monitoring for respiratory decompensation.
- Initiate cardiac monitoring and consider 12-lead ECG (special attention to abnormal rate, rhythm, QRS prolongation, and QT prolongation).
- Consider blood samples if EMS management might change value (e.g. carbon monoxide, glucose, cyanide).

- Use chemical sedation for patients with agitated delirium (combativeness, tachycardia, hyperthermia).
- Refer to **Agitated or Violent Patient/Behavioral Emergency**.
- Symptomatic dystonia, with extrapyramidal signs or symptoms: consider **Diphenhydramine** 25 mg IV/IO/IM.

- Symptomatic dystonia, with extrapyramidal signs or symptoms: consider **Diphenhydramine** 1 mg/kg IV/IO/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.




Acetylcholinesterase Inhibitor Poisoning (Nerve Agents, Organophosphates, and Carbamates): Adult & Pediatric

DUMBELS mnemonic used to describe the signs and symptoms of organophosphate toxicity:

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

Central nervous system effects can manifest with seizures, coma, and/or apnea.


EMT

- | | |
|--|--|
| <ul style="list-style-type: none"> • Don appropriate personal protective equipment (PPE) • Remove patient's clothing and wash the skin with soap and water. • Initiate Universal Care. • ABCDE assessment including pupils. • Monitor pulse oximetry | <ul style="list-style-type: none"> • When wet decontaminating children, attempt to prevent hypothermia.  |
|--|--|

AEMT

- Establish IV/IO access.

EMT-I/Paramedic

- | | |
|--|--|
| <ul style="list-style-type: none"> • Initiate continuous cardiac and EtCO₂ monitoring. | |
| <ul style="list-style-type: none"> • Atropine Sulfate 2-6 mg IV/IO. • Repeated doses (2x previous dose) should be administered as needed every 3-5 minutes. | <ul style="list-style-type: none"> • Atropine Sulfate 0.1 mg/kg IV/IO, up to 1-4 mg/dose. • Repeated doses (2x previous dose) should be administered as needed every 3-5 minutes.  |
| <ul style="list-style-type: none"> • Clinical improvement should be based upon the drying of secretions, improved respiratory effort and pulse oximetry. • Continuous and ongoing patient reassessment is critical. • For patients with seizure activity refer to Seizure as needed. | |

Radiation Exposure: External and/or Internal Contamination: Adult & Pediatric

Includes: Patients exposed to a known or suspected source of radiation or contaminated with a radioactive source, particularly patients exhibiting the signs and symptoms of acute radiation syndrome:


- Nausea
- Vomiting
- Diarrhea
- Dizziness
- Headache
- Altered mental status or loss of consciousness

Most patients will be asymptomatic, initially.

All body fluids from patients receiving *systemic radiation therapy (particularly radioactive iodine)* carry a potential risk of minor exposure, usually to primary caregivers and family members. Use Body Substance Isolation techniques, personal protective equipment (PPE), and Universal Precautions when caring for these patients.

Standard PPE does not protect against penetrating radiation from a radioactive source, it only mitigates contamination. Limit radiation exposure effectively by limiting time around, maintaining distance from, and using effective shielding against the source. Turnout gear and paper coveralls can be potentially adequate PPE to prevent contamination.

EMT

- | | |
|--|---|
| <ul style="list-style-type: none"> • Ensure scene safety. • Don appropriate personal protective equipment. • Exercise universal precautions at all times. • Initiate Universal Care. • Decontamination should not delay stabilization of limb- or life-threatening traumatic injuries. • Place contaminated towels, wastewater, and body fluids in secured containers denoted for radioactive waste materials. • For skin contaminated with radioactive sources: <ul style="list-style-type: none"> – Remove patient's clothing and wash the skin with wet gauze, skin wipes, or soap and water. – Collect the wastewater, if possible. • For inhalation contamination: <ul style="list-style-type: none"> – Administer oxygen as appropriate – Maintain the airway as needed | <ul style="list-style-type: none"> • When wet decontaminating children, attempt to prevent hypothermia. <div style="text-align: right; margin-top: 10px;">  </div> |
|--|---|

- Trauma patients who have been exposed to radiation or contaminated with radioactive sources should be triaged and treated on the basis of the severity of their conventional traumatic injuries. If possible, decontamination of the patient and wounds in particular should occur prior to arrival into a trauma bay (on scene, outside of the ED). Refer to **General Trauma Management**.
- Consider transport to a burn center in cases of severe radiation exposure.

AEMT

EMT-I/Paramedic

Dermal Chemical Burns: Adult & Pediatric

Includes: Patients exposed to a chemical that can cause a topical burn including eyes and mucous membranes.

EMT

- Ensure scene safety.
- Don appropriate personal protective equipment.
- Remove the patient's clothing, if necessary.
- Contaminated clothing should preferably be placed in impermeable bags.
- Carefully brush off solid chemicals and/or blot off liquid chemicals prior to flushing with copious amounts of water.
- Flush the patient's skin (and eyes, if involved) with copious amounts of tepid (body temperature) water or normal saline.
- Take measures to minimize hypothermia.
- Calculate the estimated total body surface area that is involved; refer to [Burn Estimation Charts](#).
- For hydrofluoric acid exposure:
 - Apply generous amounts of calcium gluconate gel to the exposed skin sites, after irrigating with water for 3 minutes.
- Refer to [Management of Acute Pain](#) as needed.

AEMT

- Initiate IV fluid resuscitation if necessary to obtain hemodynamic stability.

EMT-I/Paramedic

- For chemical burns of the eye:
 - **Proparacaine** or **Tetracaine** eye drops for pain control.
- For hydrofluoric acid exposure:
 - Apply cardiac monitor due to risk of hyperkalemia and hypocalcemia. Refer to [ECG Changes in Hyperkalemia](#) as needed.

- If findings of hyperkalemia are present, maintain continuous cardiac monitoring, administer IV fluids and:
 - **Calcium Gluconate** (Paramedic only) 2 g IV/IO over 5 minutes (or)
 - **Calcium Chloride** (Paramedic only) 1 g IV/IO over 5 minutes, ensure IV patency and do not exceed 1 mL/minute (and)
 - **Albuterol** 5 mg nebulized.

- If findings of hyperkalemia are present, maintain continuous cardiac monitoring, administer IV fluids and:
 - **Calcium Gluconate** (Paramedic only) 100 mg/kg IV/IO over 5 minutes, max dose 2 g (or)
 - **Calcium Chloride** (Paramedic only) 20 mg/kg (0.2 mL/kg) IV/IO over 5 minutes, max dose 1 g, ensure IV patency and do not exceed 1 mL/minute (and)
 - **Albuterol** 5mg nebulized.
- If clinically significant signs and symptoms of hypocalcemia:
 - **Calcium Chloride** 0.2 mL/kg IV/IO slowly (**Paramedic Only**).



Stimulant Toxicity: Adult & Pediatric

Includes: cocaine, amphetamines, methamphetamine, Ecstasy, phencyclidine (PCP), bath salts, etc.

EMT

- | | |
|--|---|
| <ul style="list-style-type: none"> • Initiate Universal Care. • Refer to Hyperthermia/Heat Exposure as needed. • Check for trauma, self-inflicted injury. • Ask about chest pain and difficulty breathing. • For chest pain refer to Chest Pain/Acute Coronary Syndrome/ST-segment Elevation Myocardial Infarction (STEMI). • Refer to Agitated or Violent Patient/Behavioral Emergency as needed. | <ul style="list-style-type: none"> • Children may experience acute coronary syndrome due to coronary artery vasospasm caused by cocaine. • Seizures are a more common serious event to stimulant poisoning. |
|--|---|



AEMT

- Initiate IV fluid resuscitation if necessary to obtain hemodynamic stability or to treat dehydration and hyperthermia.

EMT-I/Paramedic

- Initiate cardiac monitor and examine rhythm strip for arrhythmias.
- Monitor EtCO₂ for respiratory decompensation.
- Obtain 12-lead ECG.
- Refer to [Agitated or Violent Patient/Behavioral Emergency](#) as needed.

Suspected Cyanide Poisoning: Adult & Pediatric

Includes: occupational or smoke exposures (e.g., firefighting), industrial accidents, natural catastrophes, suicide and murder attempts, and chemical warfare and terrorism. Signs and symptoms of high concentration of cyanide include:

- Arrhythmias
- Cardiovascular collapse
- Cardiac arrest
- Loss of consciousness
- Seizures
- Apnea

EMT

- Ensure scene safety.
- Don appropriate personal protective equipment, e.g., special equipment for low oxygen environments (SCBA).
- Initiate **Universal Care** including pulse oximetry monitoring.
- Safely remove patient from toxic environment and provide high flow supplemental oxygen via non-rebreather mask or BVM.
- If indicated, expose patient, then cover to protect against hypothermia.
- Consider consulting with Regional Poison & Drug Information Center (800-222-1222) from the scene as needed.

AEMT

EMT-I/Paramedic

- | | |
|--|--|
| <ul style="list-style-type: none"> • Initiate cardiac and EtCO₂ monitoring and analyze rhythm strip for arrhythmias. • Obtain 12-lead ECG. • For patients with appropriate history and manifesting one or more signs or symptoms of high concentrations of cyanide: <ul style="list-style-type: none"> – Hydroxocobalamin (Cyanokit®)(Paramedic only) <ul style="list-style-type: none"> ○ Collect pre-treatment blood sample, if possible ○ 5 g IV/IO over 2 minutes ○ Additional dose <u>per local protocol</u> (or) • Sodium Nitrite <ul style="list-style-type: none"> – 300 mg IV/IO over 2 minutes (and) • Sodium Thiosulfate <ul style="list-style-type: none"> – 12.5 g IV/IO over 5-10 minutes | <ul style="list-style-type: none"> • For patients with appropriate history and signs/symptoms of cyanide poisoning (e.g. cardiovascular collapse, shock, or cardiopulmonary arrest): <ul style="list-style-type: none"> – Hydroxocobalamin (Cyanokit®)(Paramedic only) <ul style="list-style-type: none"> ○ Collect pre-treatment blood sample, if possible ○ 70 mg/kg IV/IO over 2 minutes; (maximum dose 5 g) ○ Additional dose <u>per local protocol</u> (or) • Sodium Nitrite <ul style="list-style-type: none"> – 6 mg/kg IV/IO (0.2 mL/kg) at rate of 5 mL/minute, max dose 300 mg (and) • Sodium Thiosulfate <ul style="list-style-type: none"> – 250 mg/kg (1 mL/kg) over 5-10 minutes |
|--|--|



- May repeat Sodium Nitrite/Thiosulfate combination at one-half original doses if signs of poisoning reappear.
- Refer to **Seizure** as needed.

