

# AURORA SOUTH WI EMS

*OFFICE OF MEDICAL DIRECTION*



Aurora Health Care®

Now part of  ADVOCATEHEALTH

## PRE-HOSPITAL PATIENT CARE GUIDELINES

2024



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# GENERAL INFORMATION

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[Standard Operating Guideline - Introduction](#)

[Abandoned Infant](#)

[Advanced Life Support \(ALS\) Response](#)

[Destination Determination](#)

[Do Not Resuscitate \(DNR\)](#)

[ED Peak Census Notifications or Bypass Requests](#)

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# AURORA SOUTH WI EMS – OFFICE OF MEDICAL DIRECTION

## Aurora Medical Center – Burlington (AMCB):

### **Secure EMS Line:**

Line 1: (262) 763-4287

Line 2: (262) 763-6468

### **EMS Coordinator:**

Bob Swenarski

[Robert.Swenarski@aah.org](mailto:Robert.Swenarski@aah.org)

(262) 743-3424

## Aurora Medical Center – Kenosha (AMCK):

### **Secure EMS Line:**

Line 1: (262) 694-1968

Line 2: (262) 694-1973

### **EMS Coordinator:**

VACANT

[aah-ems@aah.org](mailto:aah-ems@aah.org)

(262) 948-5645

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## Aurora Lakeland Medical Center (ALMC):

### **Secure EMS Line:**

Line 1: (262) 723-2991

Line 2: (262) 723-3965

### **EMS Coordinator:**

Bob Swenarski

[Robert.Swenarski@aah.org](mailto:Robert.Swenarski@aah.org)

(262) 743-3424

## Aurora Medical Center – Mount Pleasant (AMCMP):

### **Secure EMS Line:**

Line 1: (262) 866-3875

Line 2: (262) 866-3885

### **EMS Coordinator:**

Amy Moczynski

[Amy.Moczynski@aah.org](mailto:Amy.Moczynski@aah.org)

(262) 799-8208

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# HOW TO USE THIS DOCUMENT

There are six (6) major sections within this document. Each section is color-coded for rapid identification. The sections are organized as follows:

GENERAL INFORMATION
CLINICAL GUIDELINES
PROCEDURES
MEDICATIONS
TACTICAL EMS GUIDELINES
APPENDICES

Within each of the major sections, if viewing in an electronic version, it is possible to link directly to general information, clinical guidelines, medications, or procedures by clicking on the hyperlink. Each of the hyperlinks are colored to match the color-coded sections shown above.

**GENERAL INFORMATION** hyperlinks are colored **BLACK**

**CLINICAL GUIDELINE** hyperlinks are colored **PURPLE**

**PROCEDURE** hyperlinks are colored **GREEN**

**MEDICATION** hyperlinks are colored **BLUE**

**TACTICAL EMS GUIDELINES** hyperlinks are colored **RED**

If contact on-line medical control (**OLMC**) is recommended or required, it will be shown in red as **CONTACT ONLINE MEDICAL CONTROL**.

**INCLUSION** and **EXCLUSION** are listed to help EMS providers determine appropriate clinical guidelines to follow for each patient presentation.

**OTHER GUIDELINES TO CONSIDER** are intended to guide EMS providers to other clinical guidelines that may need to be referenced to facilitate optimal care for the patient or that should be considered to develop a broader differential diagnosis.

**PROVIDER LEVELS** are separated by **EMR** (gray), **EMT** (orange), **AEMT** (gold), **INT** (EMT-Intermediate-pink), **PARA** (Paramedic-light blue). Each provider level is responsible for ALL care performed by the preceding provider level within each guideline, unless stated otherwise. Each task in the clinical guideline generally builds on previous tasks as the EMS provider moves through the protocol. It may be necessary, at times, to perform some tasks simultaneously or out of sequence as the clinical needs of the patient dictate.

**Universal Care** or **Universal Care – Trauma Management** is referenced at the beginning of each clinical guideline. Universal Care is intended to provide a standardized approach for each patient encounter as well as reduce the need to reiterate basic assessment and other considerations in every clinical guideline. Universal Care should be followed for every patient encounter.

**NOTES** provide key information that may be critical to decision making within a clinical guideline. The notes section may be present at the end of a clinical guideline in a separate box.

BRADYCARDIA – ADULT (8 YEARS & OLDER)	
EMR	<p><b>INCLUSION Criteria:</b> Age &gt; 8 years old; heart rate less than 50 beats/min <b>AND</b> SBP &lt; 90 mmHg or MAP &lt; 65 mmHg <b>WITH</b> clinical signs of poor perfusion (altered mental status including syncope, weakness, lightheadedness, fatigue, complaints of chest pain, difficulty breathing, hypoxia, pallor, diaphoresis)</p> <p><b>EXCLUSION Criteria:</b> Children &lt; 8 years old; Neonates</p> <p><b>OTHER GUIDELINES TO CONSIDER:</b> <a href="#">Airway Management</a>, <a href="#">Chest Pain/Acute Coronary Syndrome (ACS)</a>, <a href="#">Cardiac Arrest</a>, <a href="#">Difficulty Breathing</a>, <a href="#">Dizziness or Vertigo</a>, <a href="#">Hyperkalemia</a>, <a href="#">Hypotension or Shock</a>, <a href="#">Neonatal Resuscitation</a>, <a href="#">Overdose or Toxic Exposure</a>, <a href="#">Syncope</a></p> <ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• Request ALS response</li> <li>• Initiate <a href="#">Pulse Oximetry</a> <ul style="list-style-type: none"> <li>◦ If pulse oximetry is less than 93%, titrate <a href="#">Oxygen</a> to lowest level to maintain pulse oximetry at 93% or <b>greater</b></li> <li>◦ Do not withhold oxygen if patient is having difficulty breathing or if unable to assess an oxygen <a href="#">saturation</a></li> <li>◦ If pulses are lost at any point:                             <ul style="list-style-type: none"> <li>▪ <a href="#">Cardiac Arrest</a></li> </ul> </li> </ul> </li> </ul>
EMT	<ul style="list-style-type: none"> <li>• Initiate <a href="#">Cardiac Monitoring</a></li> <li>• <b>IF AUTHORIZED:</b> acquire <a href="#">12 Lead ECG</a> as soon as possible.</li> <li>• Transmit ECG to <a href="#">hospital</a> <ul style="list-style-type: none"> <li>◦ Notify ED of transmitted ECG and request interpretation</li> </ul> </li> </ul>
AEMT	<ul style="list-style-type: none"> <li>• <a href="#">IV/IO Access</a>, if appropriate</li> </ul> <p>Pharmacologic treatment of bradycardia is based upon the presence or absence of symptoms.</p> <ul style="list-style-type: none"> <li>• If bradycardic without signs of hypoperfusion, monitor only.</li> <li>• If HR &lt; 50 <b>AND</b> SBP &lt; 90 mmHg or MAP &lt; 65 mmHg <b>WITH</b> clinical signs of poor perfusion, consider:             <ul style="list-style-type: none"> <li>◦ <a href="#">IV/IO Fluid Bolus</a></li> </ul> </li> </ul>
INT	<ul style="list-style-type: none"> <li>• Do not delay <a href="#">Transcutaneous Cardiac Pacing (TCP)</a> for IV Access if the patient has poor <a href="#">perfusion</a></li> <li>• For unstable patients not responding to initial treatment:             <ul style="list-style-type: none"> <li>◦ <a href="#">Atropine</a>:                     <ul style="list-style-type: none"> <li>▪ IV/IO: 1 mg; may repeat 1 mg every 3 minutes up to 3 mg if continued symptoms <a href="#">persist</a></li> </ul> </li> </ul> </li> <li>• For unstable patients not responding to Atropine:             <ul style="list-style-type: none"> <li>◦ <a href="#">Transcutaneous Pacing</a></li> </ul> </li> <li>• For unstable patient not responding to Atropine and/or pacing:             <ul style="list-style-type: none"> <li>◦ <a href="#">Epinephrine Push Dose (1:10,000)</a> <ul style="list-style-type: none"> <li>▪ IV/IO: 0.05 mg every 2-5 minutes as needed; may double subsequent boluses to 0.1 <a href="#">mg</a></li> </ul> </li> </ul> </li> <li>• Organophosphate Poisoning (see <a href="#">Overdose or Toxic Exposure</a>)</li> </ul>
PARA	<ul style="list-style-type: none"> <li>◦ <a href="#">Epinephrine Infusion</a>:             <ul style="list-style-type: none"> <li>▪ IV Infusion: 2-20 mcg/min; titrate as needed to achieve age-appropriate <a href="#">MAP</a></li> </ul> </li> <li>• For known or suspected calcium channel blocker or beta blocker overdose not responding to Epinephrine, administer:             <ul style="list-style-type: none"> <li>◦ <a href="#">Calcium Chloride (10%)</a>:                     <ul style="list-style-type: none"> <li>▪ <b>Adult (Ages &gt; 12 years)</b> <ul style="list-style-type: none"> <li>• IV/IO: 1 gram (10mL) <a href="#">slowly</a> over 5 minutes; may repeat initial dose in 15 minutes if continued symptoms persist; may repeat for a total of 3 <a href="#">doses</a></li> </ul> </li> <li>▪ <b>Pediatric (Ages 8-12 years)</b> <ul style="list-style-type: none"> <li>• IV/IO: 20 mg/kg <a href="#">slowly</a> over 10 minutes; maximum single dose 1000 mg; may repeat initial dose in 15 minutes if continued symptoms persist; may repeat for a total of 3 <a href="#">doses</a></li> </ul> </li> </ul> </li> <li>OR</li> <li>◦ <a href="#">Calcium Gluconate</a>:                     <ul style="list-style-type: none"> <li>▪ <b>Adult (Ages &gt; 12 years)</b> <ul style="list-style-type: none"> <li>• IV/IO: 3 grams <a href="#">slowly</a> over 5 minutes; may repeat initial dose in 15 minutes if continued symptoms persist; may repeat for a total of 3 <a href="#">doses</a></li> </ul> </li> <li>▪ <b>Pediatric (Ages 8-12 years)</b> <ul style="list-style-type: none"> <li>• IV/IO: 60 mg/kg <a href="#">slowly</a> over 5 minutes; may repeat initial dose in 15 minutes if continued symptoms persist; maximum single dose 3000 mg; may repeat for a total of three (3) <a href="#">doses</a></li> </ul> </li> </ul> </li> </ul> </li> </ul>

# STANDARD OPERATING GUIDELINE INTRODUCTION

These protocols have been approved by the Medical Directors of the Aurora Health Care South EMS System.

**THESE GUIDELINES SHALL BE UTILIZED AS:**

- Written orders of a physician for treatment guidelines to be administered by authorized members of the Aurora South EMS System as circumstances allow for the treatment of ill or injured patients.
- The prehospital standing medical orders to be initiated by Aurora South Emergency Medical Responder/First Responder (EMR), Emergency Medical Technician (EMT), Advanced Emergency Medical Technician (AEMT), EMT-Intermediate (INT), Paramedic (PARA), and/or Nursing Personnel.

**ONLINE MEDICAL CONTROL** should be contacted at the point that the clinical protocol indicates, or when a patient is refractory to available treatment.

**ONLINE MEDICAL CONTROL** can be provided by any of the Aurora Hospitals in the South Market:

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>• Aurora Lakeland Medical Center</li> <li>• Aurora Memorial Hospital of Burlington</li> <li>• Aurora Medical Center-Kenosha</li> <li>• Aurora Medical Center-Mount Pleasant</li> <li>• Aurora Medical Center-Summit</li> </ul> | <ul style="list-style-type: none"> <li>• Ascension All Saints Hospital can also provide online medical control</li> <li>• Any Aurora Hospital can provide medical control if transporting a patient to that facility</li> <li>• Additional medical control hospitals may be approved by the medical director, on a service specific operational plan</li> </ul> |
|---|---|








**It is recognized that these prehospital guidelines are intended to stabilize most patient care situations.**

- Medical care can only be initiated through these guidelines or an authorized Medical Control Center.
- EMS personnel who have question(s) regarding what care to provide for a current patient will contact Medical Control.
- If communications cannot be established, prehospital personnel shall continue to provide treatment to the degree authorized by the EMS Medical Directors in these guidelines.
- In disaster situations where immediate action to preserve and save lives supersedes the need to communicate directly with the hospital, the **CONTACT ONLINE MEDICAL CONTROL** orders may be lifted provided protocol recommendations are followed and/or sound medical judgment is used.

**UNDER NO CIRCUMSTANCES SHALL EMERGENCY PREHOSPITAL CARE BE DELAYED WHILE ATTEMPTING TO ESTABLISH CONTACT WITH MEDICAL CONTROL.**

If at any time, a near miss, an error, or deviation from these guidelines is identified, crew members should report the issue or concerns to their supervising officer, director, or chief as soon as possible. The Medical Director should be notified within 24 hours or as per agency standard policy. These guidelines will be reviewed regularly with updates as appropriate and necessary, anticipated at minimum, every two years. The Aurora South WI EMS Office of Medical Directors welcomes feedback and thoughts on how we can continue to support optimal and effective evidence-based care that is operationally feasible and understandable to our EMS providers in the field. Suggestions can be emailed to: [aah-ems@aah.org](mailto:aah-ems@aah.org).

In accordance with Wisconsin State Statute 256 in Chapter 110 of the DHS Wisconsin Administrative Code, effective **February 26<sup>th</sup>, 2024**, the following medical treatment guidelines are authorized by all Aurora South WI EMS Medical Directors. Changes to these guidelines can be made only with the authorization from the Aurora South WI EMS Office of Medical Direction.

Aurora South WI EMS: Office of Medical Direction Guideline Revision Committee			
Dr. Steve Andrews, MD, FACEP, FAMES, EMT-P <b>Medical Director</b>		Stephanie Welch, RN, CCEMTP <b>EMS Manager</b>	
Dr. Andrew Aswegan, MD, FACEP <b>Medical Director</b>		Karen Barker, Ed.D., RN, EMTP <b>EMS Prof. Development Generalist</b>	
Dr. Donald Keen, MD, LTC <b>Medical Director</b>		Michael Mackesey, NRAEMT, TR-C <b>EMS Lead Instructor</b>	
		Elizabeth Ferger Olsen, CCEMTP <b>EMS Instructor</b>	

# ABANDONED INFANT

**Purpose:** To provide a guideline to EMS personnel that is following *WI Statute 48.195*. This statute relates to the right a parent has in relinquishing a child that is less than 72 hours old and has not been abused.

**Background:**

Taking a child into custody

- *WI Statute 48.195* allows a parent to anonymously relinquish custody of a child that is 72 hours old or younger to a law enforcement officer, Emergency Medical Technician (EMT), or hospital staff member and does not express any intent to return for the child.
- This can be accomplished by:
  - Bringing the child to any place where these personnel are located or
  - Calling “911” and relinquishing custody on arrival of a law enforcement officer or EMT.
- Upon receipt of a child, any action necessary to protect the health and safety of the child shall be taken. The child then needs to be delivered to an intake worker within 24 hours.

**Anonymity and Confidentiality:**

- A parent who relinquishes custody and any person who assists the parent has the right to remain anonymous.
- This shall not affect the way the recipient performs his or her duties.
- No person may induce or coerce a parent or person assisting a parent into revealing his or her identity, unless the person has reasonable cause to suspect that the child has been the victim of abuse or neglect.
- No person shall pursue a parent or person assisting a parent unless the person has reasonable cause to suspect that the child has been the victim of abuse or neglect.
- No officer, employee, or agent of this state or of a political subdivision of this state may attempt to locate or ascertain the identity of a parent who relinquishes custody of a child.
- Any information obtained related to the relinquishment of the child shall be kept confidential. Information may be provided to specific agencies or persons as listed in [48.195\(2\)\(d\)](#) which includes staff of the department, county department, or licensed child welfare agency that is providing services to the child and an attending physician for purposes of diagnosis and treatment of the child.

**Information for Parents:**

- The recipient of the child shall make available to the parent the Wisconsin maternal and child health toll-free telephone number (1-800-722-2295). The parent may refuse this number.

**Immunity from Liability:**

- The parent or person assisting the parent has:
  - Immunity from any civil or criminal liability
  - The right to leave at any time
  - The right not to accept any information and
  - Immunity from prosecution
- Any law officer, EMT or hospital staff who take a child into custody are immune from any civil or criminal liability for any good faith actions or omission occurring solely in connection with the act of receiving custody of the child. This person is not immune for any act or omission occurring in subsequently providing care for the child.

**Medical Assistance Eligibility:** A child taken into custody is presumed to be eligible for medical assistance.

**Procedure:**

1. Accept the child.
2. Initiate treatment of any life-threatening conditions.
3. Attempt to verify that custody of the child is being relinquished.
4. Provide the parent or person assisting the parent with the WI maternal and child health toll-free telephone number (1-800-722-2295). This person has the right to refuse acceptance of this.
5. Do not attempt to induce or coerce an identity from this person unless abuse is suspected.
6. Do no attempt to pursue this person unless abuse is suspected.
7. Provide medical care to child as appropriate.
8. Transport child to the Emergency Department.
9. Document appropriately on a Patient Care Record.

Initiated: 2/26/2024	Last Review/Revision Date:	Next Review Date: 6/1/2025
Effective Date: 6/1/2024	Approved by: Steven Andrews, MD, EMT-P, FAEMS	

# ADVANCED LIFE SUPPORT (ALS) RESPONSE

For this guideline only, Advanced Life Support (ALS) refers to EMT-Intermediate or Paramedic level only.

In certain circumstances, ALS services should be considered as either an initial response or summoned by initial responders that are providing patient care.

1. The parameters contained in these guidelines are a recommendation. Provider assessment findings, dispatch information, and general impression of the patient condition by those providing care should be utilized in the decision matrix. This guideline should be utilized in conjunction with the department's internal policies, procedures, and dispatch protocols.
2. Request for an ALS response/intercept is at the discretion of the on-scene provider.
3. If uncertain whether an ALS response is warranted, consider an ALS response/intercept when:
  - a. **Cardiac arrest:**
    - i. IV epinephrine has shown to improve survival, although not neurologically intact survival
    - ii. ALS has shown benefit in survivability once a patient achieves return of spontaneous circulation (ROSC).
    - iii. ALS can provide medications to maintain blood pressure and control arrhythmias that may occur.
  - b. **Respiratory arrest, severe difficulty breathing/shortness of breath, respiratory distress (medical or trauma):**
    - i. Studies show improved survival from ALS response to severe respiratory difficulties.
  - c. **Burns involving the face, neck, or airway:**
    - i. These patients may require early airway intervention and ALS have higher level airway control abilities
  - d. **Unresponsive/Altered Mental Status:**
    - i. ALS can assess broad differential causes and provide higher level airway control abilities
  - e. **Chest pain/STEMI:**
    - i. Unless 12 lead ECG is available and can be transmitted quickly, ALS have ECG capability and can interpret them
    - ii. ALS can give medications and cardiovert severe arrhythmias that can present as chest pain
  - f. **Anaphylaxis:**
    - i. ALS have higher level airway control abilities
    - ii. Paramedics may give steroids and antihistamines
  - g. **Drowning or near drowning:**
    - i. ALS have higher level airway control abilities
  - h. **Severe pain:**
    - i. Unless nitrous oxide is available, ALS is the only level approved to give strong pain medications
  - i. **Violent or aggressive patient:**
    - i. Paramedics can administer chemical restraint medications
  - j. **Drug overdose:**
    - i. Although most drug overdoses only require supportive care, ALS can provide lifesaving treatment for some life-threatening overdoses (ex. Tricyclic antidepressants)
  - k. **Actively seizing:**
    - i. ALS can administer benzodiazepines to stop seizure activity
4. If the arrival time of an ALS (Advanced Life Support) response exceeds 10 minutes and on-scene providers are capable of transportation to an emergency department within a shorter timeframe than ALS arrival, initiate transport to the emergency department or arrange for an intercept with the ALS provider.
  - a. Cardiac arrest (medical) is an exception and should be worked on scene until a persistent spontaneous pulse is achieved or:
    - i. For 20 minutes in adult arrest when asystole is the initial rhythm
    - ii. For 30 minutes in all pediatric patients and adult patients with an initial rhythm other than asystole
5. Once ALS care is initiated, ALS provider must maintain patient care until arrival at emergency department or patient care is transferred to an equivalent or higher level of care.
6. If the level of care already provided or anticipated is within the EMT-Intermediate scope of practice, an EMT-Intermediate can transport the patient.
7. If the level of care already provided or anticipated is within the AEMT scope of practice, then an AEMT can transport the patient.
8. If the level of care already provided or anticipated is within the EMT scope of practice, then an EMT can transport the patient.

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# DESTINATION DETERMINATION

**Purpose:** To provide guidelines for determining the appropriate transport destination for every patient.

**Procedure:** In general, the patient should be transported to the closest most appropriate hospital, within the limitations of the ambulance services operational plan.

Appropriateness is determined by:

- Patient preference\*
  - Wisconsin law gives the patient the right to make the ultimate decision on hospital destination as long as it is operationally available to the EMS service (a hospital the service would normally be allowed to transport to). If provider assessment suggests the patient should be transported to a facility different than their preferred destination, and the patient is capable of making decisions, make an effort to promptly provide the patient with information explaining the rationale for recommending transfer to the alternative facility. Transport per the patient's final request.
- Specialty needs of the patient (pediatric, trauma, cardiac, etc.) and the hospital's capacity to meet those needs. Examples include:
  - STEMI: Cardiac catheterization center
  - TRAUMA: Follow trauma field triage guidelines
    - Patients meeting any one of the listed **RED** criteria should be transported to the highest-level trauma center (Level I) available within the geographic constraints of the regional trauma system.
    - Patients meeting any one of the **YELLOW CRITERIA WHO DO NOT MEET RED CRITERIA** should be preferentially transported to a trauma center (Level I or Level II), as available within the geographical constraints of the regional trauma system. (need not be the highest-level trauma center)
    - If over 30 minutes by ground to a Level I or Level II, any of the following are acceptable:
      - Helicopter transport to Level I or Level II, for **RED** criteria only
      - Transport by ground to Level I or Level II *OR*
      - Transport by ground to the highest-level trauma center within a 30-minute transport time
  - STROKE: Stroke treatment center if transport time within time window
  - BURN: Burn center if criteria met (see Burn guideline) and no significant trauma center criteria evident
  - OB: Pregnant patients greater than 20 weeks gestational age with a possible OB related symptom should go to a hospital with obstetrics. This includes pre-eclampsia/eclampsia- headache, elevated blood pressure, neurologic abnormalities, seizures.
- Hospital bypass/diversion and peak census status
- Patient's medical home
- Medical Direction
- Weather/Road conditions

Considerations to modify for each ambulance service:

- Restrictions due to coverage of the area
- Restrictions due to distance to the hospital
- Other reasons for restricting destination, such as **Mass Casualty** incident etc.

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# DO NOT RESUSCITATE (DNR)

**Purpose:** To provide guidance on when initiation of potentially life prolonging treatment is inappropriate under Wisconsin Do Not Resuscitate (DNR) laws and to ensure that care is provided in accordance with a patient's wishes to the best of the EMS provider's ability in the setting of cardiopulmonary or respiratory arrest.

## Background:



- As defined in *Wisconsin Statute 154.17(2)*, a valid Do Not Resuscitate (DNR) order directs EMS providers not to attempt cardiopulmonary resuscitation on the person for whom the order is issued if that person suffers cardiac or respiratory arrest.
- Currently, the only DNR orders that are legally required to be followed are State of Wisconsin authorized DNR bracelets.
  - Plastic ID bracelet:** obtained directly from a physician that includes the information shown below:

Each bracelet insert must contain the following information in the format outlined below.

	See Sample
Patient Name	Health Care Professional - Name
Patient Address	Phone Number
Date of Birth	Sex (M/F)
	Health Care Professional - Signature (Do not copy)



The sample insert shows: Do Not Resuscitate, Jane Doe, 111 Star Rd, No Name, WI 99999, 07/04/76 F, Dr. Jones (608) 299-9999, and a signature for July Jones, MD.

- Metal ID bracelet:** obtained from StickyJ® Medical ID. Per *Wisconsin Statute 154*, StickyJ® Medical ID is the current state of Wisconsin authorized vendor of metal bracelets.
    - The front of the bracelet shows:
      - The international medical symbol, the Staff of Aesculapius
      - The phrase, "Wisconsin Do Not Resuscitate EMS"
    - The back of the bracelet shows:
      - Patient's first and last name
      - Other health information if space allows
  - The older Medic Alert bracelets, shown to the right, will continue to be recognized. The bracelet must say, "Wisconsin Do Not Resuscitate."
- 
- 
- Under *Wisconsin Statute 154.23*, no physician, EMS provider, or health care professional may be held criminally or civilly liable, or charged with unprofessional conduct, for any of the following:
    - Under the directive of a DNR order, withholding or withdrawing, or causing to be withheld or withdrawn, resuscitation from a patient
    - Failing to act upon the revocation of a DNR order unless the person had actual knowledge of the revocation
    - Failing to comply with the DNR order if the patient or facility did not have actual knowledge of the DNR order or if the patient in good faith believed that the order had been revoked
  - Our objective is to ensure recognition and adherence to patients' preferences regarding their care, particularly concerning the initiation of Do Not Resuscitate (DNR) measures.
    - Acceptable documentation includes:
      - Intact State of Wisconsin DNR Wrist Band/Bracelet worn by the patient
      - Properly completed State of Wisconsin DNR form
      - Properly completed DNR form from another state, such as a Physician Order For Life Sustaining Treatment (POLST) or Medical Orders for Life-Sustaining treatment (MOLST), indicating the patient's preference for no CPR
      - Court Order for children under 18 years of age, instructing EMS personnel not to initiate CPR
      - Hospital DNR order for a child, provided it is properly signed and dated
    - Handling of tattoos:
      - Unfortunately, a tattoo is not considered an acceptable form of documentation. In the event of a "Do Not Resuscitate", "Do Not Intubate", or similar tattoo being present, the following steps should be taken:
        - Begin hands-only CPR
        - CONTACT ONLINE MEDICAL CONTROL** to determine whether resuscitation should be continued or stopped based on the patient's preferences

**Do Not Resuscitate (DNR) – Patient is pulseless and not breathing. Patient is considered dead.**

**Do Not Resuscitate (DNR) – Patient has a pulse and/or spontaneous respirations**

- The following should **NOT** be performed:
  - Chest compressions
  - Insertion of advanced airways
  - Administration of cardiac resuscitation drugs
  - Ventilatory assistance (mouth-to-mouth or bag valve mask)
  - Defibrillation
- EMS providers **may possibly provide**, with patient or activated healthcare power of attorney permission (do not do unless active permission is given):
  - Electrical cardioversion
  - Transcutaneous cardiac pacing (TCP)
  - Noninvasive positive pressure ventilation (NIPV, CPAP or BiPAP)
- Provide supportive/comfort measures enroute to the hospital including:
  - Clear airway
  - Administer **Oxygen**
  - Position for comfort
  - Splint
  - Control bleeding
  - Provide **Pain Management**
  - Provide emotional support
- **DO NOT WITHHOLD OXYGEN, MEDICATIONS, INTRAVENOUS ACCESS** (e.g., if needed, analgesia, sedation, fluids, antiarrhythmics, or vasopressors for hypotension) unless these are specifically included in the order to withhold

**Considerations:**

- In cases where the validity of the DNR order is questioned or family/significant other report patient would not want resuscitation, start compression only CPR and **CONTACT ONLINE MEDICAL CONTROL** to determine whether to terminate resuscitation or initiate full resuscitation.
- If resuscitation was initiated and a valid DNR order is later discovered and verified, resuscitative efforts should be discontinued without the need for medical consultation. If there is any doubt regarding the legitimacy of the DNR order, **CONTACT ONLINE MEDICAL CONTROL** for guidance.
- If suicide/homicide attempt is known or suspected, continue to respect DNR orders. If patient still has a pulse or is breathing spontaneously, provide other supportive care including antidotes to medications if available
- To ensure scene safety when dealing with a patient holding a valid DNR and meeting criteria for death, an EMS provider may choose to initiate resuscitative efforts and relocate both themselves and the patient to a secure location. Once safe, **CONTACT ONLINE MEDICAL CONTROL**, informing them of the circumstances and following any orders received. Documentation should reflect this decision-making process.
- If there are unique circumstances that are not addressed above, start compression only CPR and **CONTACT ONLINE MEDICAL CONTROL** and explain the situation to determine whether to terminate resuscitation or initiate full resuscitation.
- If the patient possesses a Physician Order For Life Sustaining Treatment (POLST) or other advanced directive form specifying their preference for a Do Not Resuscitate (DNR) status, and it appears valid with both the patient’s or their health care power of attorney’s signature AND a physician’s signature, this constitutes a valid directive which we will honor; resuscitative efforts will not be performed. If resuscitation has already been started and such a directive is discovered, resuscitative efforts should stop.
- A patient with decision-making capacity or healthcare power of attorney of an incapacitated patient may direct EMS providers to initiate resuscitation, thus revoking the DNR order. The bracelet should be removed as soon as possible.

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# ED PEAK CENSUS NOTIFICATIONS OR BYPASS REQUESTS

**Background:** Hospital resources, including emergency services, may occasionally be overwhelmed and unable to provide optimal patient care. Factors contributing to this problem may include a shortage of qualified health care professionals, lack of hospital-based resources, and overwhelming hospital and emergency department volume.

**Hospital Peak Census**

Peak Census denotes that a hospital is full/very busy, and delays should be expected. If patient condition allows, consider transport to the next closest appropriate emergency department with patient/family consent. If the patient still requests transport to the facility on Peak Census despite being aware of the potential delays, then they should be transported to that facility.

Any patient deemed unstable by EMS personnel should be transported to the closest appropriate facility regardless of Peak Census designation. Examples of unstable patients include:

- Patients with unmanageable and unsecure airways
- Patients in respiratory distress
- Patients remaining in cardiac arrest or with ROSC
- Trauma alerts
- Patients with uncontrolled hemorrhage
- Patients in decompensated shock
- Patients with possible stroke or STEMI
- Patients requiring paramedic level care without a paramedic in attendance

**Limited Divert**

Limited Divert is used by a hospital if there are specific circumstances making it difficult to care for some patient conditions. Examples include:

- No CT scanning capabilities: diversion of trauma and potential stroke patients
- Specialty care limitation: patients needing that specialty may benefit being transported elsewhere
- No hospital monitors available due to volume: patients requiring cardiac monitoring may benefit being transported elsewhere
- ED Boarders: lack of inpatient beds is limiting the ability to take care of ED patients due to boarders
- No ICU beds available: ICU level patients will likely be ED boarders or transferred to another hospital

Like Peak Census, Limited Divert should not divert unstable patients, unless their condition cannot be appropriately managed at the hospital due to an equipment issue, such as lack of CT scan for trauma and stroke patients. Questions about the appropriateness of a specific patient being transported to a hospital on Limited Divert status should be addressed through online medical control. As with Peak Census, if a patient insists on being transported to a hospital on Limited Divert despite being told the risks of doing so, they should be transported there.

**Hospital Bypass**

Hospital Bypass designates that an ED is closed to inbound EMS patients. This should only be used when a hospital has sustained a major internal emergency (Structural damage, environmental, HAZMAT, Utilities failure, etc.) that make it unsafe to care for ANY emergency department patients. EMS units should go to the next closest appropriate facility.

Once on hospital property, the receiving hospital may not refuse care for a patient and is subject to EMTALA rules and regulations. Likewise, EMS personnel cannot leave a hospital with a patient after arrival unless a medical screening exam has been completed by an ED professional. If their patient is unstable, EMS personnel should remain with the patient until hospital staff with the ability to care for that patient are available.

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# EMS MEDICATION SHORTAGE RETENTION PAST EXPIRATION

**Purpose:** This guideline provides guidance to EMS providers for emergency medication retention past expiration dates

**Background:** Nationally, many emergency medications used by EMS continue to be in severe shortage. In order to anticipate future shortages and prevent patient harm resulting from inadequate supplies of emergency medications, Dr. Steve Andrews has approved this policy for the retention of expired emergency medications

**Procedure:** All emergency medications can be retained for up to 12 months past their expiration date by the following policy. In addition, certain medications can be kept much longer as per the list below. Medications should be discarded if they have become discolored or have precipitate. Medications should be stored per the manufacturer’s recommendations

Drug	Form	Months Extension	Years Extension
Atropine Sulfate	Injection solution	96	8
Calcium Chloride	Injection solution	96	8
Dexamethasone	Syringe	60	5
Dextrose 10%	Injection solution	24	2
Dextrose 5%	Injection solution	72	6
Diphenhydramine	Syringe	72	6
Dobutamine	Injection solution	48	4
Fentanyl	Injection solution	84	7
Furosemide	Injection solution	30	2.5
Heparin Sodium	Injection solution	48	4
Hydrocortisone	Injection solution	48	4
Ketamine	Injection solution	72	6
Lactated Ringers	Injection solution	48	4
Lidocaine HCl	Injection solution	60	5
Mannitol	Injection solution	96	8
Morphine	Syringe	96	8
Naloxone	Injection solution	84	7
Pancuronium	Injection solution	84	7
Phenylephrine	Injection solution	72	6
Pralidoxime	Autoinjector	120	10
Prochlorperazine	Injection solution	60	5
Promethazine	Injection solution	60	5
Sodium Bicarbonate	Injection solution	96	8
Sodium Chloride	Irrigation	96	8
Sodium Chloride	Injection solution	36	3
Sodium Nitrite	Injection solution	120	10
Sodium Thiosulfate	Injection solution	120	10
Succinylcholine	Powder	72	6

Dr. Steve Andrews, Medical Director, authorizes storage of all emergency medications up to 12 months past their expiration dates with exceptions listed above for retaining even longer. Expired drugs should be stored separately from unexpired medications. A separate authorization will need to be issued by the medical director before expired drugs may be used on patients. This document only allows and encourages storage of expired emergency medications to meet possible future needs



\_\_\_\_\_  
Steve Andrews, MD

04/02/2024  
\_\_\_\_\_  
Date:

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# HELICOPTER EMS (HEMS) RESPONSE

**Purpose:** To provide guidelines for the appropriate utilization of Helicopter Emergency Medical Services Response (HEMS) to assure the safest, most appropriate utilization and method of transportation based on the needs of a patient. HEMS can offer a time-saving advantage to patients facing time-sensitive emergencies\* when it comes to reaching hospitals capable of providing necessary interventions. This benefit applies IF the patient can be delivered within the interventional window\*\*, AND Ground Emergency Medical Services (GEMS) are not accessible to effectively deliver the patient to receive definitive care within that interventional window.

**Examples include:**

- Injured patients meeting the State of Wisconsin Field **Trauma Triage Guidelines** **RED** criteria that are greater than 30 minutes ground travel to the closest Level I or Level II trauma center
  - HEMS utilization for mechanism of injury or special population alone lacks clear evidence of benefit. Since these are patients that may not necessarily need the resources of the highest trauma level in a region, use of HEMS should generally not be used.
- Patients with acute STEMI needing transportation to a regional percutaneous coronary intervention (PCI) capable hospital where a helicopter can get the patient to a cardiac catheterization lab 30 minutes faster than a ground ambulance
- HEMS may provide clinical resources to patients needing critical care services if unable to obtain critical care services by GEMS

### Injury Patterns

- Penetrating injuries to head, neck, torso, and proximal extremities
- Skull deformity, suspected skull fracture
- Suspected spinal injury with new motor or sensory loss
- Chest wall instability, deformity, or suspected flail chest
- Suspected pelvic fracture
- Suspected fracture of two or more proximal long bones
- Crushed, degloved, mangled, or pulseless extremity
- Amputation proximal to wrist or ankle
- Active bleeding requiring a tourniquet or wound packing with continuous pressure

### Mental Status & Vital Signs

**All Patients**

- Unable to follow commands (motor GCS < 6)
- RR < 10 or > 29 breaths/min
- Respiratory distress or need for respiratory support
- Room-air pulse oximetry < 90%

**Age 0–9 years**

- SBP < 70mmHg + (2 x age in years)

**Age 10–64 years**

- SBP < 90 mmHg or
- HR > SBP

**Age > 65 years**

- SBP < 110 mmHg or
- HR > SBP

**Other reasons to utilize HEMS in the out-of-hospital setting include:**

- Patient is located in a geographically isolated area, which would make ground transport impossible or greatly delayed
- Local EMS resources are exceeded
- **Mass Casualty** incident or during disasters and times of low community resources
- Prolonged complicated extrication requiring on-scene medical care outside of the local EMS scope of practice
- Expanding events with unclear patient involvement or community threats

**It is important to understand that HEMS is not without risk, including economic:**

- Mortality related to ambulance crashes in 0.76 deaths per 100,000 transports.
- Overall mortality associated with crashed when HEMS crews are included is 1 death per 16,340 transports. Compare this with 1-2 extra lives saved per 100 transport for patient with severe traumatic injuries

\*Time-sensitive emergency is defined as an acute life threatening medical or traumatic event that requires a time critical intervention to reduce mortality and/or morbidity. Examples include major systems trauma, ST elevation myocardial infarction, or stroke.

\*\* An interventional window can be defined as the period of time from which mortality or morbidity is likely to be reduced by the administration of pharmaceutical agents, medical procedures, or interventions. An interventional window should be based on available national consensus guidelines such as the American Heart Association’s first medical contact or door-to-balloon or door-to-needle time. The “Golden Hour” of trauma refers to the core principle of rapid intervention in trauma cases, rather than the narrow meaning of a critical one-hour time period. There is no evidence to suggest that survival rates drop after 60 minutes.



# JUST CULTURE

**Purpose:** A Just Culture recognizes that adverse events and unanticipated outcomes often result from human error or system failures, rather than the result of reckless or intentionally malicious behavior, and that individuals are accountable for their individual actions, but generally not from errors or problems in system design. Aurora South WI EMS fosters a fair and systematic approach that balances a nonpunitive, justifiable learning environment with an equally important need for accountability. This includes evaluation for system level issues that allow unwanted human error or behavioral choices and identification of process improvement opportunities that will prevent or minimize potential harm during patient care. Our guidelines are carefully developed to reduce unwanted human error and system design errors.

The goal of Aurora South WI EMS is to improve health in the communities and region we serve. Every effort that falls short of the intended result provides a learning and improvement opportunity. System design, system effectiveness, and individual performance all contribute to outcomes, therefore analysis of adverse or unintended results must fairly assess all aspects of the events. The purpose of this guideline is to establish a framework for, and commitment to, a Just Culture at Aurora Health Care as part of the journey for being a High Reliability Organization and EMS System.