Includes: known or suspected exposure to carbon monoxide (CO) or smoke from fire, propane or charcoal stoves/heaters, or combustion engines, and recreational enclosed smoking areas. Consider scene/environment monitoring with commercial CO monitors if available. Patient and environmental CO levels are helpful information for hospital personnel.

Patients may present with:

Mild	Moderate to Severe
<ul style="list-style-type: none"> • Nausea • Fatigue • Headache • Vertigo • Lightheadedness • Dyspnea 	<ul style="list-style-type: none"> • Altered Mental Status • Tachypnea • Tachycardia • Seizure/Convulsions • Chest pain, shortness of breath • Cardiopulmonary Arrest

EMT

- Ensure scene safety.
- Don appropriate personal protective equipment, e.g., special equipment for low oxygen environments (SCBA).
- Initiate **Universal Care** including pulse oximetry monitoring.
- Safely remove patient from toxic environment.
- Inquire about other possible exposed persons (other inhabitants, neighbors, family member coming home later).
- Monitor transcutaneous CO levels, if available.
- 100% oxygen via non-rebreather mask or bag valve mask.
- Refer to **Seizure** as needed.

AEMT

EMT-I/Paramedic

- Initiate cardiac and EtCO₂ monitoring and analyze rhythm strip for arrhythmias.
- Obtain 12-lead ECG.
- Obtain blood sample as soon as possible (for later testing at the hospital) per local protocol.

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).

EMT

- | | |
|---|---|
| <ul style="list-style-type: none"> • Initiate Universal Care. • For respiratory depression, perform immediate resuscitation first, then consider: • Naloxone 0.4-2 mg IM/IN, max dose 10 mg <ul style="list-style-type: none"> – IN: divide dose equally between nostrils to max of 1 mL per nostril. – Consider higher dose if suspecting high potency synthetic opioid. | <ul style="list-style-type: none"> • Naloxone 0.1 mg/kg IM/IN, max dose 10 mg. <ul style="list-style-type: none"> – IN: divide dose equally between nostrils to max of 1 mL per nostril. – Consider higher dose if suspecting high-potency synthetic opioid. |
|---|---|



- May assist with patient's own auto-injector.
- Identify medication taken, noting immediate release vs. sustained release formulations, time of ingestion, and quantity.
- Bring pill container(s) to hospital, if possible (or take pictures with photography equipped, agency-owned device).
- Assess for other etiologies of altered mental status including hypoxia, hypoglycemia, hypotension, and traumatic head injury.
- Monitor for recurrent respiratory depression and decreased mental status.
- Recommend transport to hospital.
- If patient refuses transfer, with or without receiving naloxone, call the Arizona Opioid Assistance and Referral (OAR) Line at 888-688-4222.

AEMT

- Naloxone should be given via IV/IO route to apneic patients while supporting airway and breathing through traditional methods.

EMT-I/Paramedic

Bites and Envenomations: Adult & Pediatric

Bites, stings, and envenomations can come from a variety of marine and terrestrial animals, arthropods, 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 relevant antivenin, if applicable, as soon as possible.

EMT

- Initiate [Universal Care](#).
- Check blood glucose level.
- Monitor pulse oximetry for respiratory decompensation.
- Pain control, including limited external interventions to reduce pain, refer to [Management of Acute Pain](#).
- Refer to [Seizure](#) as needed.

DO NOT perform the following:

- Tourniquet or constricting bands.
- Incision and/or suction.
- Application of cold packs.

- Envenomations known to have specific antivenin or antitoxin (scorpions, rattlesnakes, and black widow spider):
 - Consider transport to hospital that has access to antivenin, if feasible,
 - Call the **Poison & Drug Information Center (800-222-1222)** for treatment advice and location of antivenin.



AEMT

- | | |
|--|--|
| <ul style="list-style-type: none"> • Consider 20 mL/kg IV/IO fluid bolus, max of 2 L. | <ul style="list-style-type: none"> • Consider 20 mL/kg IV/IV fluid bolus, max of 1 L. |
|--|--|

EMT-I/Paramedic

- Initiate cardiac and EtCO₂ monitoring and analyze rhythm strip for arrhythmias.
- Obtain 12-lead ECG.
- Consider vasopressors after adequate fluid resuscitations if hypotension persists:
 - **Epinephrine** 0.05-0.3 mcg/kg/min IV/IO,
 - **Dopamine**: 2-20 mcg/kg/min (Paramedic Only).
 - **Norepinephrine** 0.05-0.5 mcg/kg/min IV/IO (**Paramedic Only**) (**Pump Only**)
- Titrate to maintain SBP > 90 mm Hg.
- Refer to [Shock](#) as needed.

Hyperthermia/Heat Exposure: Adult & Pediatric

Includes:

- 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.

EMT

- Initiate **Universal Care**.
- Move patient to a cool area and shield from the sun or any external heat source.
- Remove as much clothing as is practical and loosen any restrictive garments.
- If alert and oriented, give small sips of cool liquids.
- If altered mental status, check blood glucose level.
- Maintain airway vigilance for emesis, seizure.
- If temperature is > 104° F (40° C) or if altered mental status is present, begin active cooling by:
 - Continually misting the exposed skin with tepid water while fanning the victim (most effective);
 - Truncal ice packs may be used, but are less effective than evaporation;
 - Shivering should be treated as soon as possible.

AEMT

- Establish IV/IO access for heat stroke.
- Administer 20 mL/kg IV/IO cool fluid bolus and reduce to 10 mL/kg IV/IO boluses when vital signs are stable.

EMT-I/Paramedic

- Initiate cardiac monitoring and record ongoing vital signs and level of consciousness.
- Monitor for arrhythmia and cardiovascular collapse (refer to appropriate guidelines as needed).

- Treat shivering with single dose of:

- **Midazolam:**

- 2.5 mg IV/IN/IO (or)
- 5 mg IM (or)

- **Lorazepam:**

- 1 mg IV/IO or 2 mg IM (or)

- **Diazepam:**

- 2 mg IV/IO.

- Refer to **Seizure** as needed.

- Treat shivering with single dose of:

- **Midazolam:**

- 0.1 mg/kg IV/IO (or)
- 0.2 mg/kg IN/IM. Max 1 mg (or)

- **Lorazepam:**

- 0.1 mg/kg IV/IM/IO. Max 1 mg (or)

- **Diazepam:**

- 0.2 mg/kg IV/IO. Max 2 mg.

- Refer to **Seizure** as needed.



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

EMT

- Initiate **Universal Care**.
- Ensure scene safety.
- Remove patient from water as soon as possible.
- Initiate aggressive airway management and restoration of adequate oxygenation and ventilation.
- A-B-C approach.
- Administer Oxygen to maintain $\text{SaO}_2 \geq 94\%$. Refer to **Airway Management** as needed.
- Assist ventilation as needed.
- Refer to **Cardiac Arrest (VF/VT/Asystole/PEA)** as indicated.
- Consider possible C-spine injury; consider **Spinal Motion Restriction** as indicated.
- Consider hypothermia and treat as indicated.
- Remove wet clothing.
- Do not aggressively re-warm cold water drownings.
- Initiate pulse oximetry.

AEMT

- Establish IV/IO access.
- Fluid bolus as indicated.
- Escalate airway management as indicated, assist ventilation as needed.

EMT-I/Paramedic

- Escalate airway management as indicated, assist ventilation as needed.
- Initiate cardiac and EtCO_2 monitoring.
- Consider nasogastric or orogastric tube for gastric decompression.

Includes:

- 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.

EMT

- Once patient has been appropriately secured or restrained with assistance from law enforcement, initiate **Universal Care**.
- May remove barbed dart(s) if they are not in a high risk area (face, neck, hand, bone, groin, or spinal column) where it may injure bone, nerves, blood vessels, or an eye.
- Evaluate patient for evidence of excited delirium. Refer to **Agitated or Violent Patient/Behavioral Emergency** as indicated.
- Refer to **General Trauma Management** as indicated.

AEMT**EMT-I/Paramedic**

- Initiate cardiac monitoring.
- Consider 12-lead ECG.