**Just Culture Guidance:**

All Aurora South WI EMS Providers will:

- Actively seek to avoid causing a risk or harm to patients, other first responders, and hospital staff
- Work diligently to achieve the goals and intended outcomes of their organization
- Follow the policies, rules, and regulations of their organization
- Report safety events, near misses, and other events through the appropriate reporting system
- Be held accountable for their individual actions based on the quality of decision making, rather than the outcomes of decisions
- Participate in Root Cause Analysis (RCA) reviews and Apparent Cause Analysis (ACA) reviews as necessary

The interpretation, administration, and monitoring for compliance of a Just Culture will be the responsibility of operational leadership in collaboration with Aurora South WI EMS Office of Medical Direction, and will:

- Promote a learning environment and educate all EMS Providers on the concept of Just Culture
- Educate all staff members and ensure the use of the **Just Culture Decision Guideline**, a tool to help determine the type of behavior displayed and the correct course of action when an individual has made an error, drifted into at-risk behavior, or otherwise not met the expectations of the organization
- Foster an environment that promotes full disclosure of events
- Lead or participate in Root Cause Analysis (RCA) reviews and Apparent Cause Analysis (ACA) reviews, to help lead a response focused on process and prevention
- Actively seek and report areas of concern and potential harm and opportunities for improvement with organizational leadership
- Notify and include other directors, managers, senior leaders, and other healthcare team members depending on the severity of the concern or event

**Definitions:**

<b>High Reliability Organization</b>	An organization that has succeeded in avoiding catastrophes in an environment where normal accidents can be expected due to risk factors and complexity
<b>Just Culture</b>	A learning culture that is focused on balancing accountability with fairness.
<b>Staff</b>	All personnel working at all levels of clinical and non-clinical healthcare roles
<b>Near Miss</b>	An event that could have caused harm but was averted.
<b>Human Error</b>	An event leading to an action not happening as it was intended, commonly described as a slip, lapse, or mistake
<b>Safety</b>	Freedom from unjustified risk and preventable injury
<b>Consoling</b>	Expressing empathy and providing emotional support to someone in a time of grief or disappointment.
<b>Coaching</b>	The process of providing constructive feedback about engaging in safer behavioral choices. Ongoing feedback and coaching are used to communicate about and reinforce appropriate behavior, teach new skills, motivate high performance, and mentor workforce members so they understand their role in the organization.
<b>Counseling</b>	Communication with an individual where a performance deficiency is identified and expectations for future performance are discussed. Counseling should be documented in writing by informal memo or confirmation email and placed in the departmental personnel file with a copy provided to the staff member involved. The staff member does not have to sign the document.



<b>Disciplinary Action</b>	Action taken to ensure adherence to acceptable and reasonable standards of performance and conduct may include written warning, written reprimand, suspension, reduction/demotion, and discharge, applied in a progressive or non-progressive manner. Workforce members may ask for a union representative or witness (as applicable) if he or she feels a meeting may lead to discipline.
<b>Reckless Behavior</b>	A behavioral choice to consciously disregard a substantial and unjustifiable risk, or failure to follow clear and known procedures.
<b>Negligent Behavior</b>	Failure to behave in the manner expected from someone who has the same knowledge and skills under the same circumstances.
<b>Intentional Rule Violation or Malicious Intent</b>	The intentional rule violation occurs when an individual chooses to knowingly violate a rule while he or she is performing a task. This concept is not necessarily related to risk taking, but merely shows that an individual knew of or intended to violate a rule, procedure, or duty while performing a task.
<b>Root Cause Analysis</b>	A root cause analysis is one type of comprehensive, systematic analysis, which is a process for identifying basic or causal factors underlying variation in performance, including the occurrence or possible occurrence of a sentinel event.
<b>Apparent Cause Analysis</b>	A limited investigation, requiring fewer investigative resources, of a safety event resulting in limited or no harm with a focus on addressing immediate concerns and developing local preventative strategies.

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# JUST CULTURE DECISION GUIDELINE

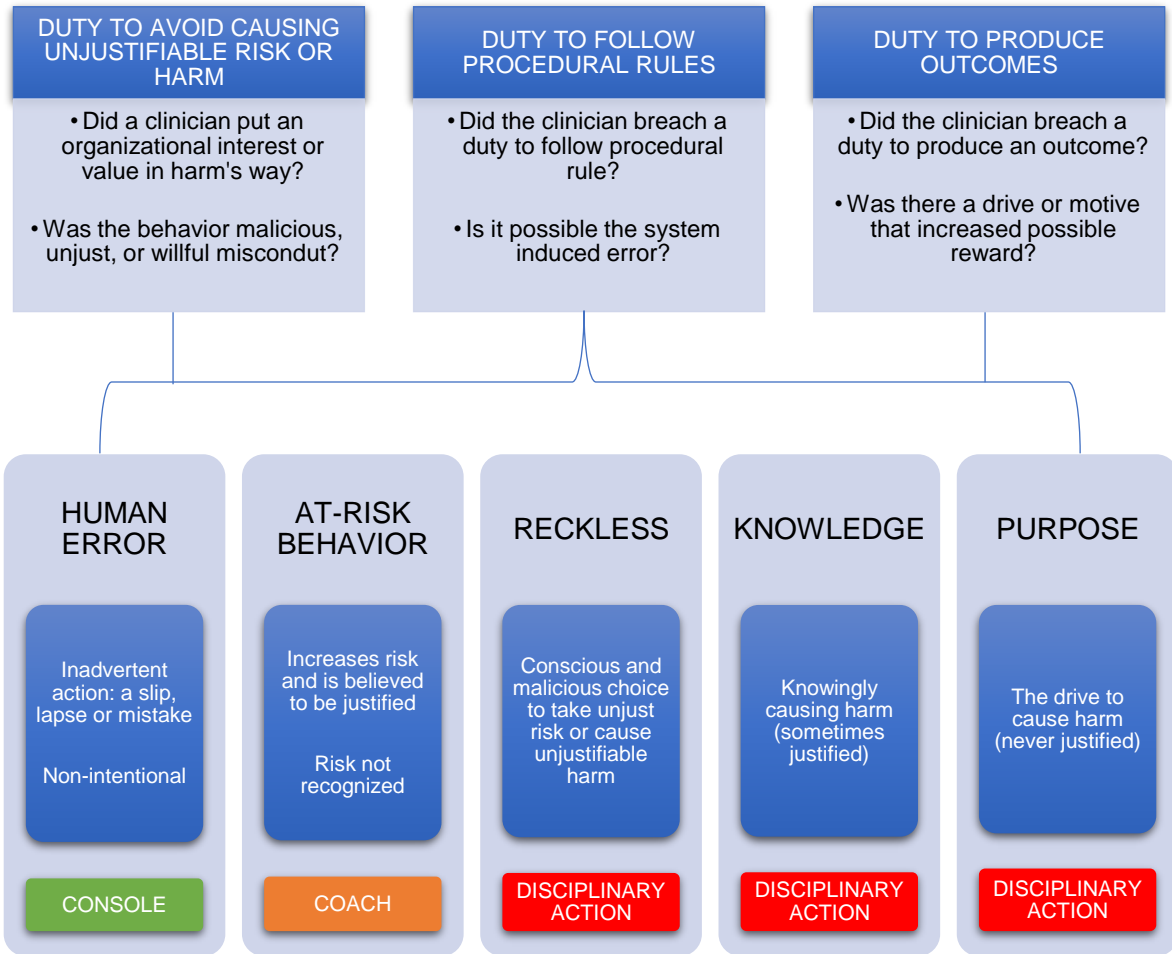
A Just Culture is a concept of systems thinking that supports shared accountability, shifting the focus from severity of events and outcomes to risk and choices. The incorporation of a Just Culture in the pre-hospital setting allows for a standardized approach to focusing on how errors occurred, and how they can be prevented in the future, using Root Cause Analysis (RCA), peer reviews, and debriefings. This promotes an investigatory approach to find the root cause creating the incident. The facts discovered in RCA's and debriefings can assist the agency with outcome resolution, determining system driven errors, human errors, or unjust behaviors.

Subsequently, a Just Culture allows for:

- Aligning values and expectations
- Designing better services
- Driving better behavioral choices
- Systematic approach to learning
- Standardized approach for discovery of factual, non-biased findings

Just Culture can assist in holding its system and staff accountable within a supportive environment, that provides a non-punitive means of reporting errors, while demonstrating zero tolerance for risky behavior.

## EVALUATE ALL INDEPENDENT OF ACTUAL OUTCOME



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# NALOXONE EXTENDED USE POLICY FOR FIRST RESPONDERS

**Purpose:** This guideline provides guidance to first responders for naloxone use beyond the labeled expiration date

**Background:** Nationally, opioid overdose remains critically high and the expansion of naloxone (Narcan) use by ambulance, fire department and law enforcement along with the public has resulted in local shortages and skyrocketing costs. Based on recent a recent study presented at “AAPS PharmSci 360” November 6<sup>th</sup>, 2018 in Washington DC “Evaluation of Chemical Stability of Naloxone Products beyond Their Labeled Expiration Dates” by Dr. Mohammad Hossain, showed that multiple expired naloxone products one year past its expiration dates were fully potent and had no contaminants.

**Procedure:** Given this information and the continued challenge of availability and cost of naloxone (Narcan), Dr. Steve Andrews has approved this policy for the use of naloxone (Narcan) one year past its expiration date for law enforcement and first responder agencies



\_\_\_\_\_  
Steve Andrews, MD

04/02/2024

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Date:

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# NALOXONE LEAVE BEHIND

**Purpose:** Aurora South Wisconsin EMS providers at the EMT level and higher may distribute Naloxone kits intended for layperson use. This would be particularly indicated after refusal of transport by suspected opioid overdoses but may be done for anyone at higher risk for encountering a future opioid overdose.

**Procedure:**

1. Naloxone from regular EMS supply shall not be distributed to patients or bystanders
2. The EMS service may obtain or create Naloxone kits intended for layperson use as available
3. Naloxone kits may be distributed to EMS units as available
4. Aurora South WI EMS providers may give a Naloxone kit, if available, to patients and/or bystanders involved in suspected opioid overdose cases
5. Naloxone kits are not limited to responses in which a suspected opioid overdose is the primary impression
6. Aurora South WI EMS providers may use their discretion and clinical judgement to distribute Naloxone kits to any patient and/or bystander they suspect to be at risk for encountering a future opioid overdose, regardless of initial call.

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# NO INJURY OR ILLNESS/LIFT ASSIST

**Purpose:** To provide guidelines for EMS personnel responding to a call and encountering individuals who deny injury or illness and have no apparent significant injury or illness when assessed. This includes “lift assist” calls.

**Procedure:**

1. Assess mechanism of injury or history of illness, patient symptoms, and assess patient for corresponding signs of significant injury or illness.
2. If there is no evidence of significant injury or illness, and the involved person has no significant symptoms or signs of injury or illness, and the patient does not desire transport, then the EMS Provider has no further obligation to this individual.
3. If it does not hinder treatment or transportation of other injured or ill patients, documentation on the EMS patient care report should, at minimum, include the following for each non-injured patient:
  - a. Name
  - b. History, confirming lack of significant findings
  - c. Patient assessment, including a complete set of vital signs confirming lack of significant findings consistent with illness/injury
4. If serious mechanism of injury, significant symptoms of injury or illness, or physical exam findings are consistent with significant injury or illness, advise treatment/transport for the patient.
  - a. If patient agrees, follow appropriate guideline and transport to hospital
  - b. If patient refuses, follow **Patient Refusal of Care or Transport**

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# PATIENT CONSENT FOR CARE AND TRANSPORT

EMS providers have an ethical, moral, and legal responsibility to care for patients with utmost competence. This includes encouraging transport to the emergency department for definitive evaluation and treatment. This also reduces EMS liability exposure.

**Purpose:** To provide guidelines for the EMS provider in obtaining consent for the treatment and transport of patients. Before treating an individual or performing an intervention, consent must first be obtained from the individual or a legal surrogate.

**Definition of a Patient:** For the purposes of these guidelines, a patient is defined as an individual who:

- Requests evaluation for a potential illness or injury; **OR**
- Has obvious evidence of illness or injury; **OR**
- Has a complaint suggestive of a potential illness or injury; **OR**
- Has experienced an acute event that could reasonably lead to illness or injury; **OR**
- If under the age of 18 or otherwise lacks capacity, has a guardian or other responsible person request evaluation on their behalf

**Decision-Making Capacity:**

Determining whether a patient has decision-making capacity to consent or refuse medical treatment in the prehospital setting can be difficult. Every effort should be made to determine if the patient has decision-making capacity, as defined below:

- A patient is deemed to have decision-making capacity and can provide informed consent if it can be demonstrated that they:
  - Understand the nature and risk of illness/injury
  - Understand the possible consequences of delaying treatment and/or refusing transport
  - Are able to make their decision voluntarily, given advised risks, benefits, and other options
  - Are able to communicate their choice

**Consent:**

- Adults retain the right to refuse treatment and transport. However, in cases of significant illness or injury, every effort should be made to persuade the patient to seek examination at a hospital.
- Whenever a patient refuses treatment or transport, and the EMS provider suspects impairment, altered consciousness, or lack of decision-making capacity, law enforcement or medical control must be notified.
- Minors (those under 18 years old who are not emancipated by marriage or court decree) lack the capacity to consent to treatment or transport.
  - Treatment or transport consent for an ill or injured minor should ideally be obtained from a parent or legal guardian.
  - Parental or legal guardian wishes take precedence unless they lack decision-making capacity.
  - If refusal to consent raises concerns of abuse, neglect, or unlawful activity, these suspicions should be reported to the police.
  - If a minor's life is believed to be in danger, immediate police assistance should be requested.
  - Documents related to treatment or transport should be signed by the parent or legal guardian; if absent, phone consent or refusal must be witnessed by another person.
  - If the parent or legal guardian is unavailable, transport of the minor is preferred over inaction.
  - Lifesaving treatment for a minor should not be withheld due to legal concerns; saving a life is a more justifiable action than non-treatment to avoid legal repercussions.
  - Consent may be inferred by the patient's actions or by express statements. If you are not sure that you have consent, clarify with the patient, legal surrogate, or contact medical control. This may include consent for treatment decisions or transport/destination decisions.

**Implied Consent:** In the event a patient, regardless of age, is incapacitated due to injury, accident, illness, or unconsciousness, and is suspected of experiencing a potentially life-threatening situation, the principle of implied consent is applicable. Implied consent operates on the presumption that if the individual were conscious and capable of communication, they would consent to emergency treatment. Consequently, under these circumstances, the patient may be transported without explicit consent. It may be necessary to employ law enforcement, physical, and/or chemical restraint measures as warranted.

**Involuntary Consent:** In exceptional situations, individuals other than the patient may grant consent. Such instances may include a court-issued order (guardianship), authorization by a law enforcement officer for individuals in custody or detention, or for individuals subject to a mental health hold or commitment due to being deemed a danger to themselves or others or being gravely disabled. EMS providers are advised, if needed, to **CONTACT ONLINE MEDICAL CONTROL** to seek guidance for matters pertaining to these circumstances.

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# PATIENT IN LAW ENFORCEMENT CUSTODY

**Purpose** To provide guidelines for the evaluation, management, and transport of a patient requiring EMS assessment while in the custody of Law Enforcement.

**Background:** EMS Providers have a duty to care for the patient, which may not align with the desires of law enforcement. As with every patient interaction, it is important that the EMS Provider serve as a patient advocate and use their best medical judgment to assist law enforcement in making safe, appropriate decisions regarding medical aid and disposition decisions. It should be noted that EMS is not equipped nor authorized to provide “medical clearance.” Rather, an EMS Provider should provide assessment, treatment, and transportation decisions as they would any other patient. EMS providers may not take medical direction or treatment instructions from Law Enforcement Officers (LEO). Additionally, interventions must not be for the purpose of assisting law enforcement in restraining, subduing, or detaining someone.

**Patient In Law Enforcement Custody:**

- **Restrained by hand cuffs:**
  - Handcuffs are only to be placed by law enforcement and are not permitted to be managed by EMS Providers
  - Law enforcement is required to ride with EMS so as to be able to be readily available to remove the handcuffs if it is needed in an emergency situation to facilitate the medical care of the patient
- **Patient refusing assessment, treatment, and/or transport and EMS feels it is appropriate:**
  - Evaluate the patient’s medical decision-making capacity according to the **Patient Refusal of Care or Transport** guideline
  - Consider utilization of family, friends, law enforcement officers, and/or **CONTACT ONLINE MEDICAL CONTROL** for support of recommendation to assess, treat, and/or transport the patient
  - Advise the law enforcement officer of the decision of the patient, and consider potential risks or hazards to law enforcement if the patient were to refuse (i.e. lacerations that may pose a biohazard to officers or other detainees)
    - If law enforcement requests transport, document their request and coordinate safe transport to the closest, most appropriate Emergency Department. In these instances, the law enforcement officer must take the patient into protective custody and is effectively making decisions as the healthcare power of attorney for the patient.
    - Document that law enforcement has taken protective custody of the patient.
    - In this instance, the law enforcement officer must accompany the patient to the Emergency Department
  - If the patient is evaluated to have capacity and does not pose an undue risk to law enforcement, follow guidelines for a patient refusal against medical advice.
- **Law enforcement refusing access, assessment, treatment, and/or transport and EMS feels it is appropriate:**
  - EMS Providers have a duty to access any patient in custody of law enforcement
  - If law enforcement is delaying, impeding, or preventing patient access, EMS Providers have a duty to “speak-up” and advocate for the patient and document accordingly. This is best done addressing law enforcement in front of a body worn camera (BWC)
  - If EMS recommends assessing, treating, or transporting a patient in custody of law enforcement to the Emergency Department but the law enforcement officer refuses transport:
    - Discuss with the law enforcement officer on body worn camera, why transportation is indicated, and that medical clearance is not authorized by EMS Personnel in the field.
    - Recommend contacting supervising officer or **CONTACT ONLINE MEDICAL CONTROL** for consultation and assistance.
  - If law enforcement continues to decline assessment, treatment, and/or transport for medical evaluation and management, allow the patient to remain in the custody of the law enforcement officer, and advise them that EMS may be re-contacted at any time to provide medical assistance as needed
    - Document the law enforcement agency as well as the name and badge number of the responsible officer along with specifics of the discussion

These patient encounters have a higher-than-average incidence of scrutiny on review; therefore, take steps to ensure that your documentation is clear, descriptive, and complete. EMS Provider documentation should include law enforcement officer names and badge numbers.

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# PATIENT REFUSAL OF CARE OR TRANSPORT

Providers have an ethical, moral, and legal responsibility for the patient's well-being if the patient consents to treatment. To reduce liability exposure, and in the best interest of a more complete patient assessment, providers should strongly encourage transport with an illness or injury.

**Purpose:** To establish guidelines for the management and documentation of situations where patients refuse treatment or transportation, or insist on transportation to a destination other than that recommended by EMS personnel

**Definition of a Patient:** For the purposes of these guidelines, a patient is defined as an individual who:

- Requests evaluation for a potential illness or injury; **OR**
- Has obvious evidence of illness or injury; **OR**
- Has a complaint suggestive of a potential illness or injury; **OR**
- Has experienced an acute event that could reasonably lead to illness or injury; **OR**
- If under the age of 18 or otherwise lacks capacity, has a guardian or other responsible person request evaluation on their behalf

It is important to understand that a competent and oriented patient has the right to make decisions, even if those decisions are deemed hazardous to their health or well-being by an EMS Provider. Every effort should be made to adequately inform a patient of the risks and benefits of an assessment or intervention to allow for informed decision making by a patient or legal surrogate. An EMS Provider must perform and document a decisional capacity assessment for a patient who is declining care or transport.