Abnormal Vital Signs

Age	Heart Rate	Resp Rate	Systolic BP	Temp (°C)
0 d – 1 m	> 205	> 60	< 60	<36 or >38
≥ 1 m - 3 m	> 205	> 60	< 70	<36 or >38
≥ 3 m - 1 r	> 190	> 60	< 70	<36 or >38.5
≥ 1 y - 2 y	> 190	> 40	< 70 + (age in yr × 2)	<36 or >38.5
≥ 2 y - 4 y	> 140	> 40	< 70 + (age in yr × 2)	<36 or >38.5
≥ 4 y - 6 y	> 140	> 34	< 70 + (age in yr × 2)	<36 or >38.5
≥ 6 y - 10 y	> 140	> 30	< 70 + (age in yr × 2)	<36 or >38.5
≥ 10 y - 13 y	> 100	> 30	< 90	<36 or >38.5
> 13 y	> 100	>16	< 90	<36 or >38.5

General Vital Signs and Guidelines

Age	Heart Rate (beats/min)	Blood Pressure (mmHg)	Respiratory Rate (breaths/min)
Premature	110-170	SBP 55-75 DBP 35-45	40-70
0-3 months	110-160	SBP 65-85 DBP 45-55	35-55
3-6 months	110-160	SBP 70-90 DBP 50-65	30-45
6-12 months	90-160	SBP 80-100 DBP 55-65	22-38
1-3 years	80-150	SBP 90-105 DBP 55-70	22-30
3-6 years	70-120	SBP 95-110 DBP 60-75	20-24
6-12 years	60-110	SBP 100-120 DBP 60-75	16-22
> 12 years	60-100	SBP 110-135 DBP 65-85	12-20

AVPU (Medical and Trauma)

- A: The patients is alert
- V: The patient responds to verbal stimulus
- P: The patient responds to painful stimulus
- U: The patient is completely unresponsive

Motor/Sensory Exam for Suspected Spinal Injury

- Wrist/hand/finger extension bilaterally
- Foot plantarflexion/dorsiflexion bilaterally
- Gross sensation in all extremities
- Check for paresthesias

Traditional Glasgow Coma Scale (Trauma)

	Points	Adult	Pediatric
Eyes	1	No eye opening	
	2	Eye opening to pain	
	3	Eye opening to verbal	
	4	Eyes open spontaneously	
Verbal	1	No verbal response	No vocalization
	2	Incomprehensible sounds	Inconsolable, agitated
	3	Inappropriate words	Inconsistently consolable, moaning
	4	Confused	Cries but consolable, inappropriate interactions
	5	Oriented	Smiles, oriented to sounds, follows objects, interacts
Motor	1	No motor response	
	2	Extension to pain	
	3	Flexion to pain	
	4	Withdraws from pain	
	5	Localizes pain	
	6	Obeys commands	

2014 Updated Glasgow Coma Score (Trauma)

The updates to the GCS 2014 are intended to increase reliability. These provide a basis for standardizing practice and ensure the scale is useful, in a practical sense, in the future.

	Points	≥ 6 years old	< 6 years old
Eyes	4	Eye opening Spontaneously	
	3	Eye opening to Sounds	
	2	Eye opening to Pressure	
	1	No Response	
	NT	Not Testable	
Verbal	5	Oriented	Smiles, oriented to sounds, follows objects, interacts
	4	Confused	Cries but consolable, inappropriate interactions
	3	Words	Inconsistently consolable, moaning
	2	Sounds	Inconsolable, moaning
	1	No Response	No vocalization
	NT	Not Testable	Not Testable
Motor	6	Obeys Commands	
	5	Localizes to Pressure	
	4	Normal Flexion to Pressure	
	3	Abnormal Flexion to Pressure	
	2	Extension to Pressure	
	1	No Response	
	NT	Not Testable	

There are several distinct differences between the Traditional GCS and 2014 versions:

- Scoring for each component of the assessment (Eyes: Verbal: Motor) are recommended rather than reporting an aggregate score.
- A Not Testable (NT) descriptor is now recommended rather than scoring the component as a 1 for None when the assessment is, in fact, not testable for a particular reason.
- Terminology has been changed to reduce subjective interpretations, ie, inappropriate words to Words and Incomprehensible /garbled sounds to Sounds.
- Pain is no longer used to elicit responses. Pressure is applied instead.
- Pressure is applied in the same method for each assessment beginning with the periphery and moving to the central areas of the body above the clavicles, as necessary.
- The sternum rub is strongly discouraged, as it may cause tissue damage with repeated maneuvers.

Prehospital Stroke Scales

FAST/Cincinnati Stoke Scale

FACE	ARMS	SPEECH	TIME
Ask patient to smile	Ask patient to raise both arms	Ask patient to speak a simple phrase	Time is BRAIN
Does the face look uneven?	Does one arm drift down?	Does the speech sound strange?	Time of symptom onset?
Yes= 1 point	Yes= 1 point	Yes= 1 point	

VAN: Acute Stroke Screening Tool

Time of onset: < 4 hr, > 4 hr, or unknown

Is ARM weakness present?

- Yes **Continue the VAN exam**
- No **Patient is VAN negative. Stop VAN Exam.**

	Yes	No
Visual Disturbance?	<input type="checkbox"/>	<input type="checkbox"/>
Aphasia?	<input type="checkbox"/>	<input type="checkbox"/>
Neglect?	<input type="checkbox"/>	<input type="checkbox"/>

If patient has **any degree of weakness PLUS any one of the below:**

Visual Disturbance (Assess field cut by testing both sides, 2 fingers right, 1 left)

Aphasia (Inability to speak or understand. Repeat and name 2 objects, close eyes, make fist)

Neglect (Forced gaze to one side or ignoring one side, touching both sides)

This is likely a large artery clot (cortical symptoms) = VAN Positive

United States, 2011

Measure vital signs and level of consciousness				
Step 1	Glasgow Coma Scale Systolic Blood Pressure (mmHg) Respiratory rate	≤ 13 <90 mmHg <10 or >29 breaths per minute (<20 in infant aged <1 year), or need for ventilatory support		Transport to a trauma center. Steps 1 and 2 attempt to identify the most seriously injured patients. These patients should be transported preferentially to the highest level of care within the defined trauma system.
No				
Assess anatomy of injury				
Step 2	<ul style="list-style-type: none"> All penetrating injuries to the head, neck, torso, and extremities proximal to elbow or knee Chest wall instability or deformity (e.g. fail chest) Two or more proximal long-bone fractures Crushed, degloved, mangled or pulseless extremity Amputation proximal to wrist or ankle Pelvic fractures Open or depressed skull fracture Paralysis 		Yes	
No				
Assess mechanism of injury and evidence of high-energy impact				
Step 3	<ul style="list-style-type: none"> Falls <ul style="list-style-type: none"> – Adults: >20 feet (one story is equal to 10 feet) – Children: >10 feet or two or three times the height of the child High-risk auto crash <ul style="list-style-type: none"> – Intrusion, **including roof: > 12 inches occupant site: > 18 inches any site – Ejection (partial or complete) from automobile – Death in the same passenger compartment – Vehicle telemetry data consistent with a high risk of injury Auto vs. Pedestrian/bicyclist thrown, run over, or with significant (> 20 mph) impact Motorcycle crash >20 mph 		Yes	Transport to a trauma center, which, depending on the defined trauma system, need not be the highest level trauma center.
No				
Assess special patient or system considerations				
Step 4	<ul style="list-style-type: none"> Older adults <ul style="list-style-type: none"> – Risk of injury/death increases after age 55 years – SBP <110 might represent shock after age 65 years – Low impact mechanisms (e.g. ground level falls) might result in severe injury Children <ul style="list-style-type: none"> – Should be triages preferentially to pediatric capable trauma centers Anticoagulants and bleeding disorder <ul style="list-style-type: none"> – Patients with head injury are at high risk for rapid deterioration Burns <ul style="list-style-type: none"> – Without other trauma mechanism: triage to burn facility – With trauma mechanism: triage to trauma center Pregnancy > 20 weeks EMS Provider judgement 		Yes	Transport to a trauma center or hospital capable of timely and thorough evaluation and initial management of potentially serious injuries. Consider consultation with medical control.
No				
Transport according to protocol When in doubt, transport to a trauma center				

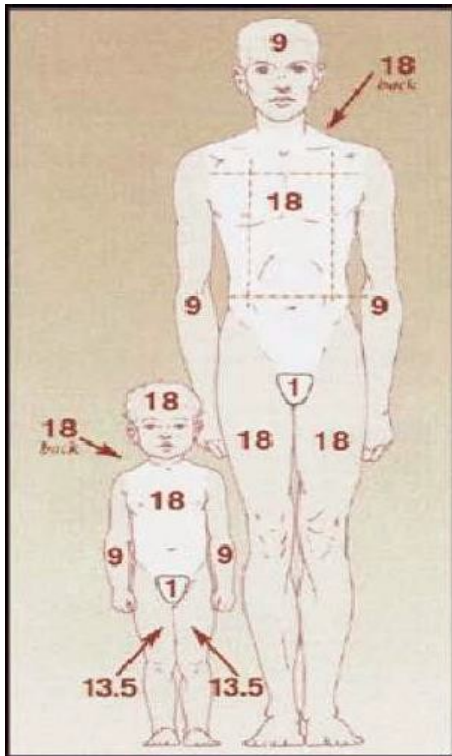
Burn Triage

Does The Patient Have Any Of The Following?

1. Partial thickness burns \geq 10% Total Body Surface Area
2. Any full thickness burns of any age group
3. Burns that involve the face, hands, feet, genitalia, perineum, or major joints
4. Circumferential Burns
5. Electrical burns including lightning injury
6. Chemical burns
7. Radiation Burns
8. Inhalation injury or airway compromise
9. Burn injury with pre-existing medical disorders: CHF, ESRD, COPD, or cardiac that could complicate management, prolong recovery, and affect mortality
10. Burns with concomitant trauma (such as fractures)
11. Pediatric burns, especially requiring ICU care
12. Burn injury in patients who will require special social, emotional or long term rehabilitation

No	Yes
Courtesy notification to receiving facility of patient's choice.	Prepare patient for transport to burn or trauma center based on <u>regional guidelines</u> .

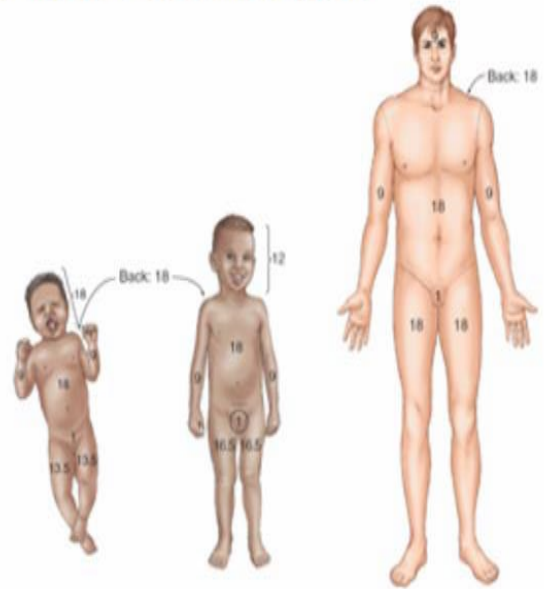
Burn Size Chart 1



Burn Size Chart 2

Burn Size Estimation

- Rule of 9's for adults.
- The "rule of palm" is another way to estimate the size of a burn. The palm of the person who is burned (not fingers or wrist area) is about 1% of the body. Use the person's palm to measure the body surface area burned.



Patient's hand = 1%
Total Body Surface Area

Source: University of Utah Burn Center

Percentage of Total Body Surface Area by Age and Anatomic Structure			
	Infant < 10 kg	Child	Adult
Head and neck	20%		
Anterior head		9%	4.5%
Posterior head		9%	4.5%
Anterior torso	16%	18%	18%
Posterior torso	16%	18%	18%
Leg, each	16%		
Anterior leg, each		6.75%	9%
Posterior leg, each		6.75%	9%
Arm, each	8%		
Anterior arm, each		4.5%	4.5%
Posterior arm, each		4.5%	4.5%
Genitalia/perineum	1%	1%	1%

Activated Charcoal

Indications	Poisoning/Overdose, should only be given within the first hour of ingestion
Contraindications	Do not give before or together with Ipecac, protect airway
Side Effects	None for the field
Dosage, route	Adult: 30-60 Gm (1-2 Gm/kg); if not in pre-mixed slurry, mix one part charcoal with four parts water. Pediatric: 0.5 -1.0 Gm/kg; if not in pre-mixed slurry, mix one part charcoal with four parts water.

Adenosine

Indications	PSVT
Contraindications	Do not give if second or third degree heart block or sick sinus syndrome, or known WPW
Side Effects	Transient dysrhythmias, facial flushing, dyspnea, chest pressure, hypotension, headache, nausea, bronchospasm
Dosage, route	Adult: 6mg IV rapidly over 1-3 sec with a 20 mL NS flush. If no effect after 1-2 minutes give 12mg IV rapidly with a 20 mL NS flush. May repeat 12mg dose in 1-2 min. Pediatric: 0.1mg/kg IV rapidly with a 2-3 mL NS flush. If no effect after 2 min give 0.2mg/kg rapidly with a 2-3 mL NS flush. May repeat 0.2mg/kg dose in 1-2 minutes. Max dose should not exceed 12mg.

Albuterol

Indications	Treatment of brochospasm
Contraindications	Do not use with MAO inhibitors, cyclics, or when tachycardia or hypertension is present
Side Effects	Muscle tremors, tachycardia, heartburn, nausea/vomiting
Dosage, route	Adult: 2.5mg/3 mL NS via SVN or inline. (Use 0.083% solution) May mix with atrovent up to 3 times, if needed Pediatric: 2.5mg/3 mL NS via SVN or inline. (Use 0.083% solution) May mix with atrovent up to 3 times, if needed

Amiodarone

Indications	Treatment of: shock-refractory VF/pulseless VT, polymorphic VT, and wide complex tachycardia of uncertain origin. Control hemodynamically stable ventricular tachycardia when cardioversion unsuccessful. Adjunct to cardioversion of SVT and PSVT. Rate control in atrial fibrillation or flutter.
Contraindications	Bradycardia. Second or third degree heart block. Cardiogenic shock. Hypotension. Pulmonary congestion
Side Effects	<u>Cardiovascular:</u> bradycardia, hypotension, asystole/cardiac arrest, atrio-ventricular block, Torsades de Pointes, congestive heart failure. <u>GI & Hepatic:</u> nausea, vomiting, abnormal liver function tests. <u>Skin:</u> slate-blue pigmentation. <u>Other:</u> fever, headache, dizziness, flushing, abnormal salivation, photophobia.
Dosage, route	Adult V-Fib/Pulseless V-Tach: 300mg IV Push. May repeat once in 3-5 minutes with 150mg IV push. Adult wide complex tachycardias, A-flutter, A-fib, SVT with cardioversion: 150mg IV over 10 minutes. May repeat every 10 minutes. Pediatric V-fib/Pulseless V-tach: 5mg/kg IV push (max 300 mg dose). May repeat every 5 minutes two times to a total max dose of 15mg/kg/day. Pediatric probable V-tach with a pulse: 5mg/kg IV push over 20 minutes. May repeat every 5 minutes two times to a total max dose of 15mg/kg/day.

Appendix: Drug Profiles – DISREGARD PER PMD 8/23/19

Aspirin (Chewable)	
Indication	Chest pain of cardiac origin
Contraindications	Known allergy, bleeding disorders such hemophilia
Side Effects	None for the field
Dosage, route	Adult: 2-4 chewable 81 mg tablets PO chew and swallow Pediatric: None
Atropine Sulfate	
Indication	Sinus bradycardia, AV Blocks
Contraindications	A-fib or flutter with rapid ventricular response, myocardial infarction, glaucoma
Side Effects	Blurred vision, dry mouth, flushing, urinary retention, headache, dilated pupils
Dosage, route	Adult IV: 0.5 mg rapid IVP q 3-5 minutes. MAX Dose 3mg Pediatric: IV: .02 mg/kg. Min dose 0.1 mg. Max. single dose 0.5 mg. May repeat x1 in 5 minutes. Maximum single doses: 0.5 mg
Atrovent	
Indication	Treatment of brochospasm
Contraindications	It should not be used in patients with hypersensitivity to Atrovent or Atropine
Side Effects	Coughing, sputum increase, dizziness, insomnia, tremor, nervousness, nausea
Dosage, route	Adult and Pediatric dose: 500 mcg in 2.5 NS (single bullet) SVN. May be mixed with Albuterol to a max of 3 times
Calcium Chloride	
Indications	Acute hypocalcaemia, calcium channel blocker and magnesium overdoses, acute hyperkalemia
Contraindications	Incompatible with all drugs, flush the line before and after administration. Use cautiously on digitalis patients
Side Effects	Brady-asystolic arrest, sever tissue necrosis if extravastates, serious arrhythmias in digitalis patients
Dosage, route	Adult: IV bolus 5-10 mL of a 10% solution. May repeat in 10 minutes. Pre-treatment for IV Verapamil: 3 mL of 10%, may repeat once. Pediatric: IV bolus 0.2-0.25 mL/kg of a 10% solution infused slowly. Should not be repeated.
Dexamethasone (Decadron) -- substitute for Solu-Medrol	
Indications	Reactive Airway Disease, Anaphylaxis
Contraindications	Preterm infants, Systemic fungal infections
Side Effects	None from a single dose
Dosage, route	Adult: 8-24 mg slow IV bolus or IM. (20mg approx. equal to 125mg Solu-Medrol) Pediatric: 0.25-0.5 mg/kg
Dextrose 50% (D-50)	
Indications	Adult hypoglycemia, unconscious diabetic, coma, or seizure of unknown etiology.
Contraindications	Pediatrics: use D25 or D10; head injury pts; incompatible with NaHCO ₃ , diazepam will precipitate if not flushed
Side Effects	Tissue necrosis if infiltrated
Dosage, route	Adult: 25-50cc of 50% solution IV push, may repeat one time. Pediatric: See D-25 and D-10.
Dextrose 25% (D-25) and Dextrose 10% (D-10) See Next Page	

Appendix: Drug Profiles – DISREGARD PER PMD 8/23/19

Dextrose 25% (D-25) and Dextrose 10% (D-10)	
Indications	Pediatric and infant hypoglycemia, unconscious diabetic, coma or seizure of unknown etiology
Contraindications	Incompatible with NaHCO_3 , diazepam will precipitate if given concurrently without flushing
Side Effects	Tissue necrosis if infiltrated
Dosage, route	<p>Pediatric: 0.5-1 Gm/kg 25% solution slow IV push or 2-4 mL/kg of D-25 To prepare D-25, mix in 50 mL syringe 25 mL D-50 with 25 mL NS. Produces 50 mL D-25</p> <p>Newborn: 0.5-1 Gm/kg 10% solution slow IV push (usually over a 20 minute period) or 5-10 mL/kg of D-10 To prepare D-10, obtain a 250 mL bag of NS for IV use, waste 50 mL, and add 50 mL of Dextrose 50%</p>
Diazepam (Valium)	
Indications	Seizure, sedation prior to cardioversion, sedation post RSI
Contraindications	Pregnancy, when patient has ingested other sedatives, respiratory depression, hypotension
Side Effects	Hypotension, confusion/stupor, respiratory depression or arrest if given too rapidly, vertigo, ataxia
Dosage, route	<p>Adult IV: 2-10 mg at 2 mg/min. Do not mix with any other drug, have respiratory support equipment available</p> <p>Pediatric IV: 0.2 -0.3 mg/kg every 15--30 min (Max of 1 mg/kg); administer slowly over at least 3 minutes</p>
Diltiazem (Cardizem)	
Indications	Rapid ventricular rates associated with A-fib and A-flutter, and for PSVT refractory to adenosine
Contraindications	Hypotension, Acute MI, Cardiogenic Shock, V-Tach of unknown origin, 2 nd or 3 rd degree AV block, WPW syndrome, Sick Sinus Syndrome, or Beta blocker use.
Side Effects	Hypotension, bradycardia, heart block, chest pain, asystole, nausea, vomiting, headache, fatigue, drowsiness
Dosage, route	<p>Adult: 0.25mg/kg administered IV over 2 minutes. If no response in 15 minutes, may repeat 0.35mg/kg IVP over 2 minutes. Max of 20mg per dose.</p> <p>Pediatric: None</p>
Diphenhydramine (Benadryl)	
Indications	Allergic reactions, anaphylaxis, acute dystonic reaction
Contraindications	Glaucoma, presence of alcohol and/or other depressants
Side Effects	Decreased LOC, hypotension, blurred vision, dry mouth, wheezing, OD may cause convulsions, coma
Dosage, route	<p>Adult: 50 mg slow IV push or deep IM</p> <p>Pediatric: 1 mg/kg slow IV push or deep IM. Max of 50mg.</p>