## Decision-Making Capacity:

- A person is deemed to have decision-making capacity if the person can demonstrate **ALL** the following:
  - Can verbalize an understanding of what is happening; the nature of the illness/injury or risk of injury/illness
  - Can verbalize an understanding of the possible consequences of delaying treatment and/or declining transport
  - Given the risks and options, the person voluntarily refuses or accepts treatment and/or transport
  - The person is able to communicate their choice, (e.g., language barriers)
- A person's decisional capacity may be impaired as a result of, but not limited by the following:
  - **Intoxication:** with alcohol or drugs: Determined by the EMS Provider evaluation demonstrating impairment of mental or physical functioning secondary to this and not solely by reported ingestion. Evidence of intoxication may include an inability to stand on their own, staggering, falling, vomiting/urinating/defecating on clothing, inability to respond appropriately to questions or follow commands
  - **Altered mental status or encephalopathy secondary to acute trauma or medical conditions (e.g., hypoxia, hypotension, hypoglycemia, dehydration, infection, etc.):** Recognize that a patient's condition and decision-making capacity may change based on treatment of acute traumatic or medical conditions
  - **Chronic or congenital conditions such as dementia, psychiatric illness, or mental disabilities:** It is important to understand a patient's baseline mental status and abilities in order to compare to current status
  - **Suicidal or homicidal ideation or attempts at self-harm:** Law Enforcement must be involved to assist in determination of protective custody
- If a person appears to lack decisional capacity based on any of the above and is continuing to refuse recommended assessment, treatment, and/or transport by EMS or another individual to the hospital:
  - Request Law Enforcement support
  - If person is taken into protective custody, follow **Patient In Law Enforcement Custody** guideline
  - If law enforcement does not determine patients should be taken into protective custody, **CONTACT ONLINE MEDICAL CONTROL** for consultation and assistance
  - Document the law enforcement agency as well as the name and badge number of the responsible officer along with specific details of the discussion
- Document how decisional capacity was assessed and all EMS provider attempts to assess, treat, and/or transport patient
  - Whenever possible, obtain Law Enforcement or other witness signatures to support documentation
- If the patient is deemed non-decisional (does not have decision making capacity) and is in need of medical care, the patient should be transported
  - The use of restraints is appropriate as needed

## Refusal of Treatment and/or Transport

- Attempt to obtain a history and physical exam, in as much detail as is permitted by the patient
  - Exam should include a full set of vital signs (Glasgow Coma Scale (GCS) systolic blood pressure, heart rate, respiratory rate)
- Conduct three assessments: Providers should attempt to assess 3 major areas prior to permitting a patient to refuse care and/or transportation. This includes assessment and documentation of:



- Legal Competence
  - Ensure the patient is at least 18 years of age in order to refuse care; **OR**
  - If a minor, patient may refuse care if he or she is a 17-year-old High School graduate, is married, or is currently or has ever been pregnant
  - Patients subject to a court decree of incapacity are not legally competent to refuse care
- Decision-Making Capacity
  - Start with the presumption that all patients have decision-making capacity unless provider assessment clearly indicates otherwise
  - Ensure that patient is oriented to person, place, time, and purpose
  - Establish that patient is not a danger to himself or others
  - Ensure that patient understands what is going on, what choices they have, and what risks are involved with refusing treatment and/or transport, or any proposed alternatives
  - Check to be sure the patient is exhibiting no other signs or symptoms of potential mental incapacity or impaired decision-making capacity as listed above under Decision-Making Capacity
  - The patient does not have to make a good decision, but they must make a deliberate, informed decision
- Medical or situational competence
  - Ensure the patient is not suffering from an acute medical condition that might impair his or her ability to make an informed decision to refuse care or transportation
  - If possible, rule out conditions such as hypovolemia, hypoxia, head trauma, unequal pupils, metabolic emergencies (e.g. hypoglycemia), hypothermia, hyperthermia, etc.
  - If any conditions listed above impair patients' decision-making capacity, patient may not be competent to refuse care and your documentation should clearly establish that the patient understood the risks, benefits, and advice given to them
- Provide a clear recommendation of treatment and transport to the patient or legal surrogate
  - Discuss reasoning behind recommendations, risks and consequences for declining assessment, treatment, and/or transport at the patient or legal surrogate's level of understanding; risks associated with refusal will always potentially include disability and death
  - Attempt to speak with family, friends, bystanders, law enforcement, and or medical personnel on scene to assist patient in consenting to treatment/transport
- Instruct the patient to call 911, go to the hospital, seek care elsewhere, or find alternative transportation at any time if they change their mind or their condition worsens
- **CONTACT ONLINE MEDICAL CONTROL** liberally for high-risk situations including assessment of decision-making capacity
- Obtain the signature of the patient or authorized signer. If the patient refuses to sign, document this fact on the refusal form and in the patient care record.
- Obtain signature of a witness; preferably someone who witnessed the explanation of risks and benefits to the patient, heard EMS providers recommendation of treatment and transport, heard the patient's refusal of treatment and transport, and who observed the patient sign the form. If no witness is available, a crew member may sign as a last resort. All witnesses should be 18 years of age or older.
- Document event in the patient care record. Documentation should include the following:
  - All attempts made and individuals spoken with regarding patient treatment and transport decision
  - Complete history and physical exam, as permitted by the patient, including vital signs
    - If patient refuses any part of the exam, document the refusal accordingly
  - Assessment of decision-making capacity
  - Clinical signs and/or symptoms upon which the recommendation for treatment and transport was based
  - Information provided to the patient and/or other authorized individual of the consequences of their refusal of treatment transport
  - Risks of refusal, patient instructions, the patient's understanding of the risks and complications of his or her choice to refuse
  - Online medical control instructions/advice if any
  - Alternatives offered

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# PHYSICIAN PRESENT ON SCENE

**Purpose:** To establish a clear framework for collaboration and decision making to ensure the best possible care for a patient when a physician is on scene.

**Personal Physician:** A personal physician includes any physician with whom the patient has an established relationship (i.e., if a patient was seen in an urgent care, and the urgent care physician examined the patient and calls EMS, that qualifies as an established relationship).

- If the patient’s personal physician is present and wishes to direct the patient’s care:
  - The EMS Providers should defer to the orders of the personal physician if those orders are within the scope of practice for the EMS provider license level and the Aurora South Wisconsin EMS Guidelines. EMS Providers should establish medical control at any time they are uncomfortable performing orders from a patient’s physician.
  - Orders given by the personal physician should be written, with the physician’s name documented legibly, and signed by the physician when possible.

**EMS Medical Director:** If an Aurora South WI EMS Medical Director is present and wishes to assume responsibility for the patient’s care, EMS Providers should defer to the orders of the Medical Director. EMS providers cannot perform skills beyond their scope of practice.

**Medical Control Physician:** If a medical control physician is present and wishes to assume responsibility for the patient’s care, EMS Providers should defer to the orders of the medical control physician if those orders are within the scope of practice for the EMS provider license level and the Aurora South Wisconsin EMS Guidelines.

**Other Intervening Physician:** If any other intervening physician wishes to assume responsibility for a patient:

- **If Online Medical Control (OLMC) is already established:**
  - The intervening physician should be allowed to communicate with the medical control physician prior to EMS Providers accepting orders. If there is a disagreement between the two physicians, EMS Providers will follow the orders of the medical control physician and allow the physicians to continue their communication.
- **If Online Medical Control (OLMC) has not been established:**
  - The intervening physicians name should be documented legibly on the PCR and, if possible, obtain the physicians signature in the PCR, documenting assumption of care and verification of orders. EMS Providers should relinquish responsibility for patient management if the physician meets the following criteria:
    - Physician can show appropriate identification (or is known to the EMS Providers)
    - Agrees in advance to accompany the patient to the hospital (exception: MCI)
- **If multiple intervening physicians are present:**
  - EMS Providers should request the physicians to designate one physician to direct patient care and assume responsibility for the patient.
- If a physician is unable or unwilling to assume responsibility for patient care and is not accompanying the patient to the hospital, they may be requested to aid the EMS Providers or serve as a medical consultant to both the EMS Providers and OLMC.

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# RADIO REPORT

**Purpose:** To facilitate effective communication between EMS teams and receiving healthcare facilities, ensuring that essential patient information is conveyed accurately and efficiently for timely and appropriate medical care.

Transmit radio reports using the following guidance below. Reports given by cell phone may be preferred if additional patient information is pertinent to the receiving facility.

1. Department name, unit number, transport priority
2. Notify if patient is a trauma, stroke, cardiac, or sepsis alert patient
3. Age, sex, and approximate weight (when appropriate)
4. Chief complaint:
  - a. Signs and symptoms, degree of distress, severity of pain (1-10 scale)
  - b. Mechanism of Injury (MOI) or Nature of Illness (NOI)
  - c. Pertinent scene information
  - d. Pertinent negatives/denials
5. Level of consciousness (Glasgow Coma Scale parameters for altered mental status)
6. History
  - a. Current medications
  - b. Allergies
7. Clinical findings:
  - a. Pertinent findings
  - b. Vital signs:
    - i. Blood pressure (auscultated or palpated)
    - ii. Pulse (rate, regularity, quality, equality)
    - iii. Respirations (rate, pattern, depth)
    - iv. Skin (color, temperature, moisture, turgor)
    - v. Blood glucose (if indicated)
    - vi. Pulse oximetry
    - vii. EtCO2 (if indicated)
8. Treatment initiated prior to calling, and treatment response

DMIST - EMS VERBAL HAND-OFF FORMAT		
D	Demographics	Age, sex, weight (if pertinent), blood thinners
M	Mechanism of Injury - or - Medical Complaint	Mechanism: speed, mass, height of fall, restraints, type of collision, safety device use, use of weapon
		Medical: OPQRST as appropriate
I	Injuries - or - Illness	Injuries: head to toe, significant findings
		Info: ECG, Stroke Scale, SAMPLE
S	Severity - or - Signs	GCS, vital signs (BP, HR, RR, SpO2), BGL if applicable
T	Treatments Provided	Tubes, lines, medications, electrical therapy, wound care
		Trends: response to treatments

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# SCOPE OF PRACTICE FOR REGISTERED NURSE (RN)

**Purpose:** To establish guidelines to allow a Registered Nurse (RN) to perform as an EMS provider to the level approved by the EMS Medical Directors(s) up to the paramedic level or the highest level of care of the service provider.

**RN Qualification Requirements:**

1. Wisconsin licensed Registered Nurse
2. Wisconsin E-licensing account
  - a. Active, approved LCA on e-licensing agency roster
  - b. Approved authorization from Aurora South WI EMS Office of Medical Direction (OMD)
  - c. Approved authorization from the EMS Service Director
  - d. EMS training or previous licensure with approval from Aurora South WI OMD
3. Current CPR, ACLS, and PALS certifications for RNs approved to function at the EMT-Intermediate or Paramedic level
4. Complete the State of Wisconsin Department of Health Services Physician, Physician Assistant, and Registered Nurse Equivalency Application online and fulfill requirements outlined by WI EMS office
5. Complete the Aurora South WI EMS System Affiliation process
6. Maintain an E-Licensing account with the State of Wisconsin
7. Service Director and Aurora South WI OMD will decide on highest level of care an RN can provide within the scope of practice for which they are providing care. An RN may not perform skills that exceed the level of care of the service provider

**Skills and Protocol Proficiency:** RN providers must meet all benchmarks for those skills that are within their highest scope of practice for which they are providing care.

**Continuing Education:**

1. RN providers authorized by the Aurora South WI EMS Office of Medical Direction must:
  - a. Present copies of current licensure and certification to the OMD on a bi-annual basis
  - b. Meet all licensing, educational, and skill requirements as outlined in the Aurora South WI EMS Affiliation Application
  - c. Remain active in their department

**Pre-Hospital Care:** RN providers may not provide ALS care unless authorized and approved. If authorized to provide ALS care, an RN provider may initiate ALS as outlined within the scope of the Aurora South WI EMS Guidelines. If contact with on-line medical control (**OLMC**) is recommended or required, it will be shown in red as **CONTACT ONLINE MEDICAL CONTROL** within the specific guideline.

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# TERMINATION OR WITHHOLDING RESUSCITATIVE EFFORTS

## TERMINATION OR WITHHOLDING RESUSCITATIVE EFFORTS

**Purpose:** To identify patients in cardiac arrest for whom withholding or ceasing resuscitative efforts in the field is appropriate. For patients with a DNR order or bracelet, see [Do Not Resuscitate \(DNR\)](#) guideline.

**Background:** When there is no response to prehospital cardiac arrest treatment or there is evidence of injuries incompatible with life, it may be acceptable and often preferable to cease or not initiate resuscitation efforts in the field. In most situations, ALS providers can perform initial resuscitation that is equivalent to in hospital resuscitation attempts and there is usually no additional benefit to emergency department resuscitation. Research has shown that CPR performed during patient packing and transport is less effective than CPR done on the scene. Additionally, EMS providers risk physical injury when attempting to perform CPR in a moving ambulance while unrestrained. Given that ROSC and good neurologic recovery are dependent on focused, timely resuscitation with high quality, uninterrupted CPR, and timely defibrillation, the priority for most patients in cardiac arrest is high performance CPR and resuscitation on scene with appropriate cessation of efforts when indicated.

### Termination of Resuscitation Without Online Medical Control May Proceed:

- After 20 minutes of resuscitation, provided all of the following criteria are met:
  - The patient is an **ADULT** with an initial rhythm of asystole
  - Cardiac arrest is unwitnessed by EMS personnel
  - No shock has been administered by either automated or manual defibrillator
  - Pulses are absent without CPR assistance throughout the resuscitation
- After 30 minutes of resuscitation in **ANY** patient whose initial rhythm is not asystole or is unknown, provided all of the following criteria are met:
  - Cardiac arrest is unwitnessed by EMS personnel
  - No shock has been administered by either automated or manual defibrillator
  - Pulses are absent without CPR assistance throughout the resuscitation
- After 15 minutes of resuscitation for a witnessed traumatic arrest, provided all of the following criteria are met:
  - The transport time to an emergency hospital exceeded 15 minutes from the initial assessment or the onset of arrest, necessitating the initiation of resuscitation at the scene
  - Absence of pulses and other signs of life persists
  - The patient develops asystole or a pulseless, wide complex rhythm (PEA) with a rate less than 30 beats per minute
- Considerations for continuing resuscitation after 30 minutes include any of the following:
  - PEA greater than 40 beats per minute
  - Persistent ventricular tachycardia or ventricular fibrillation
  - EtCO<sub>2</sub> greater than 20

### CONTACT ONLINE MEDICAL CONTROL For Termination of Resuscitation Guidance If:

- There are any concerns about terminating resuscitation
- After 30 minutes of resuscitation, the criteria for termination of resuscitation outlined above are not met
  - Medical control may provide recommendations such as continuing resuscitation efforts, transporting the patient to the hospital, or considering termination of resuscitative efforts based on the specific circumstances

### Following Termination Of Resuscitation

- After termination of resuscitation, do not alter patient condition and do not remove any equipment such as lines or tubes, as the patient is now a potential medical examiner case
- Following termination of resuscitation:
  - Provide emotional support to family
  - Ensure appropriate patient disposition (law enforcement or medical examiner) according to local and county requirements
  - Document the following in the patient care record:
    - Date and time of termination of resuscitative efforts
    - All circumstances surrounding the use of this guideline
    - Disposition of the patient

**Withholding Resuscitation**

- Resuscitative efforts should be withheld for a patient of any age who is pulseless and apneic if any one or more of the following criteria is present:
  - Decapitation
  - Hemitorporectomy (trans-lumbar amputation)
  - Incineration
  - Decomposition of body tissue
  - Rigor mortis and/or dependent lividity
  - Cold death
    - Body frozen preventing chest from being compressed
    - Ice in the airway
    - Signs of predation
    - Head underwater for more than 60 minutes in an adult or 90 minutes in a child
- **Traumatic cardiac arrest:** resuscitative efforts should be withheld for any patient in traumatic cardiac arrest if, on arrival of first EMS unit, the patient has one or more of the following:
  - Pulseless, apneic, and without other signs of life (pupillary reflexes, spontaneous movement, response to pain)
  - Asystole on ECG
  - If mechanism of injury does not correlate with clinical condition or suspicion for possible non-traumatic cause of arrest, initiate resuscitation according to [Cardiac Arrest](#) guideline
- If above criteria are not met, or if mechanism of injury suggests possible non-traumatic cause of arrest, initiate resuscitation according to [Cardiac Arrest](#) guideline

**Special Considerations**

- EMS personnel may terminate or withhold resuscitative efforts in any of the following situations:
  - There is a risk to the health and safety of EMS personnel
  - Resources are inadequate to treat all patients ([Mass Casualty](#) situations)

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# CLINICAL GUIDELINES

## Cardiopulmonary

Airway Management

Medication Assisted Airway Management (MAAM)

Bradycardia – Adult (8 Years & Older)

Cardiac Arrest

Cardiac Arrest – ROSC

Chest Pain/Acute Coronary Syndrome (ACS)

Difficulty Breathing

Tachycardia

Ventricular Assist Device (LVAD)

## General Medical

Universal Care

Abdominal Pain

Allergic Reaction/Anaphylaxis

Altered Mental Status

Behavioral or Psychiatric Emergencies

Bites or Envenomations

Dizziness or Vertigo

Epistaxis

Fever or Suspected Sepsis

Hyperkalemia

Hypertensive Emergencies

Hyperthermia or Heat Exposure

Hypoglycemia or Hyperglycemia

Hypotension or Shock

Hypothermia or Cold Exposure

Nausea or Vomiting

Overdose or Toxic Exposure

Pain Management

Restraints – Chemical

Sedation

Seizure

Sickle Cell Pain

Suspected Stroke

Syncope

## OB/Neonatal

Childbirth

Childbirth - Complications

Neonatal Resuscitation

OB - Complications

## Pediatric

Bradycardia – Pediatric (<8 Years Old)

Brief Resolved Unexplained Event (BRUE)

## Trauma

Universal Care – Trauma Management

Burns

Hemorrhage Control

Traumatic Injuries

# CARDIOPULMONARY

[Airway Management](#)

[Medication Assisted Airway Management \(MAAM\)](#)

[Bradycardia – Adult \(8 Years & Older\)](#)

[Cardiac Arrest](#)

[Cardiac Arrest – ROSC](#)

[Chest Pain/Acute Coronary Syndrome \(ACS\)](#)

[Difficulty Breathing](#)

[Tachycardia](#)

[Ventricular Assist Device \(LVAD\)](#)



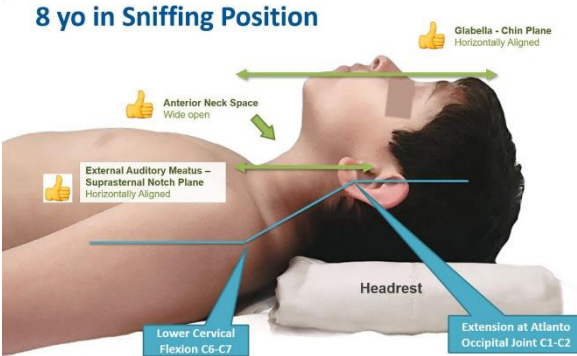
# AIRWAY MANAGEMENT

**INCLUSION Criteria:** Patients with evidence of ineffective oxygenation or ventilation, respiratory failure, or inability to maintain patency of airway

**EXCLUSION Criteria:** Neonates – see [Neonatal Resuscitation](#), patients who improve with supplemental oxygen or other interventions

**OTHER GUIDELINES TO CONSIDER:** [Medication Assisted Airway Management \(MAAM\)](#), [Difficulty Breathing](#), [Allergic Reaction/Anaphylaxis](#), [Altered Mental Status](#), [Chest Pain/Acute Coronary Syndrome \(ACS\)](#), [Cardiac Arrest](#), [Restraints - Chemical](#), [Hypotension or Shock](#), [Overdose or Toxic Exposure](#), [Sedation](#), [Seizure](#), [Suspected Stroke](#), [Traumatic Injuries](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a> or <a href="#">Universal Care – Trauma Management</a></li> <li>• Initiate <a href="#">Pulse Oximetry</a> <ul style="list-style-type: none"> <li>○ If pulse oximetry is less than 93%, titrate <a href="#">Oxygen</a> to lowest level to maintain pulse oximetry at 93% or greater</li> <li>○ Do not withhold oxygen if patient is having difficulty breathing or if unable to assess an oxygen saturation</li> </ul> </li> <li>• If patient spontaneously breathing,             <ul style="list-style-type: none"> <li>○ Allow or assist the patient into a position of comfort</li> </ul> </li> <li>• If airway obstruction is suspected: see <a href="#">Airway Obstruction</a></li> <li>• If patient has impaired protective reflexes:             <ul style="list-style-type: none"> <li>○ Initiate <a href="#">Suctioning</a>, if indicated</li> <li>○ Consider insertion of <a href="#">Basic Airway Adjuncts</a></li> </ul> </li> <li>• If apneic or agonal respirations present:             <ul style="list-style-type: none"> <li>○ Open airway with jaw thrust/head-tilt chin lift</li> <li>○ Position patient in sniffing position utilizing padding, if needed to achieve:                 <ul style="list-style-type: none"> <li>▪ Ear to sternal notch</li> <li>▪ Patient’s face/glabella parallel to ceiling                     <ul style="list-style-type: none"> <li>• <b>Pediatric:</b> Particularly infants, head shape and size may require additional padding under shoulders</li> <li>• <b>Bariatric patients:</b> may require additional padding or ramping to achieve proper positioning</li> </ul> </li> </ul> </li> <li>○ Initiate <a href="#">Suctioning</a>, if indicated</li> <li>○ Consider insertion of <a href="#">Basic Airway Adjuncts</a></li> <li>○ Assist breathing with <a href="#">Bag Valve Mask (BVM)</a></li> </ul> </li> </ul> <p><b>Ventilation</b></p> <ul style="list-style-type: none"> <li>▪ Ventilate only enough to see chest rise</li> <li>▪ Consider 2 rescuer mask seal technique at a rate of:             <ul style="list-style-type: none"> <li>• Adults: 10-12 breaths/minute</li> <li>• <b>Pediatric:</b> 12-20 breaths/minutes</li> </ul> </li> </ul> <ul style="list-style-type: none"> <li>• If patient is in <a href="#">Cardiac Arrest</a>, consider <a href="#">i-gel®</a> placement when appropriate</li> <li>• Consider <a href="#">Orogastric (OG) Tube Insertion</a> for gastric decompression following advanced airway placement</li> <li>• If opioid intoxication is suspected see <a href="#">Overdose or Toxic Exposure</a></li> <li>• If traumatic injury suspected, maintain C-spine precautions per <a href="#">Spinal Motion Restriction</a></li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• If patient has clinical signs of moderate to severe respiratory distress not relieved by other interventions consider <a href="#">CPAP – Non-Invasive Positive Pressure Ventilation</a> <ul style="list-style-type: none"> <li>○ Patient must be able to maintain open airway</li> <li>○ Mask must correctly fit and be secure</li> <li>○ MAP &gt; 65mmHg (adult) or age appropriate (pediatric)</li> </ul> </li> <li>• Consider <a href="#">Waveform Capnography</a></li> <li>• Consider <a href="#">Cardiac Monitoring</a></li> </ul> <p>Consider <a href="#">12 Lead ECG</a></p>



<b>AEMT</b>	<ul style="list-style-type: none"> <li>Consider <a href="#">IV/IO Access</a></li> <li>Consider <a href="#">IV/IO Fluid Bolus</a></li> </ul>
<b>INT</b>	<ul style="list-style-type: none"> <li>Consider <a href="#">Endotracheal Intubation</a></li> <li>If after successful airway placement patient demonstrates any signs of discomfort (increasing blood pressure, increasing heart rate, tearing, coughing, or gagging on invasive airway device, clinical signs of agitation) AND MAP &gt; 65 mmHg (adult) or age appropriate (pediatric), consider <a href="#">Pain Management</a></li> </ul>
<b>PARA</b>	<ul style="list-style-type: none"> <li><b>IF AUTHORIZED:</b> Consider <a href="#">Medication Assisted Airway Management (MAAM)</a></li> <li>If unable to place or maintain an advanced airway and if unable to adequately oxygenate or ventilate, perform <a href="#">Cricothyrotomy – Surgical</a></li> <li>If after successful airway placement patient demonstrates any signs of discomfort (increasing blood pressure, increasing heart rate, tearing, coughing, or gagging on invasive airway device, clinical signs of agitation) AND MAP &gt; 65 mmHg (adult) or age appropriate (pediatric), administer one or more of the following for <a href="#">Sedation</a>:             <ul style="list-style-type: none"> <li><a href="#">Ketamine</a> <ul style="list-style-type: none"> <li><b>Ages ≥ 3 months:</b> <ul style="list-style-type: none"> <li><b>IV/IO:</b> 2 mg/kg; maximum single dose 200 mg</li> </ul> </li> <li>If after 2 minutes, patient not adequately sedated and MAP &gt; 65 mmHg or age appropriate administer:</li> </ul> </li> <li><a href="#">Midazolam</a> <ul style="list-style-type: none"> <li><b>Adult (ages 12 years – 64 years):</b> <ul style="list-style-type: none"> <li><b>IV/IO:</b> 5mg; may repeat every 3 minutes until desired effect</li> </ul> </li> <li><b>Pediatric (age &lt; 12 years):</b> <ul style="list-style-type: none"> <li><b>IV/IO:</b> 0.1 mg/kg; maximum single dose 10 mg; may repeat every 3 minutes until desired effect</li> </ul> </li> <li><b>Elderly (ages 65 years and older):</b> <ul style="list-style-type: none"> <li><b>IV/IO:</b> 2 mg; repeat every 3 minutes until desired effect</li> </ul> </li> <li>If patient not adequately sedated after subsequent doses and MAP &gt; 65 mmHg or age appropriate consider administration of one of the following narcotic medications:</li> </ul> </li> <li><a href="#">Fentanyl</a> <ul style="list-style-type: none"> <li><b>All ages:</b> <ul style="list-style-type: none"> <li><b>IV/IO:</b> 1 mcg/kg max single dose 200 mcg; repeat every 5 minutes until desired effect</li> </ul> </li> </ul> </li> <li><b>OR</b></li> <li><a href="#">Morphine</a> <ul style="list-style-type: none"> <li><b>All ages &lt; 65 years:</b> <ul style="list-style-type: none"> <li><b>IV/IO:</b> 0.1 mg/kg max single dose 10 mg; repeat every 10 minutes until desired effect</li> </ul> </li> <li><b>Elderly (age 65 years and older) OR otherwise impaired:</b> <ul style="list-style-type: none"> <li><b>IV/IO:</b> 0.05 mg/kg; maximum initial dose 5 mg; may repeat every 10 minutes as needed for pain control</li> </ul> </li> </ul> </li> <li><b>OR</b></li> <li><a href="#">Hydromorphone</a> <ul style="list-style-type: none"> <li><b>All ages:</b> <ul style="list-style-type: none"> <li><b>IV/IO:</b> 0.015 mg/kg max single dose 1 mg; repeat every 10 minutes until desired effect</li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>NOTES</b>	<ul style="list-style-type: none"> <li>If an <a href="#">i-gel®</a> is properly positioned and ventilation is effective, do not replace it with an endotracheal tube</li> <li><a href="#">Waveform Capnography</a> is a critical safety tool             <ul style="list-style-type: none"> <li>During CPR, a gradual decline in capnography suggests a patient is not responding to resuscitation or possible provider fatigue</li> <li>A sudden loss of capnography suggests airway dislodgement or ventilation failure (DOPE)                 <ul style="list-style-type: none"> <li>Dislodgement</li> <li>Obstruction</li> <li>Pneumothorax</li> <li>Equipment</li> </ul> </li> </ul> </li> </ul>

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# MEDICATION ASSISTED AIRWAY MANAGEMENT (MAAM)

**ONLY IF AUTHORIZED BY OFFICE OF MEDICAL DIRECTION**

**INCLUSION Criteria: MAAM is indicated to ensure a patent airway in the following situations:**

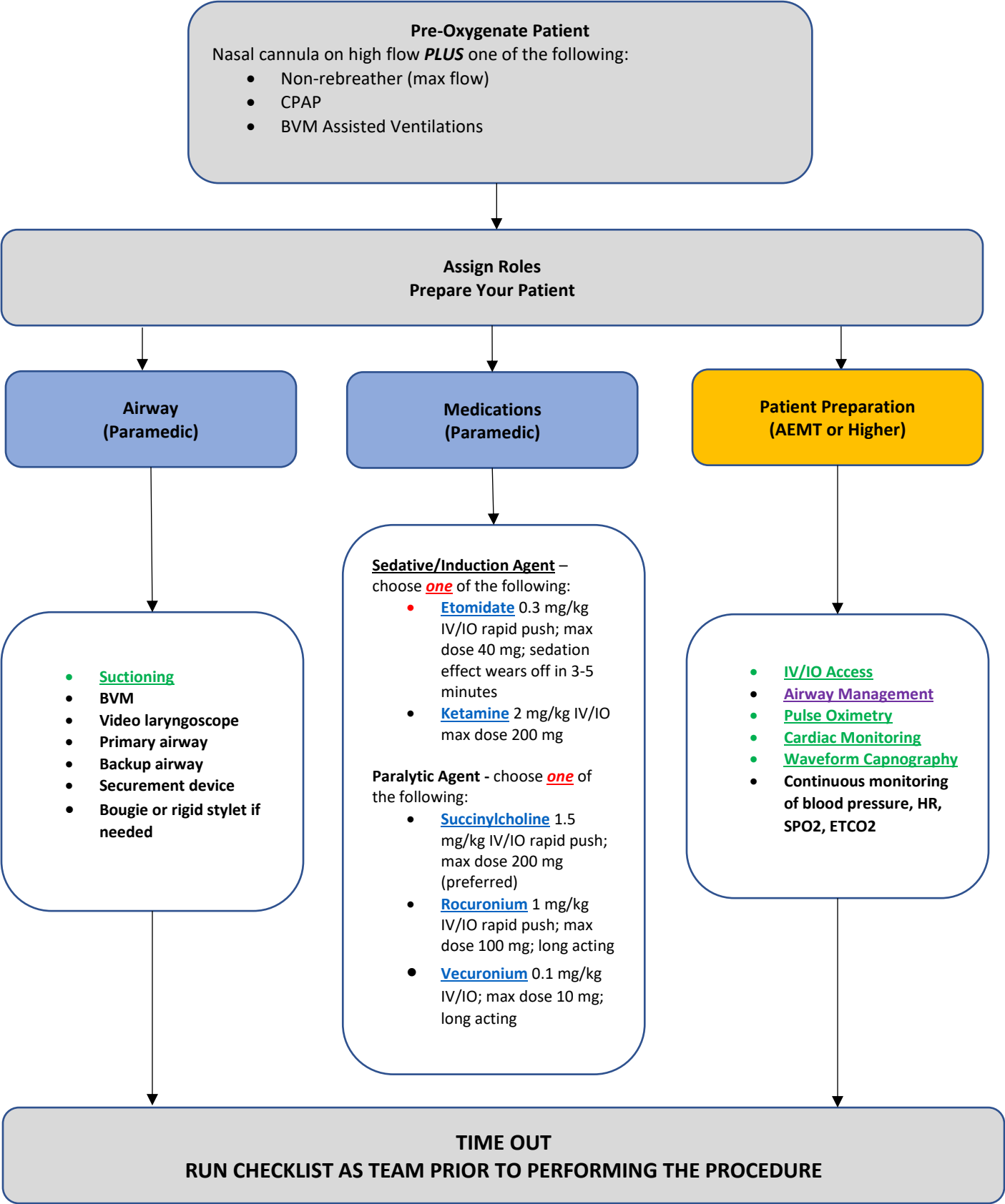
- Patients who are unable to tolerate laryngoscopy without MAAM (conscious, or semi-conscious, gag reflex, clenched jaw):
  - Patients who require immediate airway control
  - Patients with impending respiratory arrest
  - Patients with imminent or anticipated loss of airway resulting from inhalation injury

**EXCLUSION Criteria:** **Less than one (1) year old;** ability to manage the airway with less invasive techniques; **ONLY one (1) trained person** at the patient side; neck deformity such as goiter, tumor, swelling, hematoma, or other physical conditions that could prevent successful intubation; known history of malignant hyperthermia in patient or patient's family; **Pediatric:** should avoid MAAM in all pediatric patients unless all less invasive forms of airway management have failed

**OTHER GUIDELINES TO CONSIDER:** [Airway Management](#), [Burns](#)

PARA	<ul style="list-style-type: none"> <li>• <b>IF AUTHORIZED</b>, at least two (2) paramedics or a single paramedic with an AEMT or higher trained in the MAAM procedure</li> <li>• Ensure all the following are completed before beginning procedure:           <ul style="list-style-type: none"> <li>○ <a href="#">Airway Management</a></li> <li>○ <a href="#">Cardiac Monitoring</a></li> <li>○ <a href="#">Waveform Capnography</a></li> <li>○ <a href="#">IV/IO Access</a></li> <li>○ Resuscitate <b>BEFORE</b> you intubate to avoid post intubation arrest               <ul style="list-style-type: none"> <li>▪ Keep SBP greater than HR                   <ul style="list-style-type: none"> <li>• Consider <a href="#">Epinephrine Push Dose</a></li> </ul> </li> <li>▪ Keep SPO2 &gt; 90%</li> </ul> </li> <li>○ Prepare all equipment</li> </ul> </li> </ul> <p><b>Post Airway Sedation</b></p> <ul style="list-style-type: none"> <li>• If etomidate given, after 5 minutes administer:           <ul style="list-style-type: none"> <li>○ <a href="#">Ketamine</a> <ul style="list-style-type: none"> <li>▪ Ages ≥ 3 months:               <ul style="list-style-type: none"> <li>• IV/IO: 2 mg/kg; maximum single dose 200 mg</li> </ul> </li> </ul> </li> </ul> </li> <li>• If at any time MAP is &lt; 65 mmHg or age-appropriate following intubation, aggressively optimize MAP per the <a href="#">Hypotension or Shock</a> guideline prior to proceeding.</li> <li>• If patient not adequately sedated following Ketamine, administer:           <ul style="list-style-type: none"> <li>○ <a href="#">Midazolam</a> <ul style="list-style-type: none"> <li>▪ <b>Adult &gt; 12 years:</b> <ul style="list-style-type: none"> <li>• IV/IO: 5 mg; may repeat every 3 minutes for desired effect</li> </ul> </li> <li>▪ <b>Pediatric &lt; 12 years:</b> <ul style="list-style-type: none"> <li>• IV/IO: 0.1 mg/kg; max single dose 10 mg; may repeat every 3 minutes for desired effect</li> </ul> </li> </ul> </li> </ul> </li> <li>• If patient not adequately sedated after subsequent doses of midazolam, and MAP is optimized, consider administration of one of the following narcotic medications:           <ul style="list-style-type: none"> <li>○ <a href="#">Fentanyl</a> <ul style="list-style-type: none"> <li>▪ <b>All ages:</b> <ul style="list-style-type: none"> <li>• IV/IO: 1 mcg/kg max single dose 200 mcg; repeat every 5 minutes until desired effect</li> </ul> </li> </ul> </li> <li>OR</li> <li>○ <a href="#">Morphine</a> <ul style="list-style-type: none"> <li>▪ <b>All ages &lt; 65 years:</b> <ul style="list-style-type: none"> <li>• IV/IO: 0.1 mg/kg max single dose 10 mg; repeat every 10 minutes until desired effect</li> </ul> </li> <li>▪ <b>Elderly (age 65 years and older) OR otherwise impaired:</b> <ul style="list-style-type: none"> <li>• IV/IO: 0.05 mg/kg; maximum initial dose 5 mg; may repeat every 10 minutes as needed for pain control</li> </ul> </li> </ul> </li> <li>OR</li> <li>○ <a href="#">Hydromorphone</a> <ul style="list-style-type: none"> <li>▪ <b>All ages:</b> <ul style="list-style-type: none"> <li>• IV/IO: 0.015 mg/kg max single dose 1 mg; repeat every 10 minutes until desired effect</li> </ul> </li> </ul> </li> </ul> </li> </ul>
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**MEDICATION ASSISTED AIRWAY MANAGEMENT PROCEDURE:**



<b>NOTES</b>	<ul style="list-style-type: none"> <li>• If i-gel in place and adequate ventilations, do not replace with an endotracheal tube</li> <li>• Remember once paralytic drug has been given – YOU are responsible for ventilation and ensuring ongoing adequate sedation</li> <li>• A paralytic CANNOT be administered without adequate sedation</li> <li>• Do not administer sedation without paralytic as this results in a much higher risk of failure and complications in the field</li> <li>• Determining whether a patient requires a drug assisted airway is multifactorial and requires experienced clinical judgment. These considerations are meant to serve as guidelines. Consider in setting of:             <ul style="list-style-type: none"> <li>○ <b>Failure of airway protection:</b> Patients who have significantly decreased levels of consciousness with an easily maintained airway and adequate ventilation still may require intubation. These patients may not be able to maintain their own airway should they vomit or experience other airway compromise. Lack of gag reflex (should NOT be tested for as it may induce vomiting) or GCS &lt;8 may help in the decision-making process but are not definitive indications</li> <li>○ <b>Failure of ventilation and oxygenation:</b> Patients often require airway maintenance because they cannot effectively deliver oxygen to their body tissue or expel carbon dioxide due to respiratory inadequacy. These patients have failed or are not candidates for noninvasive techniques such as supplemental oxygen and noninvasive positive pressure ventilation. Examples may include severe respiratory distress and toxicological emergencies</li> <li>○ <b>Anticipated clinical course:</b> Patients may present with imminent or suspected imminent loss of airway but at initial presentation do not have immediate airway compromise. It is often beneficial to secure the airway in these patients early before they deteriorate. Examples include suspected airway burns or deteriorating head injuries</li> </ul> </li> </ul>
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# BRADYCARDIA – ADULT (8 YEARS & OLDER)

**INCLUSION Criteria:** Age > 8 years old; heart rate less than 50 beats/min **AND** SBP < 90 mmHg or MAP < 65 mmHg **WITH** clinical signs of poor perfusion (altered mental status including syncope, weakness, lightheadedness, fatigue, complaints of chest pain, difficulty breathing, hypoxia, pallor, diaphoresis)