Appendix: Drug Profiles – DISREGARD PER PMD 8/23/19

Dopamine (Intropin)	
Indication	Cardiogenic shock, hypotension, or unresolved bradycardia after pacing
Contraindications	Tachyarrhythmias, V-Fib, do not give with NaHCO ₃ , hypotension due to hypovolemia until fluid replaced
Side Effects	Nausea/vomiting, htn, infiltration will cause local necrosis, tachycardia, angina, palpitations
Dosage, route	Adult: 1600 mcg/mL pre-mixed. Begin at 2-5 mcg/kg/min. Max of 10mcg/kg/min. See Table. Pediatric: 2-10 mcg/kg/min. Begin at 2mcg/kg/min.
Epinephrine 1 mg/mL	
Indications	Anaphylaxis, cardiac arrest, asthma, croup, unresolved bradycardia after pacing and dopamine
Contraindications	Use with caution in pts >35 y/o, w/angina, hypertension, pregnancy, tachycardia. None in cardiac arrest
Side Effects	Palpitations, tachycardia, increased blood pressure
Dosage, route	Anaphylaxis and asthma – Adult: 0.3mg -0.5mg. Preferred route is IM. Pediatric: 0.01 mg/kg up to a max of 0.5mg. Preferred route is IM. Cardiac arrest: Adult: Cardiac Arrest IV/IO dose . See 0.1 mg/1 mL concentration below Adult ETT: 2-2.5 mg in 10cc of saline Pediatric: IV cardiac IV doses. See 0.1 mg/1 mL concentration below Ped ETT: 0.1 mg/kg q 3--5 minutes diluted in 3-5 mL saline Croup/Stridor Peds SVN for croup: =/< 4 y/o deliver 2.5 mg diluted in 3cc of NS =/> 5 y/o deliver 5.0 mg diluted in 3cc of NS Bradycardia IV Infusion Adult: IV infusion: 2-10 mcg/min
Epinephrine 0.1 mg/mL	
Indications	Cardiac arrest
Contraindications	None in cardiac arrest
Side Effects	Palpitations, tachycardia, increased blood pressure
Dosage, route	Adult: 1.0 mg IV push every 3--5 minutes with a 20cc flush. Pediatric: 0.01 mg/kg of 0.1 mg/1 mL. IV/IO push Pediatric ETT: (See 1 mg/1 mL concentration above)
Etomidate (Amidate)	
Indication	Sedation for rapid sequence intubation
Contraindications	Patient must be >14 years of age, hypersensitivity to the medication
Side Effects	CNS depression, anesthesia, transient muscle movements, apnea
Dosage, route	Adult dose: 0.3 mg/kg IV over 30--60 seconds. Pediatric: None

Appendix: Drug Profiles – DISREGARD PER PMD 8/23/19

Fentanyl	
Indications	Pain analgesic
Contraindications	Hypersensitivity, fetal acidosis/non-reassuring fetal tracing
Side Effects	Bradycardia, hypotension, cardiac arrest, respiratory depression, chest tightness, and laryngospasm
Dosage, route	Adult: IV: 1 mcg/kg mcg slow , may repeat to max of 200 mcg total. IM: 2mcg/kg to a max of 200 mcg. Intranasal: 2mcg/kg to a max of 200 mcg Pediatric: IV: 1-2 mcg/kg slow , may repeat to max of 200 mcg total. IM: 2mcg/kg to a max 200 mcg. Intranasal: 2mcg/kg to a max of 200 mcg
Glucagon	
Indications	Blood sugar less than 80 mg/dL and unable to start an IV
Contraindications	Contraindicated in patients with known hypersensitivity to glucagon, beef or pork protein
Side Effects	Occasional nausea/vomiting or generalized allergic reaction
Dosage, route	Adult: 1 mg IM. Pediatric: >20kg: 1mg IM <20kg: 0.5 mg IM.
Ketamine	
Indications	RSI, Excited Delirium
Contraindications	Angina, CHF, Symptomatic Hyperthyroidism, Pregnancy-Relative (Category B)
Side Effects	An emergence reaction (in approximately 12% of patients) may occur near end of medication half-life, when patient is awakening, that may require Versed 1-5 mg IV/IM/IO to calm patient.
Dosage, route	RSI: Adult: 1.5 mg/kg max 150mg Excited Delirium/Sedation: Adult: 1 mg/kg IV (max single dose 150 mg) or 2 mg/kg IM (max 250 mg)
Lidocaine (if Amiodarone is unavailable)	
Indications	Cardiac arrest, suppression of ventricular arrhythmias
Contraindications	Patients with conduction disturbances (2 nd and 3 rd degree blocks). Don't treat ectopic beats if rate <60
Side Effects	SA nodal depression or conduction problems and hypotension in large doses, or if given too rapidly. Drowsiness, disorientation, paresthesia, decreased hearing acuity, muscle twitching, seizures, agitation
Dosage, route	Adult: Pulseless VF/VT: 1.0-1.5 mg/kg IV push. Repeat boluses 0.5-0.75 mg/kg every 5-10 min. Max: 3mg/kg. Hang a drip at 1-4 mg/min after conversion. Pediatric: 1 mg/kg may repeat x1 for VF/Pulseless V-tach, and unstable V-tach

Appendix: Drug Profiles – DISREGARD PER PMD 8/23/19

Lorazepam	
Indications	Status epilepticus, seizures, sedation
Contraindications	Known sensitivity to benzodiazepines, hypersensitivity to polyethylene glycol, propylene glycol, benzyl alcohol, pregnancy, acute narrow angle glaucoma
Side Effects	Sedation, transient amnesia, memory impairment, confusion, hypotension, dizziness, headache, respiratory depression
Dosage, route	Adult: Status epilepticus 2-4 mg Slow IV. May give IV/IO if no IV access. May repeat in 10-15 minutes. Pediatric: Status epilepticus 0.05-0.1 mg/kg Slow IV. May give IO if no IV access. Max dose 4mg. May repeat in 10-15 minutes.
Magnesium Sulfate	
Indications	Torsades de Pointes, VF/Pulseless VT refractory to Lidocaine, Pre- eclampsia, Eclampsia, Pregnancy Inducted Hypertension, Pre Term Labor, severe asthma
Contraindications	Renal disease, heart block, recent MI
Side Effects	Respiratory and CNS depression, hypotension
Dosage, route	<u>Torsades</u> Adult: Torsades with a pulse: 2 Gm in 100 mL NS over 10 min. Torsades without a pulse 1-2 Gm in 10 mL of NS Fast IV. Pediatric Torsades without a pulse 25-50 mg/kg. Max of 2 Grams rapid IV push. <u>Eclamptic, Pre-eclamptic, and PIH</u> Adult: 4-6 G IV bolus over 10-15 min (Add 4 Gms to 100 mL of NS, D5W, LR. Resulting concentration is 30-60 mg/mL). <u>Pre Term labor</u> Adult: 4-6 G IV bolus over 10-15 min (Add 4 Gms to 100 mL of NS, D5W, LR. Resulting concentration is 30-60 mg/mL). <u>Asthma</u> Adult: 2 Grams in 50 mL of NS given over 5 minutes. Pediatric: 25-50 mg/kg in 50 mL of NS over 20 minutes.
Methylprednisolone Sodium Succinate (Solu-Medrol)	
Indications	Reactive airway disease (acute exacerbation of emphysema, chronic bronchitis, asthma, anaphylaxis)
Contraindications	Do not use in preterm infants
Side Effects	None from a single dose
Dosage, route	Adult: 125 mg slow IV bolus or IM Pediatric: 2 mg/kg slow IV bolus or IM
Midazolam (Versed)	
Indications	Sedation, post rapid sequence intubation (RSI)
Contraindications	Hypotensive, hypoxia
Side Effects	CNS and respiratory depression
Dosage, route	Adult: 14-60 years: 1 -5 mg IV push over 30 seconds. 2-5 mg IM. 0.2mg/kg for status seizures if no IV access. Age >60: Reduce by half. Pediatric: 0.05 to 0.1 mg/kg slow IV push. 0.2 mg/kg IM for status seizures if no IV Intranasal for Adult and Peds: 0.2-0.3 mg/kg to a max of 10mg. May repeat once if needed. Must use 5 mg/mL concentration

Morphine Sulfate	
Indications	Analgesia, sedation post RSI
Contraindications	Head injury, exacerbated COPD, depressed respiratory drive, hypotension, acute abdomen pain, altered LOC
Side Effects	Respiratory depression, decreased BP, decreased LOC, decreased HR, nausea/vomiting
Dosage, route	Adult: IV 1-20mg in 2-4mg increments. 5-10 mg IM Pediatric: 0.1 mg/kg IV or IM. May repeat to a max dose of 0.2 mg/kg.
Naloxone (Narcan)	
Indication	Opiate overdose, coma of unknown etiology
Contraindications	Withdrawal symptoms in the addicted patient
Side Effects	Precipitous vomiting, ventricular dysrhythmias, acute withdrawal
Dosage, route	Adult: 0.4-2 mg IV, IM, inject SL, SC, ETT. May repeat in 2 minutes. Intranasal: 2 mg in each nostril using a mucosal atomizer device, may repeat every 2 minutes. Pediatric: 0.1 mg/kg IV, IM, IN, or ETT Titrate to respiratory improvement – not necessary to wake patient up in the field
Phenylephrine Nasal Spray 0.5%	
Indication	Facilitation of nasotracheal intubation
Contraindications	No known contraindications
Side Effects	Hypertension, palpitations, tremors
Dosage, route	Adult: 2-4 sprays in each nostril before attempting ETT insertion. Pediatric: none
Nitroglycerin	
Indications	Angina, myocardial infarction, CHF with pulmonary edema
Contraindications	Hypovolemia, increased intra cranial pressure
Side Effects	Hypotension, temporary pulsating headache, flushing
Dosage, route	Adult: 0.4 mg (either by tablet or spray) SL. May repeat q 5 minutes for a total of 3 doses. Pediatric: none

Appendix: Drug Profiles – DISREGARD PER PMD 8/23/19

Ondansetron	
Indications	Nausea, vomiting
Contraindications	Hypersensitivity. Use with caution in patients with hepatic impairment
Side Effects	<u>CNS:</u> Headache, malaise, fatigue, dizziness, fever, sedation, extrapyramidal syndrome <u>Cardiovascular:</u> Chest pain, arrhythmias. <u>Respiratory:</u> Hypoxia. <u>GI & Hepatic:</u> Diarrhea, constipation, abdominal pain, xerostomia, decreased appetite. <u>Skin:</u> Rash
Dosage, route	Adult: 4– 8 mg IV slow push over 2 – 5 minutes. Or 8 mg PO ODT or tablet Pediatric: <40 kg 0.1 mg/kg, slow over 2-5 minutes >40kg 4 mg slow over 2-5 minutes 4-12 years old 4 mg PO or ODT May be given IM if no IV access
Sodium Bicarbonate	
Indications	Metabolic acidosis, cardiac arrest with a down time >10 minutes, tricyclic antidepressant overdose
Contraindications	Low serum potassium, patient unable to tolerate salt load (i.e., CHF)
Side Effects	Alkalosis, precipitates when mixed with calcium chloride
Dosage, route	Adult: 1 mEq/kg IV initially then 0.5 mEq/kg every 10 minutes Pediatric: 1mEq/kg IV or IO slowly. Neonate dose 1 mEq/kg IV or IO of 4.2% solution
Succinylcholine (Anectine)	
Indication	Endotracheal intubation requiring paralysis
Contraindications	Muscle disorders and personal or family history of malignant hyperthermia
Side Effects	Vagal stimulation leading to bradycardia or asystole. Will cause muscle paralysis
Dosage, route	Adult: 1.5 mg/kg IVP. Pediatric: None
Thiamine	
Indications	Coma of unknown origin, use prior to D50 administration
Contraindications	Hypotension
Side Effects	Restlessness, nausea, diarrhea, anaphylactic reaction, pulmonary edema
Dosage, route	Adult: 100 mg slow IV or IM Pediatric: none

Appendix: Drug Profiles – DISREGARD PER PMD 8/23/19

Toxicology Paramedic Drug Profiles	
Atropine Sulfate	
Description	Atropine affects the muscarinic receptors of the autonomic nervous system by inhibiting their effects. At higher doses it also has a similar effect on the nicotinic receptors.
Indications	Treatment of organophosphate and carbamate poisoning.
Contraindications	There are no contraindications to administration of atropine. Note: Tachycardia is not a contraindication
Side Effects	Dry mouth, decreased bronchial secretions, mydriasis, flushing, tachycardia, urinary retention, ileus, confusion, ataxia, hallucinations, psychosis, seizures.
Dosage, route	Adult: 2 – 5 mg IV push q 5 – 10 minutes until atropinization. Pediatric: 0.05 mg / kg IV push q 5 – 10 minutes until atropinization. Continue dosing until: no wheezing, no bradycardia, no diarrhea, no brochorrhea, no diaphoresis
Amount carried	16 - 8mg / 20 mL vials (0.4 mg /mL)
Hydroxocobalamin (Cyanokit®)	
Description	Used in the treatment of acute cyanide poisoning. Detoxifies cyanide by forming cyanocobalamin which is excreted in the urine.
Indications	Treatment of suspected or known cyanide poisoning
Contraindications	None
Side Effects	Rash, chest tightness, edema, urticaria, pruritus, dyspnea, and rash. Most common adverse reactions (>5%) are transient and include chromaturia (red-colored urine), erythema (skin redness), rash, increased blood pressure, nausea, headache, decreased lymphocyte percent, and injection site reactions.
Dosage, route	2.5 grams in a vial. Add 100cc NS. Mix by rocking or rotating vial. Do not shake. Infuse. Repeat with second vial
Amount carried	2.5 grams in a vial. Add 100cc NS. Mix by rocking or rotating vial. Do not shake. Infuse. Repeat with second vial
Methylene Blue	
Description	Dark blue crystalline powder in solution with water or alcohol. Used in the treatment of methemoglobin toxicity. Acts as reducing agent to convert iron in methemoglobin from Fe +++ to Fe++, regenerating normal hemoglobin.
Indications	Treatment of severe symptomatic methemoglobinemia.
Contraindications	Known Glucose-6-phosphate dehydrogenase deficiency.
Side Effects	Nausea, vomiting, abdominal and chest pain, headache, dizziness, confusion, dyspnea, hypertension.
Dosage, route	7 mL (0.1 mL/kg of 1% soln) IV over 2-3 minutes with NaCl running at 200-300 mL/hr. May repeat in 10 minutes if not improved. Mix in 100cc bag N.S 2.0 mg / kg IV over 5 – 10 minutes, May repeat at 1.0 mg / kg if no change within 10 – 20 minutes.
Amount carried	8 - 100mg /10 mL vials.

Proparacaine (Ophthetic)

Description	Proparacaine is a topical ocular local anesthetic of the ester class producing anesthesia lasting approximately 15 minutes.
Indications	Topical anesthesia of the eye when preparing to insert Morgan Lens for Irrigation.
Contraindications	Contraindicated in known hypersensitivity to the drug or benzalkonium chloride (preservative).
Side Effects	Temporary burning, redness, stinging of conjunctiva may occur.
Dosage, route	Adult and Pediatric: 1-2 gtt into affected eye. May repeat q 5–10 minutes
Amount carried	4 Eye drop bottles (0.5%) Keep cool.

Protopam Chloride (Pralidoxime Chloride, 2-Pam)

Description	Protopam is an odorless white powder used to reactivate Cholinesterase enzymes, which have been inactivated by phosphorylation by organophosphates.
Indications	Treatment of organophosphate poisoning.
Contraindications	No absolute contraindications. Known hypersensitivity to drug is a relative contraindication to administration.
Side Effects	Local pain, blurred vision, dizziness, headache, nausea, tachycardia, increased BP, hyperventilation.
Dosage, route	2gms diluted in 20cc sterile water per gram. Adults: 1 – 2 gms IV over 10 – 15 minutes. Pediatric: 30 –50 mg /kg over 10 – 15 minutes.
Amount carried	12 - 1 gram powered vials.

Sodium Nitrite

Description	White or slightly yellow powder soluble in water. When used in cyanide poisoning acts with hemoglobin to form methemoglobin. The methemoglobin then forms complexes with the cyanide inactivating it. In hydrogen sulfide poisoning reacts with hemoglobin to form sulfmethemoglobin.
Indications	Indicated in the treatment of severe symptomatic cyanide and hydrogen sulfide poisoning.
Contraindications	None
Side Effects	Nausea, vomiting, abdominal pain, dizziness, headache, flushing, cyanosis, tachypnea, vasodilatation, syncope, hypotension, tachycardia.
Dosage, route	Administer 300mg of Na Nitrite (10 mL of 3% solution) IV over 5 -10 minutes. If symptoms not improved in 15 to 30 minutes may repeat dose. Adults: 10 mL (300 mg; 1 amp) IV over 5 – 10 minutes. Can be give faster during cardiac arrest Pediatric: 0.33 mL / kg of 3% solution IV over similar time period.
Amount carried	8 – 300mg / 10 mL Ampules

Sodium Thiosulfate

Description	Used in the treatment of cyanide poisoning. Reacts with cyanide-methemoglobin complex to form stable thiocyanate, which is then excreted by kidneys.
Indications	Treatment of severe symptomatic cyanide poisoning.
Contraindications	Don't give for Sulfide poisoning
Side Effects	Relatively nontoxic.
Dosage, route	12.5gm (50 mL of 25% solution) IV over 5 minutes. Adults: 50 mL (12.5 gms) IV over 5 minutes. Give fast during cardiac arrest. Pediatric: 1.65 mL / kg of 25% solution IV over similar time period.
Amount carried	8 - 12.5 gms in 50 mL (250 mg / mL)






Appendix: Drip Calculations

Lidocaine Infusion Chart Mix 2 g in 500 mL of NS (4/mg/mL)		Epinephrine Infusion Chart Mix 2 mg of 1 mg/mL (2000mcg) in 250 mL of NS (8/mcg/mL)	
Dose ordered in mg/min	Amount to infuse in mcgtts/min or mL/hr	Dose ordered in mcg/min	Amount to infuse in mcgtts/min or mL/hr
1	15	2	15
2	30	4	30
3	45	6	45
4	60	8	60
5	75	10	75