**EXCLUSION Criteria:** Children < 8 years old; Neonates

**OTHER GUIDELINES TO CONSIDER:** [Airway Management](#), [Chest Pain/Acute Coronary Syndrome \(ACS\)](#), [Cardiac Arrest](#), [Difficulty Breathing](#), [Dizziness or Vertigo](#), [Hyperkalemia](#), [Hypotension or Shock](#), [Neonatal Resuscitation](#), [Overdose or Toxic Exposure](#), [Syncope](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• Request ALS response</li> <li>• Initiate <a href="#">Pulse Oximetry</a> <ul style="list-style-type: none"> <li>○ If pulse oximetry is less than 93%, titrate <a href="#">Oxygen</a> to lowest level to maintain pulse oximetry at 93% or greater</li> <li>○ Do not withhold oxygen if patient is having difficulty breathing or if unable to assess an oxygen saturation</li> <li>○ If pulses are lost at any point:                             <ul style="list-style-type: none"> <li>▪ <a href="#">Cardiac Arrest</a></li> </ul> </li> </ul> </li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• Initiate <a href="#">Cardiac Monitoring</a></li> <li>• <b>IF AUTHORIZED:</b> acquire <a href="#">12 Lead ECG</a> as soon as possible.</li> <li>• Transmit ECG to hospital             <ul style="list-style-type: none"> <li>○ Notify ED of transmitted ECG and request interpretation</li> </ul> </li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• <a href="#">IV/IO Access</a>, if appropriate</li> </ul> <p><b>Pharmacologic treatment of bradycardia is based upon the presence or absence of symptoms</b></p> <ul style="list-style-type: none"> <li>• If bradycardic without signs of hypoperfusion, monitor only.</li> <li>• If HR &lt; 50 <b>AND</b> SBP &lt; 90 mmHg or MAP &lt; 65 mmHg <b>WITH</b> clinical signs of poor perfusion, consider:             <ul style="list-style-type: none"> <li>○ <a href="#">Fluid Bolus – IV/IO</a></li> </ul> </li> </ul>
<b>INT</b>	<ul style="list-style-type: none"> <li>• Do not delay <a href="#">Transcutaneous Cardiac Pacing (TCP)</a> for IV Access if the patient has poor perfusion</li> <li>• For unstable patients not responding to initial treatment:             <ul style="list-style-type: none"> <li>○ <a href="#">Atropine:</a> <ul style="list-style-type: none"> <li>▪ <b>IV/IO:</b> 1 mg; may repeat 1 mg every 3 minutes up to 3 mg if continued symptoms persist</li> </ul> </li> </ul> </li> <li>• For unstable patients not responding to Atropine:             <ul style="list-style-type: none"> <li>○ <a href="#">Transcutaneous Pacing</a></li> </ul> </li> <li>• For unstable patient not responding to Atropine and/or pacing:             <ul style="list-style-type: none"> <li>○ <a href="#">Epinephrine Push Dose (1:10,000)</a> <ul style="list-style-type: none"> <li>▪ <b>IV/IO:</b> 0.05 mg every 2-5 minutes as needed; may double subsequent boluses to 0.1 mg</li> </ul> </li> </ul> </li> <li>• Organophosphate Poisoning (see <a href="#">Overdose or Toxic Exposure</a>)</li> </ul>
<b>PARA</b>	<ul style="list-style-type: none"> <li>○ <a href="#">Epinephrine Infusion:</a> <ul style="list-style-type: none"> <li>▪ <b>IV Infusion:</b> 2-20 mcg/min; titrate as needed to achieve age-appropriate MAP</li> </ul> </li> <li>• For known or suspected calcium channel blocker or beta blocker overdose not responding to Epinephrine, administer:             <ul style="list-style-type: none"> <li>○ <a href="#">Calcium Chloride (10%):</a> <ul style="list-style-type: none"> <li>▪ <b>Adult (Ages ≥ 12 years)</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 1 gram (10mL) <i>slowly</i> over 5 minutes; may repeat initial dose in 15 minutes if continued symptoms persist; may repeat for a total of 3 doses</li> </ul> </li> <li>▪ <b>Pediatric (Ages 8-12 years)</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 20 mg/kg <i>slowly</i> over 10 minutes; maximum single dose 1000 mg; may repeat initial dose in 15 minutes if continued symptoms persist; may repeat for a total of 3 doses</li> </ul> </li> </ul> </li> <li>OR</li> <li>○ <a href="#">Calcium Gluconate:</a> <ul style="list-style-type: none"> <li>▪ <b>Adult (Ages &gt; 12 years)</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 3 grams <i>slowly</i> over 5 minutes; may repeat initial dose in 15 minutes if continued symptoms persist; may repeat for a total of 3 doses</li> </ul> </li> <li>▪ <b>Pediatric (Ages 8- 12 years)</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 60 mg/kg <i>slowly</i> over 5 minutes; may repeat initial dose in 15 minutes if continued symptoms persist; maximum single dose 3000 mg; may repeat for a total of three (3) doses</li> </ul> </li> </ul> </li> </ul> </li></ul>

NOTES

**MEDICATIONS THAT CAUSE BRADYCARDIA:**

- Bradycardia and hypotension may worsen with rapid IV/IO administration of calcium
- **MEDICATIONS THAT CAUSE BRADYCARDIA:**
  - **Beta-blockers:**
    - (metoprolol, atenolol, labetalol, sotalol, propranolol, carvedilol, pindolol, nadolol)
  - **Calcium channel blockers:**
    - (amlodipine, diltiazem, felodipine, isradipine, nifedipine, verapamil)
  - **Digitalis:**
    - (Digoxin, Lanoxin, Digitek, Lanoxicaps)

PEDIATRIC VITAL SIGNS				
Age	Pulse	Respiratory Rate	Systolic BP Lowest Normal	Lowest Normal MAP
Newborn	120-160	30-60	60	40
Up to 1 year	100-140	30-60	70	42
1-3 years	100-140	20-40	76	45
4-6 years	80-120	20-30	80	48
7-9 years	80-120	16-24	84	52
10-12 years	80-120	16-20	90	55
13-14 years	60-100	16-20	90	60

IV Epinephrine for Severe Allergic Reaction, Shock, Severe Asthma/COPD/Bronchospasm				Epinephrine Dosing <i>0.001 mg/kg</i>	Push Dose 1:10,000 <i>0.1mg/mL</i>	Push Dose 1:100,000 <i>0.01 mg/mL</i>
Age	Broselow	Kilos	Pounds	mg	mL	mL
Newborn	3-5 kg	3-5 kg	6 - 11 lbs	0.004 mg	0.04 mL	0.4 mL
6 mo	PINK	6-7 kg	13 - 15 lbs	0.006 mg	0.06 mL	0.6 mL
9 mo	RED	8-9 kg	16 - 20 lbs	0.008 mg	0.08 mL	0.8 mL
1 yr	PURPLE	10-11 kg	21 - 24 lbs	0.01 mg	0.1 mL	1 mL
2 yrs	YELLOW	12-14 kg	25 - 31 lbs	0.013mg	0.13 mL	1.3 mL
4 yrs	WHITE	15-18 kg	32 - 40 lbs	0.015mg	0.15 mL	1.5 mL
6 yrs	BLUE	19-23 kg	41 - 48 lbs	0.02 mg	0.2 mL	2.0 mL
8 yrs	ORANGE	24-29 kg	49 - 66 lbs	0.03 mg	0.3 mL	3 mL
10 yrs	GREEN	30-36 kg	67 - 80 lbs	0.035 mg	0.35 mL	3.5 mL
12 yrs		40 kg	88 lbs	0.04 mg	0.4 mL	4 mL
14 yrs		45 kg	99 lbs	0.045 mg	0.45 mL	4.5 mL
16 yrs + (Max Single Dose)		50 kg+	110 lbs+	0.05mg	0.5 mL	5 mL

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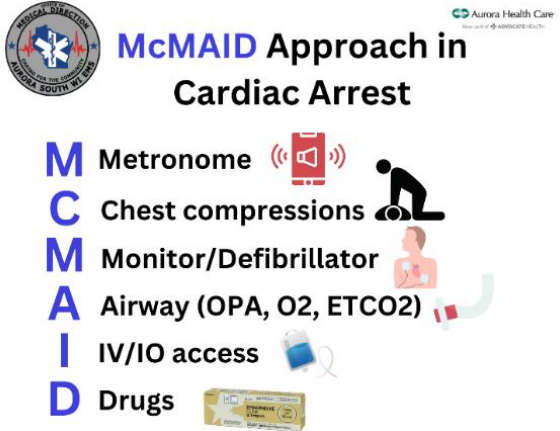








# CARDIAC ARREST

**INCLUSION Criteria:** Patients who are unresponsive and without a palpable pulse with absent or gasping respirations

**EXCLUSION Criteria:** Neonates (infants <28 days old) see [Neonatal Resuscitation](#), patient who meets the criteria for [Termination of Withholding Resuscitative Efforts](#)

**OTHER PROTOCOLS TO CONSIDER:** [Airway Management](#), [Chest Pain/Acute Coronary Syndrome \(ACS\)](#), [Hypotension or Shock](#), [Overdose or Toxic Exposure](#), [Syncope](#)

EMR	<ul style="list-style-type: none"> <li>Request ALS Response</li> <li><b>Initiate chest compressions</b> 30:2 regardless of rhythm             <ul style="list-style-type: none"> <li>Push hard, push fast 100-120 per minute</li> <li>Compressions should be initiated and continued where the patient is found                 <ul style="list-style-type: none"> <li>Move patient only as far as necessary for effective resuscitation or safety of the crew</li> </ul> </li> <li>Pediatric: 15:2 if 2 rescuers available</li> </ul> </li> <li><b>Apply AED</b> and analyze for a shockable rhythm</li> <li><a href="#">Defibrillation</a>, if indicated</li> <li><b>Immediately resume chest compressions</b> for an additional 2 minutes             <ul style="list-style-type: none"> <li>Continuous compressions may be performed only if patient is in a shockable rhythm without a respiratory cause</li> <li>Initiate apneic oxygenation                 <ul style="list-style-type: none"> <li>15 LPM via nasal cannula</li> <li>High flow via non-rebreather mask</li> </ul> </li> </ul> </li> <li><b>Manage the airway:</b> <ul style="list-style-type: none"> <li>Position patient in sniffing position utilizing padding, if needed to achieve ear to sternal notch and patient's face parallel to ceiling</li> <li>Initiate <a href="#">Suctioning</a>, if indicated</li> <li>Consider insertion of <a href="#">Basic Airway Adjunct – OPA</a></li> <li>Ventilate with 100% <a href="#">Oxygen</a> using <a href="#">Bag Valve Mask (BVM) Ventilation</a></li> <li>Attach <a href="#">Waveform Capnography</a>, if authorized</li> <li>Consider <a href="#">i-gel®</a> placement, if authorized, when appropriate to manage airway</li> </ul> </li> <li>If hypothermic, consider <a href="#">Hypothermia or Cold Exposure</a> guideline</li> <li>Deploy Mechanical CPR Device when adequate personnel are available to avoid compromising high-quality compressions and early defibrillation</li> <li><b>Consider reversible causes:</b> <ul style="list-style-type: none"> <li><b>Hypovolemia</b> <ul style="list-style-type: none"> <li>If evidence of traumatic etiology or concern for multisystem trauma, consider:</li> </ul> </li> <li><a href="#">Hemorrhage Control</a> <ul style="list-style-type: none"> <li><a href="#">Pelvic Binder, Tourniquet – Intentional</a></li> </ul> </li> <li><b>Hypoxia</b> <ul style="list-style-type: none"> <li>Ensure high-flow <a href="#">Oxygen</a> is being delivered</li> <li>Perform <a href="#">Bag Valve Mask (BVM) Ventilation</a></li> <li>Do not hyperventilate</li> </ul> </li> <li><a href="#">Hyperkalemia</a> <ul style="list-style-type: none"> <li><a href="#">Albuterol</a> <ul style="list-style-type: none"> <li><b>Adult and children over 12 years of age:</b> <ul style="list-style-type: none"> <li><b>Nebulized:</b> 10 mg via in-line nebulizer or mask; continuous with BVM</li> </ul> </li> </ul> </li> </ul> </li> <li><b>Hypothermia</b> <ul style="list-style-type: none"> <li>See <a href="#">Hypothermia or Cold Exposure</a></li> </ul> </li> </ul> </li> </ul>	 <p><b>McMAID Approach in Cardiac Arrest</b></p> <p><b>M</b> Metronome </p> <p><b>C</b> Chest compressions </p> <p><b>M</b> Monitor/Defibrillator </p> <p><b>A</b> Airway (OPA, O2, ETCO2) </p> <p><b>I</b> IV/IO access </p> <p><b>D</b> Drugs </p>
EMT		



<b>AEMT</b>	<ul style="list-style-type: none"> <li>• <b>Initiate <a href="#">IV/IO Access</a></b> <ul style="list-style-type: none"> <li>○ <b>Adult:</b> Consider peripheral IV attempt first if viable site identified. May proceed to <a href="#">Intraosseous (IO) Access</a> after two (2) failed IV attempts.</li> <li>○ <b>Pediatric:</b> <a href="#">Intraosseous (IO) Access</a> should be attempted first</li> </ul> </li> <li>• <b>Consider additional reversible causes:</b> <ul style="list-style-type: none"> <li>○ <b>Hypovolemia</b> <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> Infuse normal saline wide open up to 2000 mL</li> <li>▪ <b>Pediatric:</b> 20 mL/kg, may repeat as needed to maximum of 60 mL/kg</li> </ul> </li> </ul> </li> </ul>
<b>INT</b>	<ul style="list-style-type: none"> <li>• Manual <a href="#">Defibrillation</a> if indicated:             <ul style="list-style-type: none"> <li>○ <b>Adult:</b> Manufacturers recommendation or maximum joules</li> <li>○ <b>Pediatric:</b> 2 J/kg initial shock; increase 2 J/kg for each subsequent shock (max of 10 J/kg or max energy setting)</li> </ul> </li> <li>• <b>Manage the Airway:</b> <ul style="list-style-type: none"> <li>○ If an <a href="#">i-gel®</a> or supraglottic airway is effectively managing the patient's airway and remains functional, continue its use to ensure ongoing ventilation and airway support</li> <li>○ If an <a href="#">i-gel®</a> or supraglottic airway device proves <i>inadequate</i> in managing or maintaining the airway proceed with <a href="#">Endotracheal Intubation</a> to ensure proper airway control and ventilation</li> </ul> </li> <li>• <b>Cardiac Arrest, any rhythm:</b> May or may not administer the following:             <ul style="list-style-type: none"> <li>○ <a href="#">Epinephrine:</a> <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> <ul style="list-style-type: none"> <li>• IV/IO: <a href="#">Epinephrine 1:10,000</a> 1 mg; may repeat every 3-5 minutes for a maximum of 4 doses</li> </ul> </li> <li>▪ <b>Pediatric &lt; 50 kg:</b> <ul style="list-style-type: none"> <li>• IV/IO: <a href="#">Epinephrine 1:10,000</a> 0.01 mg/kg; may repeat every 3-5 minutes for a maximum of 4 doses</li> </ul> </li> </ul> </li> </ul> </li> <li>• <b>Ventricular fibrillation (V-Fib) or pulseless ventricular tachycardia (pVT) may or may not administer the following:</b> <ul style="list-style-type: none"> <li>○ <a href="#">Amiodarone</a> <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> <ul style="list-style-type: none"> <li>• IV/IO: 300 mg rapid push</li> <li>• If ventricular fibrillation or pulseless ventricular tachycardia continues after subsequent defibrillation attempt or reoccurs after initially achieving return of spontaneous circulation, administer supplemental dose of 150 mg</li> </ul> </li> <li>▪ <b>Pediatric (children less than 12 years of age):</b> <ul style="list-style-type: none"> <li>• IV/IO: 5 mg/kg rapid push (max dose 300 mg)</li> </ul> </li> </ul> </li> <li>○ <a href="#">Lidocaine</a> <ul style="list-style-type: none"> <li>▪ <b>All ages:</b> <ul style="list-style-type: none"> <li>• IV/IO: 1.0 mg/kg initial dose (maximum dose 100 mg); may repeat 0.5 mg/kg every 5-10 minutes if refractory; total dose 3 mg/kg</li> </ul> </li> </ul> </li> </ul> </li> <li>• <b>Persistent or recurrent V-Fib or pVT that fails to convert after three (3) shocks:</b> <ul style="list-style-type: none"> <li>○ Consider <a href="#">Double Sequential Defibrillation</a> or if only one monitor/defibrillator consider changing pad placement</li> </ul> </li> <li>• <b>Consider additional reversible causes:</b> <ul style="list-style-type: none"> <li>○ <b>Tablets</b> <ul style="list-style-type: none"> <li>▪ See <a href="#">Overdose or Toxic Exposure</a></li> </ul> </li> <li>○ <b>Tension Pneumothorax</b> <ul style="list-style-type: none"> <li>▪ Perform <a href="#">Needle Decompression</a> bilaterally if chest trauma present and tension pneumothorax suspected</li> </ul> </li> </ul> </li> </ul>

<b>PARA</b>	<ul style="list-style-type: none"> <li>● <b>Torsades de Pointes:</b> <ul style="list-style-type: none"> <li>○ <b>Magnesium Sulfate</b> <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> <ul style="list-style-type: none"> <li>● <b>IV/IO:</b> Mix 2 grams in 10 mL and administer over 1-2 minutes, if ineffective may repeat a second dose immediately</li> </ul> </li> <li>▪ <b>Pediatric:</b> <ul style="list-style-type: none"> <li>● <b>IV/IO:</b> 50 mg/kg in 10 mL and administer over 2 minutes; maximum single dose 2 grams; if ineffective may repeat a second dose immediately</li> </ul> </li> </ul> </li> </ul> </li> <li>● <b>Consider Additional Reversible Causes:</b> <ul style="list-style-type: none"> <li>○ <b>Hydrogen ion</b> (preexisting acidosis leading to <b>Cardiac Arrest</b> e.g. tricyclic antidepressant overdose, ASA overdose); not to be given for prolonged downtime:                     <ul style="list-style-type: none"> <li>▪ <b>Sodium Bicarbonate</b> <ul style="list-style-type: none"> <li>● <b>Adult:</b> <ul style="list-style-type: none"> <li>○ <b>IV/IO:</b> 100 mEq (2 amps)</li> </ul> </li> <li>● <b>Pediatric:</b> <ul style="list-style-type: none"> <li>○ <b>IV/IO:</b> 1 mEq/kg; over 5-10 minutes; maximum initial dose 100 mEq; no repeat dose</li> </ul> </li> </ul> </li> </ul> </li> <li>○ <b>Hyperkalemia</b> <ul style="list-style-type: none"> <li>▪ <b>If known or suspected dialysis patient, see <u>Hyperkalemia</u> guideline</b></li> </ul> </li> <li>○ <b>Tamponade</b> <ul style="list-style-type: none"> <li>▪ Perform <b>Pericardiocentesis</b> for traumatic <b>Cardiac Arrest</b> with suspected cardiac tamponade</li> </ul> </li> </ul> </li> </ul>
<b>NOTES</b>	<ul style="list-style-type: none"> <li>● Resuscitate the patient in the location found unless scene is unsafe or unmanageable</li> <li>● Do not interrupt chest compressions to place an airway</li> <li>● The first few minutes of resuscitation should have manual high-quality compressions and defibrillation prioritized prior to placement of a mechanical CPR device. Placement of the device should be deferred until adequate personnel are available to avoid compromising high-quality compressions and early defibrillation.</li> </ul> <p><b>Termination of Resuscitation Without Online Medical Control May Proceed:</b></p> <ul style="list-style-type: none"> <li>● After 20 minutes of resuscitation, provided all of the following criteria are met:             <ul style="list-style-type: none"> <li>▪ The patient is an <b>ADULT</b> with an initial rhythm of asystole</li> <li>▪ Cardiac arrest is unwitnessed by EMS personnel</li> <li>▪ No shock has been administered by either automated or manual defibrillator</li> <li>▪ Pulses are absent without CPR assistance throughout the resuscitation</li> </ul> </li> <li>● After 30 minutes of resuscitation in <b>ANY</b> patient whose initial rhythm is not asystole or is unknown, provided all of the following criteria are met:             <ul style="list-style-type: none"> <li>▪ Cardiac arrest is unwitnessed by EMS personnel</li> <li>▪ No shock has been administered by either automated or manual defibrillator</li> <li>▪ Pulses are absent without CPR assistance throughout the resuscitation</li> </ul> </li> <li>● After 15 minutes of resuscitation for a <u>witnessed</u> traumatic arrest, provided all of the following criteria are met:             <ul style="list-style-type: none"> <li>▪ The transport time to an emergency hospital exceeded 15 minutes from the initial assessment or the onset of arrest, necessitating the initiation of resuscitation at the scene</li> <li>▪ Absence of pulses and other signs of life persists</li> <li>▪ The patient develops asystole or a pulseless, wide complex rhythm (PEA) with a rate less than 30 beats per minute</li> </ul> </li> <li>● Considerations for continuing resuscitation after 30 minutes include any of the following:             <ul style="list-style-type: none"> <li>▪ PEA greater than 40 beats per minute</li> <li>▪ Persistent ventricular tachycardia or ventricular fibrillation</li> <li>▪ EtCO2 greater than 20</li> </ul> </li> </ul>

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# CARDIAC ARREST – ROSC

**INCLUSION Criteria:** Patients who have return of spontaneous circulation following cardiac arrest of any etiology

**EXCLUSION Criteria:** None

**OTHER GUIDELINES TO CONSIDER:** [Advanced Life Support \(ALS\) Response](#), [Airway Management](#), [Bradycardia – Adult \(8 Years & Older\)](#), [Bradycardia-Pediatric](#), [Cardiac Arrest](#), [Chest Pain/Acute Coronary Syndrome \(ACS\)](#), [Hypotension or Shock](#), [Hypothermia or Cold Exposure](#), [Tachycardia](#), [Termination or Withholding of Resuscitative Efforts](#), [Endotracheal Intubation](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• Request ALS Response</li> <li>• <a href="#">Universal Care</a></li> <li>• Prioritize preventing further neurologic injury and re-arrest</li> <li>• <b>Optimize oxygenation and ventilation</b> <ul style="list-style-type: none"> <li>○ Continuous <a href="#">Pulse Oximetry</a> to maintain SpO2 between 93%-98%</li> <li>○ Do NOT hyperventilate</li> </ul> </li> <li>• If <a href="#">Mechanical CPR Device</a> was used, maintain proper position to easily restart compressions if pulses are lost</li> <li>• Perform and document neurological exam</li> <li>• Obtain <a href="#">Blood Glucose</a></li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• Maintain continuous <a href="#">Cardiac Monitoring</a></li> <li>• <b>IF AUTHORIZED:</b> acquire <a href="#">12 Lead ECG</a> <ul style="list-style-type: none"> <li>○ Notify ED of transmitted ECG and resuscitated PNB</li> <li>○ Request interpretation for possible STEMI</li> </ul> </li> <li>• <b>Optimize oxygenation and ventilation:</b> <ul style="list-style-type: none"> <li>○ Continuous <a href="#">Waveform Capnography</a> to maintain ETCO2 between 35-45 mmHg                             <ul style="list-style-type: none"> <li>▪ Do NOT hyperventilate</li> </ul> </li> </ul> </li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• <b>Prevent hypotension and re-arrest:</b> <ul style="list-style-type: none"> <li>○ Administer <a href="#">Fluid Bolus – IV/IO</a> <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> <ul style="list-style-type: none"> <li>• 500 mL bolus; may repeat up to 2000 mL to keep MAP ≥ 65 mmHg</li> </ul> </li> <li>▪ <b>Pediatric:</b> <ul style="list-style-type: none"> <li>• 20 mL/kg; may repeat up to 60 mL/kg to maintain age appropriate SBP and adequate perfusion</li> </ul> </li> <li>▪ Monitor patient for signs of developing pulmonary edema (respiratory exam, respiratory effort, SpO2)</li> </ul> </li> <li>○ Establish a second <a href="#">IV/IO Access</a> site if not already done</li> </ul> </li> </ul>
<b>INT</b>	<ul style="list-style-type: none"> <li>• <b>Optimize oxygenation and ventilation:</b> <ul style="list-style-type: none"> <li>○ Consider <a href="#">Airway Management</a> if not already done                             <ul style="list-style-type: none"> <li>▪ Avoid <a href="#">Endotracheal Intubation</a> if:                                     <ul style="list-style-type: none"> <li>• HR is greater than SBP</li> <li>• SPO2 &lt; 90%</li> </ul> </li> <li>○ <b><i>Resuscitate BEFORE you intubate to avoid post intubation arrest</i></b></li> </ul> </li> </ul> </li> <li>• <b>Prevent hypotension and re-arrest:</b> <ul style="list-style-type: none"> <li>○ For persistent hypotension or signs of shock not responding to initial fluid bolus, consider:                             <ul style="list-style-type: none"> <li>▪ <a href="#">Epinephrine Push Dose (1:10,000)</a> <ul style="list-style-type: none"> <li>• <b>Adult:</b> <ul style="list-style-type: none"> <li>○ 0.05 mg IV/IO every 2-5 minutes as needed; may double subsequent boluses to 0.1 mg</li> </ul> </li> <li>• <b>Pediatric:</b> <ul style="list-style-type: none"> <li>○ 0.001 mg/kg every 2-5 minutes as needed (max initial dose 0.05 mg); may double subsequent doses to 0.002 mg/kg (max dose 0.1 mg)</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> <li>• <b>Persistent bradycardia and hypotension</b> <ul style="list-style-type: none"> <li>○ Patients with ROSC should rarely if ever be paced. Although these patients may have a bradycardic rhythm initially after regaining pulses, the heart is often stunned and will not respond adequately to pacing. Pacing also makes it more difficult to discern if a patient goes back into cardiac arrest. Fluids, followed by push-dose epinephrine, is the treatment of choice for patients with ROSC who are bradycardic and/or hypotensive.</li> </ul> </li> </ul>



# CHEST PAIN/ACUTE CORONARY SYNDROME (ACS)

**INCLUSION CRITERIA:** Adult patients with chest discomfort or any other symptoms of potential cardiac origin; abnormal heart rate and rhythm such as bradycardia and tachycardia. Consider in patients with atypical symptoms (e.g. upper abdominal pain, dyspnea, nausea, diaphoresis, lightheadedness, generalized weakness, or [Syncope](#)).

**EXCLUSION CRITERIA:** Patients with chest pain from known traumatic injury; patients <18 years of age

**OTHER GUIDELINES TO CONSIDER:** [Bradycardia – Adult \(8 Years & Older\)](#), [Cardiac Arrest](#), [Cardiac Monitoring](#), [Difficulty Breathing](#), [Hypotension or Shock](#), [Pain Management](#), [Syncope](#), [Tachycardia](#), [12 Lead ECG](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• Initiate <a href="#">Pulse Oximetry</a> <ul style="list-style-type: none"> <li>○ If pulse oximetry is less than 93%, titrate <a href="#">Oxygen</a> to lowest level to maintain pulse oximetry at 93% or greater</li> <li>○ Do not withhold oxygen if patient is having difficulty breathing or if unable to assess an oxygen saturation</li> <li>○ <a href="#">Aspirin</a> <ul style="list-style-type: none"> <li>▪ <b>Adult</b> <ul style="list-style-type: none"> <li>• <b>PO:</b> 324 mg chewed; if patient has already taken aspirin, may supplement to 324 mg total dose</li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• Initiate <a href="#">Cardiac Monitoring</a></li> <li>• <b>IF AUTHORIZED:</b> acquire <a href="#">12 Lead ECG</a> within 5 minutes of patient contact; repeat:             <ul style="list-style-type: none"> <li>○ Prior to initiating transport if patient still having symptoms</li> <li>○ On arrival at the hospital</li> <li>○ For worsening chest pain or ECG changes</li> </ul> </li> <li>• Transmit ECG to hospital             <ul style="list-style-type: none"> <li>○ Notify ED of transmitted ECG and request interpretation for possible STEMI or any of the following:                 <ul style="list-style-type: none"> <li>▪ Wide QRS complexes</li> <li>▪ Suspected ST elevation</li> <li>▪ Suspected cardiac ischemia with ST depression in two or more contiguous leads</li> <li>▪ ECG looks unusual</li> </ul> </li> </ul> </li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• Consider <a href="#">Nitroglycerin</a> – Do not delay nitroglycerin to establish an IV             <ul style="list-style-type: none"> <li>○ <b>Adult</b> <ul style="list-style-type: none"> <li>▪ <b>SL:</b> 0.4 mg tablet or metered spray; may repeat every 5 minutes; no maximum total dose. Do not administer if SBP&lt; 100 mmHg</li> </ul> </li> </ul> </li> <li>• Initiate <a href="#">IV/IO Access</a></li> <li>• Consider <a href="#">Fluid Bolus – IV/IO</a> if hypotension or signs of hypovolemia</li> <li>• If nauseated or vomiting, see <a href="#">Nausea or Vomiting</a> guideline</li> </ul>
<b>INT</b>	<ul style="list-style-type: none"> <li>• If pain unrelieved after three (3) <a href="#">Nitroglycerin</a>, consider <a href="#">Pain Management</a> while continuing to administer <a href="#">Nitroglycerin</a></li> <li>• If <a href="#">12 Lead ECG</a> confirms an Acute MI/STEMI notify hospital to trigger STEMI Alert</li> <li>• Options for care include:             <ul style="list-style-type: none"> <li>○ Initial rapid transport to closest ED</li> <li>○ Direct transport to closest PCI capable facility</li> <li>○ Interception with ALS for direct transfer via:                 <ul style="list-style-type: none"> <li>▪ Air medical transport (HEMS)</li> <li>▪ Paramedic level ground transport</li> </ul> </li> <li>○ <b>CONTACT ONLINE MEDICAL CONTROL</b> if situation is unclear or for any concerns regarding transport destination and method of transport</li> </ul> </li> </ul>
<b>PARA</b>	
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• Performing a <a href="#">12 Lead ECG</a> during initial evaluation, prior to initiating transport, and upon hospital arrival enhances the likelihood of identifying a STEMI by 15% compared to obtaining a single ECG.</li> </ul>

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# DIFFICULTY BREATHING

**INCLUSION CRITERIA:** Patients presenting with complaints of difficulty breathing, evidence of increased work of breathing, and/or respiratory distress

**EXCLUSION CRITERIA:** Neonates – use [Neonatal Resuscitation](#) guideline; patients who have apnea or agonal breathing and are in [Cardiac Arrest](#)

**OTHER GUIDELINES TO CONSIDER:** [Airway Management](#), [Airway Obstruction](#), [Allergic Reaction/Anaphylaxis](#), [Bradycardia – Adult \(8 Years & Older\)](#), [Bradycardia – Pediatric \(< 8 years Old\)](#), [Chest Pain/Acute Coronary Syndrome \(ACS\)](#), [Cardiac Arrest](#), [CPAP – Non-Invasive Positive Pressure Ventilation](#), [Hypotension or Shock](#), [Overdose or Toxic Exposure](#), [Tachycardia](#), [Traumatic Injuries](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a> or <a href="#">Universal Care – Trauma Management</a></li> <li>• Allow or assist patient into a position of comfort</li> <li>• Initiate <a href="#">Pulse Oximetry</a> <ul style="list-style-type: none"> <li>○ If pulse oximetry is less than 93%, titrate <a href="#">Oxygen</a> to lowest level to maintain pulse oximetry at 93% or greater</li> <li>○ Do not withhold oxygen if patient is having difficulty breathing or if unable to assess an oxygen saturation</li> </ul> </li> <li>• If respirations ineffective, support ventilation with <a href="#">Bag Valve Mask (BVM) Ventilation</a></li> <li>• If airway obstruction is suspected: see <a href="#">Airway Obstruction</a></li> <li>• If allergic reaction is suspected: see <a href="#">Allergic Reaction/Anaphylaxis</a></li> <li>• <b>Asthma/COPD, Wheezing, Bronchospasm</b> <ul style="list-style-type: none"> <li>○ <a href="#">Albuterol</a> <ul style="list-style-type: none"> <li>▪ <b>All ages:</b> <ul style="list-style-type: none"> <li>• <b>Nebulized:</b> 2.5 mg in 3 mL via hand-held nebulizer or mask; may repeat every 10-20 minutes; max 3 doses</li> <li>• <b>For severe exacerbations:</b> 5.0 mg via hand-held nebulizer or mask; may repeat every 20 minutes; maximum 2 doses</li> <li>• <b>If critical:</b> 10 mg via hand-held nebulizer or mask</li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• Consider <a href="#">CPAP – Non-Invasive Positive Pressure Ventilation</a> if no contraindications</li> <li>• <b>Asthma/COPD, Wheezing, Bronchospasm</b> <ul style="list-style-type: none"> <li>○ <a href="#">Ipratropium Bromide:</a> <ul style="list-style-type: none"> <li>▪ <b>All ages:</b> <ul style="list-style-type: none"> <li>• <b>Nebulized:</b> 0.5 mg in combination with <a href="#">Albuterol</a> 2.5 mg                             <ul style="list-style-type: none"> <li>○ May repeat every 10-20 minutes as needed; maximum 3 doses</li> <li>○ Initial albuterol dose can be increased if patient is severe or critical as noted above</li> </ul> </li> <li>• <b>Nebulized:</b> DuoNeb (<a href="#">Albuterol</a> 2.5 mg and <a href="#">Ipratropium Bromide</a> 0.5 mg)                             <ul style="list-style-type: none"> <li>○ May repeat DuoNeb every 10-20 minutes as needed; maximum 3 doses</li> </ul> </li> </ul> </li> <li>○ <b>Critical respiratory distress or severe difficulty breathing not improving with <a href="#">Albuterol</a></b> <ul style="list-style-type: none"> <li>▪ <a href="#">Epinephrine (1:1,000)</a> <ul style="list-style-type: none"> <li>• <b>Adult:</b> <ul style="list-style-type: none"> <li>○ <b>IM:</b> 0.5 mg every 5-15 minutes if symptoms persist</li> </ul> </li> <li>• <b>Pediatric &lt; 50 kg:</b> <ul style="list-style-type: none"> <li>○ <b>IM:</b> 0.01mg/kg IM every 5-15 minutes if symptoms persist (max single dose 0.5 mg)</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> <li>• <b>Pediatric: Croup (seal bark cough), Stridor</b> <ul style="list-style-type: none"> <li>○ <a href="#">Epinephrine (1:1,000)</a> <ul style="list-style-type: none"> <li>▪ <b>Nebulized:</b> 3 mg (3 mL) via hand-held nebulizer or mask; aim mist at child’s face; may repeat once if severe distress and stridor at rest continues</li> </ul> </li> </ul> </li> <li>• <b>Pulmonary edema or suspected exacerbation of congestive heart failure (CHF)</b> <ul style="list-style-type: none"> <li>○ Consider <a href="#">CPAP – Non-Invasive Positive Pressure Ventilation</a> if no contraindications</li> </ul> </li> <li>• Consider <a href="#">Waveform Capnography</a></li> <li>• Consider <a href="#">Cardiac Monitoring</a> <ul style="list-style-type: none"> <li>○ <b>Pediatric:</b> monitor heart rate for changes; bradycardia signals deterioration</li> </ul> </li> <li>• <b>IF AUTHORIZED:</b> acquire <a href="#">12 Lead ECG</a> as soon as possible.             <ul style="list-style-type: none"> <li>○ Transmit ECG to hospital</li> </ul> </li> </ul> </li></ul>

<b>AEMT</b>	<ul style="list-style-type: none"> <li>• <a href="#">IV/IO Access</a>, if appropriate             <ul style="list-style-type: none"> <li>○ <b>Pediatric:</b> Do not start IV/IO unless child presents in impending arrest</li> </ul> </li> <li>• <b>Pulmonary edema with hypertensive crisis</b> <ul style="list-style-type: none"> <li>○ Moderate to severe difficulty breathing with manual SBP &gt; 220 mmHg or DBP &gt; 120 mmHg confirmed with multiple measurements at least 5 minutes apart                 <ul style="list-style-type: none"> <li>▪ <a href="#">Nitroglycerin</a> <ul style="list-style-type: none"> <li>• <b>Adult Systolic BP 100-159 mmHg:</b> <ul style="list-style-type: none"> <li>○ <b>SL:</b> 0.4 mg tablet or metered spray; may repeat every 3 minutes until symptoms improve or systolic BP drops to &lt; 100 mmHg</li> </ul> </li> <li>• <b>Adult Systolic BP 160-199 mmHg:</b> <ul style="list-style-type: none"> <li>○ <b>SL:</b> 0.8 mg (2 tablets or metered sprays); may repeat every 3 minutes until symptoms improve. If systolic BP drops to &lt; 160 mmHg, proceed to dosing above.</li> </ul> </li> <li>• <b>Adult Systolic BP 200 mmHg or greater:</b> <ul style="list-style-type: none"> <li>○ <b>SL:</b> 1.2 mg (3 tablets or metered sprays); may repeat every 3 minutes until symptoms improve. If systolic BP drops to &lt; 200 mmHg, proceed to the appropriate dosing above.</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>INT</b>	<ul style="list-style-type: none"> <li>• <b>Trauma:</b> for suspected tension pneumothorax             <ul style="list-style-type: none"> <li>○ <a href="#">Needle Decompression</a></li> </ul> </li> <li>• <b>Asthma/COPD, Wheezing, Bronchospasm, Croup (seal bark cough), Stridor:</b> <ul style="list-style-type: none"> <li>○ For critical respiratory distress consider:                 <ul style="list-style-type: none"> <li>▪ <a href="#">Epinephrine</a> <ul style="list-style-type: none"> <li>○ <b>Adult:</b> <ul style="list-style-type: none"> <li>▪ <b>IV/IO:</b> <a href="#">Epinephrine Push Dose (1:10,000)</a> 0.05 mg every 2-5 minutes as needed; may double subsequent boluses to 0.1 mg</li> </ul> </li> <li>• <b>Pediatric &lt; 50 kg:</b> <ul style="list-style-type: none"> <li>○ <b>IV/IO:</b> <a href="#">Epinephrine Push Dose (1:10,000)</a> 0.001 mg/kg every 2-5 minutes as needed (max initial dose 0.05 mg); may double subsequent doses to 0.002 mg/kg (max dose 0.1 mg)</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>PARA</b>	<ul style="list-style-type: none"> <li>• <b>Asthma/COPD, Wheezing, Bronchospasm:</b> <ul style="list-style-type: none"> <li>○ Moderate to severe symptoms, consider <u>one</u> of the following:                 <ul style="list-style-type: none"> <li>▪ <a href="#">Dexamethasone</a> <ul style="list-style-type: none"> <li>• <b>Adult:</b> <ul style="list-style-type: none"> <li>○ <b>PO/IM/IV/IO:</b> 10 mg</li> </ul> </li> <li>• <b>Pediatric:</b> <ul style="list-style-type: none"> <li>○ <b>PO/IM/IV/IO:</b> 0.3 mg/kg, maximum dose 10 mg</li> </ul> </li> </ul> </li> <li>▪ <a href="#">Methylprednisolone</a> <ul style="list-style-type: none"> <li>• <b>Adult:</b> <ul style="list-style-type: none"> <li>○ <b>PO/IM/IV/IO:</b> 125 mg</li> </ul> </li> <li>• <b>Pediatric:</b> <ul style="list-style-type: none"> <li>○ <b>PO/IM/IV/IO:</b> 2 mg/kg, maximum dose 125 mg</li> </ul> </li> </ul> </li> </ul> </li> <li>○ Severe or critical respiratory distress or moderate respiratory distress not improving with treatment, consider:                 <ul style="list-style-type: none"> <li>▪ <a href="#">Magnesium</a> <ul style="list-style-type: none"> <li>• <b>Adult:</b> <ul style="list-style-type: none"> <li>○ <b>IV/IO:</b> Mix 2 grams in 10 mL and administer <i>slowly</i> over 10 minutes</li> </ul> </li> <li>• <b>Pediatric:</b> <ul style="list-style-type: none"> <li>○ <b>IV/IO:</b> Mix 50 mg/kg in 10 mL and administer <i>slowly</i> over 10 minutes; maximum dose 2 grams</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> <li>• <b>Pediatric: Croup (seal bark cough), Stridor</b> <ul style="list-style-type: none"> <li>○ <a href="#">Dexamethasone</a> <ul style="list-style-type: none"> <li>▪ <b>Pediatric:</b> <ul style="list-style-type: none"> <li>• <b>PO/IM/IV/IO:</b> 0.6 mg/kg, maximum dose 10 mg</li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>NOTES</b>	<p>Remember: <i>“All that wheezes is not asthma!”</i> In older adults with wheezing, always consider the possibility of congestive heart failure.</p> <ul style="list-style-type: none"> <li>• <b>Bronchiolitis</b> is wheezing in a child &lt; 2 years old without a diagnosis of asthma</li> <li>• <b>Asthma/COPD, Wheezing, Bronchospasm</b> <ul style="list-style-type: none"> <li>○ The absence of wheezing may be indicative of extreme airflow obstruction.</li> </ul> </li> </ul>