Dopamine Infusion Chart Mix 400 mg in 250 mL of NS (1600 mcg/mL)													
Dose in mcg/kg/min	Body Weight (lbs on top, kg on bottom)												
	99 45	110 50	121 55	132 60	143 65	154 70	165 75	176 80	187 85	198 90	209 95	220 100	231 105
2.5	4	5	5	6	6	7	7	8	8	8	9	9	10
5	8	9	10	11	12	13	14	15	16	17	18	19	20
7.5	13	14	15	17	18	20	21	23	24	25	27	28	30
10	17	19	21	23	24	26	28	30	32	34	36	38	39
12.5	21	23	26	28	30	33	35	38	40	42	45	47	49
15	25	28	31	34	37	39	42	45	48	51	53	56	59
20	34	38	41	45	49	53	56	60	64	68	71	75	79

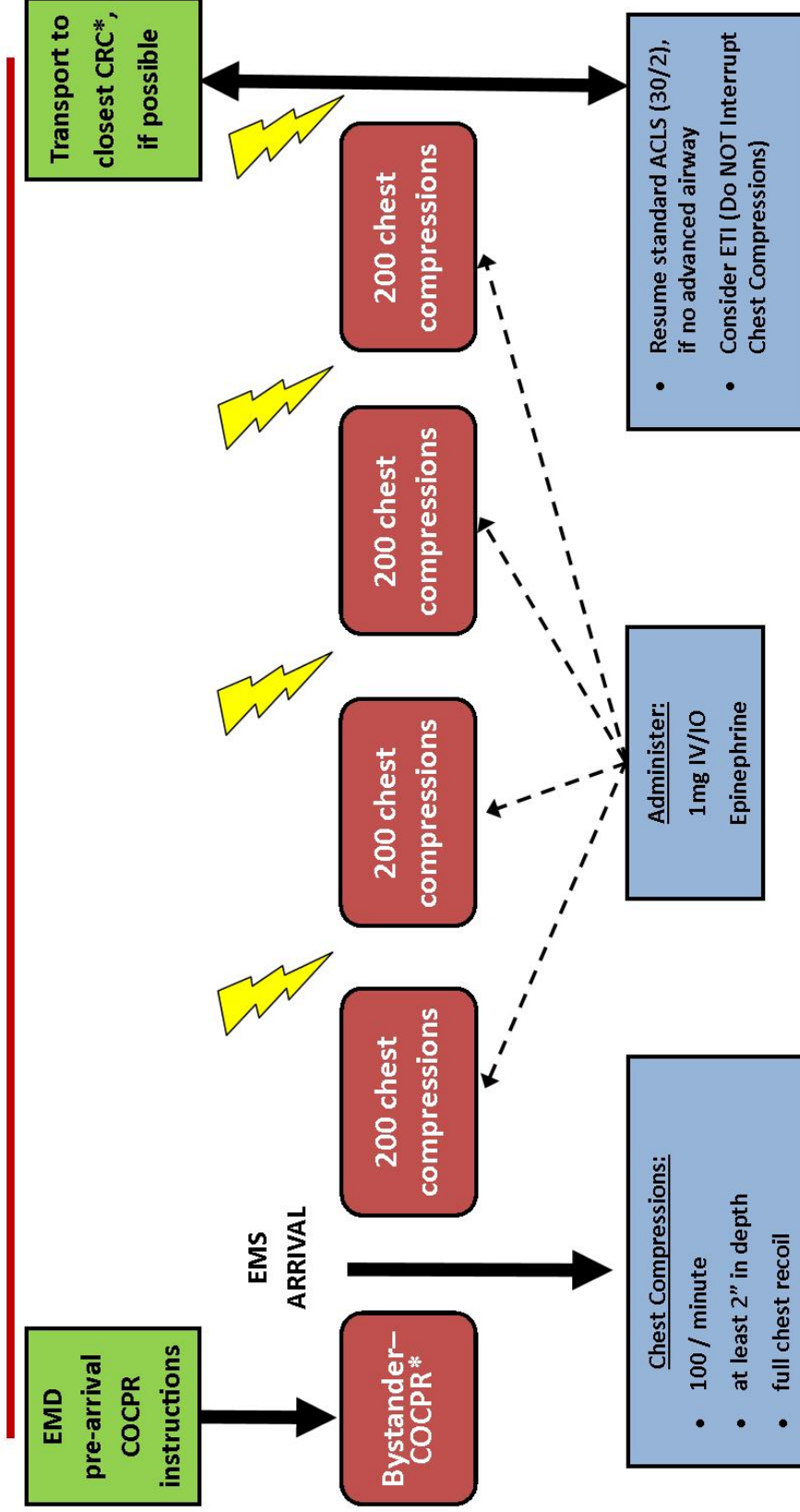
Dopamine Infusion Chart Mix 400 mg in 250 mL of NS (1600 mcg/mL)	
Dose ordered in mcg/min	Amount to infuse in mcgtts/min or mL/hr
400	15
800	30
1200	45
1600	60

Appendix: ECG Changes in Hyperkalemia

ECG Changes in Hyperkalemia		
QRS Complex	Approximate Serum Potassium (mmol/l)	ECG Change
 <p>P wave T wave</p>	-4	Normal
	6-7	Peaked T waves
	7-8	Flattened P wave, prolonged PR interval, depressed ST segment, peaked T wave
	8-9	Atrial standstill, prolonged QRS duration, further peaking T waves
	>9	Sine wave pattern

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CARDIOCEREBRAL RESUSCITATION (CCR) AKA MINIMALLY INTERRUPTED CARDIAC RESUSCITATION



- If adequate uninterrupted bystander chest compressions are provided, EMS providers should perform immediate rhythm analysis.
- Single shock after each set of 200 chest compressions, if indicated. Do not perform pulse check.
- Apply passive oxygenation via a non-rebreather mask and airway adjunct.

COCPR = Compression –only CPR

CRC = Cardiac Receiving Center

EMD = Emergency Medical Dispatch

Table 1: EMCT Drug Box

EMCT's are authorized to administer, monitor, and assist patient with the self-administration of medications through their administrative medical director's delegated authority. The Medical Direction Commission periodically reviews the following list of medications and will make recommendations for changes that the Director of the Arizona Department of Health Services must then approve.

The following list represents the most recent iteration of the Director approved medication list. Administrative Medical Directors may authorize EMCTs operating under their delegated medical authority to administer any or all of medications from this list. The administrative medical directors **MUST** ensure that every EMCT operating under their delegated medical authority has access to the **MINIMUM SUPPLY** of agents required in the table below consistent with the EMCT's certification level.

KEY:

A = Authorized to administer the agent

SVN = Agent shall be administered by small volume nebulizer

MDI = Agent shall be administered by metered dose inhaler

* = Authorized to assist in patient self-administration

[] = Minimum supply required if an EMS provider chooses to make the optional agent available for EMCT administration

IP = Agent shall be administered with an infusion pump

AGENT	MINIMUM SUPPLY	EMT	AEMT	EMT-I (99)	Paramedic
Adenosine	18 mg	-	-	Λ	A
Albuterol Sulfate SVN or MDI (sulfite free)	10 mg	-	A	A	A
Albuterol Sulfate SVN or MDI (sulfite free)	Optional [10 mg]	A	-	-	-
Amiodarone or Lidocaine	300 mg or 3 prefilled syringes, total of 300 mg and 1 g vials or premixed infusion, total of 2 g	- -	- -	- A	A A
Aspirin	324 mg	-	A	A	Λ
Aspirin	Optional [324 mg]	A	-	-	-
Atropine Sulfate	1 prefilled syringes, total of 1 mg	-	-	A	A
Atropine Sulfate	Optional [8 mg multidose vial (1)]	-	-	A	A
Atropine Sulfate Auto-Injector	None	A	A	A	A
Atropine Sulfate and Pralidoxime Chloride (Combined) Auto-Injector	None	A	A	A	A
Calcium Chloride Or Calcium Gluconate	1 g 3 g 2 g	- -	- -	- -	A A
Calcium Gluconate, 2.5% topical gel	Optional [50 g]	A	A	A	Λ
Charcoal, Activated (without sorbitol)	Optional [50 g]	A	A	A	A
Cyanokit	Optional [5 g]	-	-	-	A
Dexamethasone	Optional [8 mg]	-	-	Λ	A
Dextrose	50 g	-	A	Λ	A
Dextrose, 5% in H ₂ O	Optional [250 mL bag (1)]	A	A	A	A

Diazepam or Lorazepam or Midazolam	20 mg 8 mg 20 mg — 10 mg	-	-	A	A
Diazepam Rectal Delivery Gel	Optional [20 mg]	-	-	A	A
Diltiazem or Verapamil HCl	Optional [25 mg] Optional [10 mg]	-	-	-	A
Diphenhydramine HCl	50 mg	-	-	A	A
Epinephrine Auto-Injector	Optional [1 adult auto-injectors 1 pediatric auto-injectors]	A	A	A	A
Epinephrine HCL 1 mg/1 mL For IM use in anaphylaxis only	Optional 1 mg	-	A	A	A
Epinephrine HCl, 1 mg/1 mL	2 mg	-	A	A	A
Epinephrine HCl, 1 mg/1 mL	Optional [30 mg multidose vial (1)]	-	A	A	A
Epinephrine HCl, 0.1 mg/1 mL	5 mg	-	-	A	A
Etomidate	Optional [40 mg]	-	-	-	A
Glucagon	1 mg	-	A	A	A
Glucose, oral	Optional [30 gm]	A	A	A	A
Hemostatic Agents	Optional	A	A	A	A
Hydrocortisone Sodium Succinate	Optional	-	*	*	*
Immunizing Agent	Optional	-	-	A	A
Ipratropium Bromide 0.02% SVN or MDI	5 mL	-	-	A	A
Ketamine	Optional [200 mg]	-	-	-	A
Lactated Ringers	1 L bag (2)	-	A	A	A
Lactated Ringers	Optional [1 L bag]	A	-	-	-
Lidocaine 2% preservative-free (IO insertion)	Optional [100 mg]	-	A	A	A
Magnesium Sulfate	5 g	-	-	-	A
Methylprednisolone Sodium Succinate	125 mg	-	-	A	A
Morphine Sulfate or Fentanyl	20 mg 200 mcg	-	A	A	A
Nalmefene HCl	Optional [4 mg]	-	A	A	A
Naloxone HCl	10 mg	-	A	A	A
Naloxone HCl	Optional [prefilled atomizers or auto-injectors] 2 doses	A	A	A	A
Nitroglycerin Sublingual Spray or Nitroglycerin Tablets	1 bottle 6 tablets	* *	A A	A A	A A

Normal Saline	1 L bag (2) Optional [250 mL bag (1)] Optional [50 mL bag (2)]	-	A	A	A
Normal Saline	Optional [1 L bag]	A	-	-	-
Norepinephrine IP Or Dopamine HCl	Optional [4 mg] 400 mg	-	-	-	A
Ondansetron HCl	Optional [4 mg]	-	-	A	A
Oxygen	13 cubic feet	A	A	A	A
Oxytocin	Optional [10 units]	-	-	A	A
Phenylephrine Nasal Spray 0.5%	Optional [1 bottle]	-	-	A	A
Pralidoxime Chloride Auto-Injector	None	A	A	A	A
Proparacaine Ophthalmic Or Tetracaine	Optional [1 bottle] Optional [1 bottle]	-	-	A	A
Rocuronium	Optional [100 mg]	-	-	-	A
Sodium Bicarbonate 8.4%	Optional [100 mEq]	-	-	A	A
Succinylcholine	Optional [400 mg]	-	-	-	A
Thiamine HCl	Optional [100 mg]	-	-	A	A
Vasopressin	Optional [40 units]	-	-	-	A

* * *

Table 3: Agents Eligible for Administration and Monitoring During Interfacility Transport

EMCT's are authorized to administer, and monitor medications through their administrative medical director's delegated authority during interfacility transports. The Medical Direction Commission periodically reviews the following list of medications and will make recommendations for changes that the Director of the Arizona Department of Health Services must then approve.

The following list represents the most recent iteration of the Director approved interfacility transport medication list. Administrative Medical Directors may authorize EMCTs operating under their delegated medical authority to administer any or all of medications from this list below consistent with the EMCT's certification level during an interfacility transport.

KEY:

TA = Transport agent for an EMCT with the specified certification

IP = Agent shall be administered by infusion pump

SVN = Agent shall be administered by small volume nebulizer

<u>AGENT</u>	<u>MINIMUM SUPPLY</u>	<u>EMT</u>	<u>AEMT</u>	<u>EMT-1 (99)</u>	<u>Paramedic</u>
Amiodarone IP	None	=	=	=	<u>TA</u>
Antibiotics	None	=	=	<u>TA</u>	<u>TA</u>
Blood	None	=	=	=	<u>TA</u>
Calcium Chloride	None	=	=	=	<u>TA</u>
Colloids	None	=	=	<u>TA</u>	<u>TA</u>
Corticosteroids IP	None	=	=	<u>TA</u>	<u>TA</u>
Diltiazem IP	None	=	=	=	<u>TA</u>
Diuretics	None	=	=	<u>TA</u>	<u>TA</u>
Dopamine HCl IP	None	=	=	=	<u>TA</u>
Electrolytes/Crystalloids (Commercial Preparations)	None	<u>TA</u>	<u>TA</u>	<u>TA</u>	<u>TA</u>
Epinephrine IP	None	=	=	<u>TA</u>	<u>TA</u>
Fentanyl IP	None	=	=	<u>TA</u>	<u>TA</u>
Fosphenytoin Na IP or Phenytoin Na IP	None None	= =	= =	= =	<u>TA</u> <u>TA</u>
Glucagon	None	=	=	<u>TA</u>	<u>TA</u>
Glycoprotein IIb/IIIa Inhibitors	None	=	=	=	<u>TA</u>
H2 Blockers	None	=	=	<u>TA</u>	<u>TA</u>
Heparin Na IP	None	=	=	=	<u>TA</u>
Insulin IP	None	=	=	=	<u>TA</u>
Lidocaine IP	None	=	=	<u>TA</u>	<u>TA</u>
Magnesium Sulfate IP	None	=	=	=	<u>TA</u>
Midazolam IP	None	=	=	<u>TA</u>	<u>TA</u>

Morphine IP	None	=	=	<u>TA</u>	<u>TA</u>
Nitroglycerin IV Solution IP	None	=	=	=	<u>TA</u>
Norepinephrine IP	None	=	=	=	<u>TA</u>
<u>Pantoprazole</u>	<u>None</u>	<u>=</u>	<u>=</u>	<u>=</u>	<u>TA</u>
Phenobarbital Na IP	None	=	=	=	<u>TA</u>
Potassium Salts IP	None	=	=	=	<u>TA</u>
Procainamide HCl IP	None	=	=	=	<u>TA</u>
Propofol IP	None	=	=	=	<u>TA</u>
Racemic Epinephrine SVN	None	=	=	=	<u>TA</u>
Total Parenteral Nutrition, with or without lipids IP	None	=	=	=	<u>TA</u>
Vitamins	None	=	=	<u>TA</u>	<u>TA</u>

* * *

Drug Profile for KETAMINE HYDROCHLORIDE INJECTION

GENERIC NAME: KETAMINE HYDROCHLORIDE INJECTION

CLASS: Anesthetic; Dissociative Anesthetic

Mechanism of Action:

- Non-competitive antagonist of NMDA receptors causing a prolonged tonic blockade of the receptor contributing to long lasting analgesic effects. Directly affects the delta opioid receptor and acts to augment opioid mu-receptor function. Blocks the release of excitatory neurotransmitter glutamate and provides anesthesia, amnesia, and analgesia by virtue of decreasing central sensitization.

Pharmacologic Effects:

- Ketamine is a Class III Phencyclidine (PCP) derivative that is rapid acting in producing a “dissociative” anesthesia in which the patient’s consciousness is detached from their nervous system. Due to its “dissociative” properties, Ketamine is a potent analgesic.
- Minimal cardiac depression occasionally reported with rapid-high doses. May transiently (within 30-60 seconds) increase heart rate and blood pressure by central sympathetic stimulation. Return to normal values begins almost immediately, and is complete within 15 minutes.
- Ketamine is a bronchodilator and has minimal to no respiratory depression, with respiratory stimulation frequently seen.

Metabolized:

- The liver microsomal enzyme system metabolizes Ketamine.

Indications for Field Use (15-4 years and older):

- Induction and Pre-intubation for Rapid Sequence Intubation/Delayed Sequence Intubation/medication-assisted intubation protocols-
- Pre-intubation for critical asthma patients needing aggressive bronchodilation and possible intubation.
- Achieve control of combative and high-violence risk patients
- Analgesia

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Contraindications:

- Angina
- CHF

- Symptomatic Hyperthyroidism
- Pregnancy-Relative (Category B)

Adverse Reactions:

An emergence reaction (in approximately 12% of patients) may occur near end of medication half-life, when patient is awakening (dizziness, nausea, light-headedness, nystagmus, visual disturbances, drowsiness, numbness, increased skeletal tone, hallucinations, dysphoria or confusion, agitation, disorientation, mood changes,

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Drug Profile for KETAMINE HYDROCHLORIDE INJECTION

tachycardia, hypertension, feeling of unreality). When emergence reaction occurs, contact online medical direction or treat per local off-line protocols.

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Cautions:

- Acute alcohol intoxication (halve all doses)
- Benzodiazepine use suspected (halve all doses)
- Hypertension
 - Tachycardia
 - Acute alcohol intoxication
 - Known Cerebral or Aortic Aneurism
 - Psychotic Disorders

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Notes of Administration:

IM: May re-medicate after 10 minutes.

IV/IO: May re-medicate after ~~10-5~~ minutes. Very slow administration for pain management reduces adverse reactions.

IN: (only permissible in pediatric patients ages 4-15): May re-medicate after 10 minutes.

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Incompatibilities/Drug Interactions:

Sympathomimetic drugs. Concurrent use with a benzodiazepine may cause marked cause increased sedation and severe respiratory depression.

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Adult and Pediatric Dosages (not recommended for ages under 4 years15 years and older):

Pre-intubation dose:

IV/IO 0.5-2 mg/kg (~~max dose 150 mg~~) over 1 minute.

Half-life 5-10 minutes. ~~IM 2-4 mg/kg (max dose 250 mg).~~

~~Half life 12-25 minutes.~~

Combative or Violent patient dose:

IM: Adults: 4 mg/kg. 3-5 minute onset of action. 2 mg/kg. 1 minute onset of action. Pediatrics: 3 mg/kg IM or 1 mg/kg IV.

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Analgesic dose:

IV/IO (very slow push) 0.25 mg/kg (max 25 mg/dose initial dose 20 mg). May repeat every 5 minutes. Maximum cumulative dose 100 mg.

IN doses for pediatrics (ages 4-15) -very slow IV push IN 0.5 mg/kg (max initial 25/mg dose 25 mg) May repeat every 10 minutes. Maximum cumulative dose 100 mg.

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Pediatric Dosage:

~~Not currently recommended for field use in patients less than 15 years old~~

Routes of Administration:

~~IV/IO~~

~~IM~~

~~IN~~

Onset of Action:

IV/IO: 30 seconds

IM: 3-4 minutes

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Drug Profile for KETAMINE HYDROCHLORIDE INJECTION

Peak Effects:

IV/IO: 30 seconds to 5 minutes

IM/IN: 3-12 minutes

Duration of Action:

IV/IO: 10-45 minutes

IM/IN: 25-60 minutes

Arizona Drug Box Minimum Supply:

Optional: 200 mg

Special Notes:

- If significant emergency reaction occurs, contact online medical direction
- Pregnancy: Category B
- Lactation: Undetermined, if any, effects
- Elderly(>55): Use with caution, halve all doses start at low end of dosing range

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