IV Epinephrine for Severe Allergic Reaction, Shock, Severe Asthma/COPD/Bronchospasm				Epinephrine Dosing <i>0.001 mg/kg</i>	Push Dose 1:10,000 <i>0.1mg/mL</i>	Push Dose 1:100,000 <i>0.01 mg/mL</i>
Age	Broselow	Kilos	Pounds	mg	mL	mL
Newborn	3-5 kg	3-5 kg	6 - 11 lbs	0.004 mg	0.04 mL	0.4 mL
6 mo	PINK	6-7 kg	13 - 15 lbs	0.006 mg	0.06 mL	0.6 mL
9 mo	RED	8-9 kg	16 - 20 lbs	0.008 mg	0.08 mL	0.8 mL
1 yr	PURPLE	10-11 kg	21 - 24 lbs	0.01 mg	0.1 mL	1 mL
2 yrs	YELLOW	12-14 kg	25 - 31 lbs	0.013mg	0.13 mL	1.3 mL
4 yrs	WHITE	15-18 kg	32 - 40 lbs	0.015mg	0.15 mL	1.5 mL
6 yrs	BLUE	19-23 kg	41 - 48 lbs	0.02 mg	0.2 mL	2.0 mL
8 yrs	ORANGE	24-29 kg	49 - 66 lbs	0.03 mg	0.3 mL	3 mL
10 yrs	GREEN	30-36 kg	67 - 80 lbs	0.035 mg	0.35 mL	3.5 mL
12 yrs		40 kg	88 lbs	0.04 mg	0.4 mL	4 mL
14 yrs		45 kg	99 lbs	0.045 mg	0.45 mL	4.5 mL
16 yrs + (Max Single Dose)		50 kg+	110 lbs+	0.05mg	0.5 mL	5 mL

IM or Epinephrine for Asthma/COPD/Bronchospasm				Manual drawn Epinephrine 1:1,000		Mechanical Epinephrine (Epi-Pen)		
Age	Broselow	Kilos	Pounds	mg	mL	Junior	Adult	
newborn	3-5 kg	3-5 kg	6 - 11 lbs	0.05	0.05	Junior		
6 mo	PINK	6-7 kg	13 - 15 lbs	0.07	0.07	Junior		
9 mo	RED	8-9 kg	16 - 20 lbs	0.08	0.08	Junior		
1 yr	PURPLE	10-11 kg	21 - 24 lbs	0.1	0.1	Junior		
2 yrs	YELLOW	12-14 kg	25 - 31 lbs	0.15	0.15	Junior		
4 yrs	WHITE	15-18 kg	32 - 40 lbs	0.15	0.15	Junior		
6 yrs	BLUE	19-23 kg	41 - 48 lbs	0.2	0.2	Junior		
8 yrs	ORANGE	24-29 kg	49 - 66 lbs	0.3	0.3			Adult
10 yrs	GREEN	30-36 kg	67 - 80 lbs	0.35	0.35			Adult
12 yrs		40 kg	88 lbs	0.4	0.4			Adult
14 yrs		45 kg	99 lbs	0.45	0.45			Adult
16 yrs + (Max Single Dose)		50 kg+	110 lbs+	0.5	0.5		Adult	

Initiated: 2/26/2024	Last Review/Revision Date:	Next Review Date: 6/1/2025
Effective Date: 6/1/2024	Approved by: Steven Andrews, MD, EMT-P, FAEMS	



# TACHYCARDIA

**INCLUSION Criteria:** Patients with heart rate > 100 (adult) or upper range of normal limit (**pediatric**) **AND** associated symptoms such as signs of poor perfusion, palpitations, chest pain, difficulty breathing, syncope or near syncope, hypotension/shock, altered mental status

**EXCLUSION Criteria:** Neonates, patients with sinus tachycardia or tachycardia caused by reversible factors (pain, dehydration, hypotension/shock, hypoglycemia, hypoxemia, anxiety, fever, sepsis, drug induced, recent heavy exertion, hyperthyroidism)

**OTHER GUIDELINES TO CONSIDER:** [Cardiac Arrest](#), [Chest Pain/Acute Coronary Syndrome \(ACS\)](#), [Difficulty Breathing](#), [Hypotension or Shock](#), [Overdose or Toxic Exposure](#), [Syncope](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• Consider <a href="#">Pulse Oximetry</a> <ul style="list-style-type: none"> <li>○ If pulse oximetry is less than 93%, titrate <a href="#">Oxygen</a> to lowest level to maintain pulse oximetry at 93% or greater</li> <li>○ Do not withhold oxygen if patient is having difficulty breathing or if unable to assess an oxygen saturation</li> <li>○ If respirations ineffective, support ventilation with <a href="#">Bag Valve Mask (BVM) Ventilation</a></li> </ul> </li> <li>• If pulses are lost at any point:                     <ul style="list-style-type: none"> <li>○ <a href="#">Cardiac Arrest</a></li> </ul> </li> <li>• Obtain <a href="#">Blood Glucose</a>, if &lt; 60 mg/dl, see <a href="#">Hypoglycemia or Hyperglycemia</a> guideline</li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• Initiate <a href="#">Cardiac Monitoring</a></li> <li>• <b>IF AUTHORIZED:</b> acquire <a href="#">12 Lead ECG</a> as soon as possible.</li> <li>• Transmit ECG to hospital                     <ul style="list-style-type: none"> <li>○ Notify ED of transmitted ECG and request interpretation</li> </ul> </li> <li>• Assess rhythm for rate, width, regularity</li> <li>• Place defibrillation pads on patient</li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• Obtain <a href="#">IV/IO Access</a></li> <li>• If hypotensive or with clinical signs of dehydration or poor perfusion, administer <a href="#">Fluid Bolus – IV/IO</a></li> <li>• Consider <a href="#">Waveform Capnography</a></li> </ul>
<b>INT</b>	<ul style="list-style-type: none"> <li>• <b>UNSTABLE:</b> perform <a href="#">Synchronized Cardioversion</a>:                     <ul style="list-style-type: none"> <li>○ Select appropriate initial energy based on patient age (adult/pediatric):                             <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> 100 joules</li> <li>▪ <b>Pediatric:</b> 1 joule/kg</li> </ul> </li> </ul> </li> <li>• Evaluate rhythm, check pulse, and evaluate for hemodynamic changes. Repeat procedure if needed:                     <ul style="list-style-type: none"> <li>○ Select appropriate energy:                             <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> Increase 50 joules for each subsequent shock</li> <li>▪ <b>Pediatric:</b> Increase 2 joules/kg for each subsequent shock</li> </ul> </li> </ul> </li> <li>• Evaluate rhythm, check pulse, and evaluate for hemodynamic changes.</li> <li>• Prepare to perform CPR or defibrillation                     <ul style="list-style-type: none"> <li>○ If defibrillation is required at any time, ensure “<b>SYNC</b>” is turned off.</li> </ul> </li> <li>• For responsive patients, consider sedation and/or pain control prior to cardioversion. Do NOT delay cardioversion to administer medication if patient is unstable:                     <ul style="list-style-type: none"> <li>○ <a href="#">Fentanyl</a> <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 100 mcg</li> </ul> </li> <li>▪ <b>Pediatric:</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 1 mcg/kg; maximum single dose 100 mcg</li> </ul> </li> </ul> </li> </ul> </li> </ul>

<b>INT</b>	<ul style="list-style-type: none"> <li>• <b>STABLE: Narrow Complex, Regular</b> (QRS &lt; 0.12 sec)             <ul style="list-style-type: none"> <li>○ SVT, PAT, Atrial flutter with fixed conduction</li> <li>○ Perform <a href="#">Modified Valsalva-Leg Lift Valsalva</a></li> <li>○ <a href="#">Adenosine</a> <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> <ul style="list-style-type: none"> <li>• IV/IO: 6 mg rapid push over 1-2 seconds followed by a 20 mL saline bolus; if no response:</li> <li>• IV/IO: 12 mg rapid push over 1-2 seconds followed by a 20 mL saline bolus</li> </ul> </li> <li>▪ <b>Pediatric:</b> <ul style="list-style-type: none"> <li>• IV/IO: 0.1 mg/kg (max dose 6 mg) rapid IV/IO push over 1-2 seconds followed by a 20 mL saline bolus; if no response:</li> <li>• IV/IO: 0.2 mg/kg (max dose 12 mg) rapid IV/IO push over 1-2 seconds followed by a 20 mL saline bolus</li> </ul> </li> </ul> </li> </ul> </li> <li>• <b>STABLE: Narrow Complex, Irregular</b> (QRS &lt; 0.12 sec)             <ul style="list-style-type: none"> <li>○ Atrial fibrillation, atrial flutter with variable conduction, multifocal atrial tachycardia</li> <li>○ <a href="#">Diltiazem or Metoprolol</a> is first-line treatment. If unavailable for treatment, consider:                 <ul style="list-style-type: none"> <li>▪ <a href="#">Amiodarone:</a> <ul style="list-style-type: none"> <li>• <b>Adult:</b> <ul style="list-style-type: none"> <li>○ IV/IO: 150 mg over 10 minutes</li> </ul> </li> <li>• <b>Pediatric:</b> <ul style="list-style-type: none"> <li>○ If suspected in pediatric patient, <b>CONTACT ONLINE MEDICAL CONTROL</b></li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> <li>• <b>STABLE: Wide Complex, Monomorphic, Regular</b> (QRS &gt; 0.12 sec)             <ul style="list-style-type: none"> <li>○ Ventricular tachycardia, SVT with Bundle Branch Block, Atrial flutter with aberrancy, Wolff-Parkinson White</li> <li>○ Consider <b>one</b> of the following if available and without contraindications:                 <ul style="list-style-type: none"> <li>○ <a href="#">Amiodarone</a> <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> <ul style="list-style-type: none"> <li>• IV/IO: 150 mg over 10 minutes</li> </ul> </li> <li>▪ <b>Pediatric:</b> <ul style="list-style-type: none"> <li>• If suspected in pediatric patient, <b>CONTACT ONLINE MEDICAL CONTROL</b></li> </ul> </li> </ul> </li> <li>○ <a href="#">Lidocaine</a> <ul style="list-style-type: none"> <li>▪ <b>All Ages:</b> <ul style="list-style-type: none"> <li>• IV/IO: 1.0 mg/kg initial dose (maximum dose 100 mg); may repeat 0.5 mg/kg every 5-10 minutes if refractory; total dose 3 mg/kg</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>PARA</b>	<ul style="list-style-type: none"> <li>• <b>Sedation – Procedural:</b> For responsive patients, consider sedation prior to <a href="#">Synchronized Cardioversion</a>. Do NOT delay cardioversion to administer medication:             <ul style="list-style-type: none"> <li>○ <a href="#">Etomidate</a> <ul style="list-style-type: none"> <li>▪ <b>All Ages:</b> <ul style="list-style-type: none"> <li>• IV/IO: 0.1 mg/kg, maximum single dose 10 mg; may repeat once</li> </ul> </li> </ul> </li> </ul> </li> <li>• <b>STABLE: Narrow Complex, Regular</b> (QRS &lt; 0.12 sec)             <ul style="list-style-type: none"> <li>○ SVT, PAT, Atrial flutter with fixed conduction</li> <li>○ If rhythm persists despite treatment with adenosine and patient remains stable, if available and without contraindications, consider <b>one</b> of the following:                 <ul style="list-style-type: none"> <li>▪ <a href="#">Diltiazem</a> <ul style="list-style-type: none"> <li>• <b>Adult (18 -65 years of age):</b> <ul style="list-style-type: none"> <li>○ 0.25 mg/kg <b>slowly</b> over 2 minutes; maximum single dose 20 mg</li> <li>○ May repeat in 15 minutes 0.35 mg/kg <b>slowly</b> over 2 minutes; maximum repeat dose 25 mg</li> </ul> </li> <li>• <b>Elderly (age 65 years and older):</b> <ul style="list-style-type: none"> <li>○ 0.25 mg/kg <b>slowly</b> over 2 minutes; maximum single dose 15 mg</li> <li>○ May repeat in 15 minutes 0.35 mg/kg <b>slowly</b> over 2 minutes; maximum repeat dose 20 mg</li> </ul> </li> <li>• <b>Pediatric (&lt;18 years):</b> <ul style="list-style-type: none"> <li>○ If suspected in pediatric patients, <b>CONTACT ONLINE MEDICAL CONTROL</b></li> </ul> </li> </ul> </li> <li>▪ <a href="#">Metoprolol</a> <ul style="list-style-type: none"> <li>• <b>Adult:</b> <ul style="list-style-type: none"> <li>○ IV/IO: 5 mg <b>slowly</b> over 2 minutes; may repeat every 5 minutes as needed until HR &lt;100 or rhythm converts; maximum total dose 15 mg; hold if MAP is &lt; 65 mmHg</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> </ul>

<b>PARA</b>	<ul style="list-style-type: none"> <li>• <b>STABLE: Narrow Complex, Irregular</b> (QRS &lt; 0.12 sec)             <ul style="list-style-type: none"> <li>○ <i>Atrial fibrillation, atrial flutter with variable conduction, multifocal atrial tachycardia</i></li> <li>○ Consider <b>one</b> of the following if available and without contraindications:                 <ul style="list-style-type: none"> <li>▪ <b>Diltiazem</b> <ul style="list-style-type: none"> <li>• <b>Adult (18 -64 years of age):</b> <ul style="list-style-type: none"> <li>○ 0.25 mg/kg <b>slowly</b> over 2 minutes; maximum single dose 20 mg</li> <li>○ May repeat in 15 minutes 0.35 mg/kg <b>slowly</b> over 2 minutes; maximum repeat dose 25 mg</li> </ul> </li> <li>• <b>Elderly (age 65 years and older):</b> <ul style="list-style-type: none"> <li>○ 0.25 mg/kg <b>slowly</b> over 2 minutes; maximum single dose 15 mg</li> <li>○ May repeat in 15 minutes 0.35 mg/kg <b>slowly</b> over 2 minutes; maximum repeat dose 20 mg</li> </ul> </li> <li>• <b>Pediatric (&lt;18 years):</b> <ul style="list-style-type: none"> <li>○ If suspected in pediatric patients, <b>CONTACT ONLINE MEDICAL CONTROL</b></li> </ul> </li> </ul> </li> <li>▪ <b>Metoprolol</b> <ul style="list-style-type: none"> <li>• <b>Adult:</b> <ul style="list-style-type: none"> <li>○ <b>IV/IO:</b> 5 mg <b>slowly</b> over 2 minutes; may repeat every 5 minutes as needed until HR &lt;100 or rhythm converts; maximum total dose 15 mg; hold if MAP is &lt; 65 mmHg</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> <li>• <b>STABLE: Wide Complex, Polymorphic</b> (QRS &gt; 0.12 sec)             <ul style="list-style-type: none"> <li>○ <i>Torsades de pointes</i></li> <li>○ Consider if without contraindications:                 <ul style="list-style-type: none"> <li>▪ <b>Magnesium Sulfate</b> <ul style="list-style-type: none"> <li>• <b>Adult:</b> <ul style="list-style-type: none"> <li>○ <b>IV/IO:</b> Mix 2 grams in 10 mL and administer over 10 minutes, if ineffective may repeat once in 15 minutes</li> </ul> </li> <li>• <b>Pediatric:</b> <ul style="list-style-type: none"> <li>○ <b>IV/IO:</b> 50 mg/kg in 10 mL and administer over 10 minutes; maximum dose 2 grams</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>NOTES</b>	

Initiated: 2/26/2024	Last Review/Revision Date:	Next Review Date: 6/1/2025
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# VENTRICULAR ASSIST DEVICE (LVAD)

**INCLUSION Criteria:** Patients with a ventricular assist device

**EXCLUSION Criteria:** None

**OTHER GUIDELINES TO CONSIDER:** [Cardiac Arrest](#), [Difficulty Breathing](#), [Fever or Suspected Sepsis](#), [Suspected Stroke](#)

EMR

- **Universal Care**
- VAD specific considerations:
  - The patient or caregiver should know their normal parameters
  - Call the patient’s VAD coordinator for any device-related complications
  - Be careful when removing or cutting clothing so you don’t inadvertently dislodge or cut the drive line
- If unresponsive or with altered mental status, follow the diagram below and request ALS response:
- Assess the patient:
  - Check for signs of life and perfusion:
    - Mental status
    - Breathing
    - Skin color and temperature
    - Capillary refill
    - Initiate [Waveform Capnography](#), if authorized
  - Assess vital signs:
    - Pulse: Many patients will not have a palpable pulse or pulse ox
    - BP:
      - Obtain Mean BP (MAP) using manual BP cuff and Doppler, if available
        - The first sound you will hear is the Mean Arterial Pressure (MAP)
        - MAP should be 60-90 mmHg
      - If manual BP not detected, or no Doppler available, use the Mean BP (MAP) on the Non-Invasive BP cuff
- If inadequate perfusion:
  - Assess LVAD function:
    - Look/listen for alarms on the system controller
    - Listen for LVAD hum over left chest/left upper quadrant
    - If LVAD not functioning:
      - Attempt to restart
      - Make sure driveline connected
      - Make sure power source connected
      - Consider system control unit change-out if trained provider available
    - If LVAD functioning and patient is unresponsive with signs of poor perfusion go to [Cardiac Arrest](#) and follow usual ACLS guidelines. ***It is fine to do chest compressions and defibrillation.***
- If adequate perfusion and patient is unresponsive or has altered mental status, go to [Altered Mental Status](#)

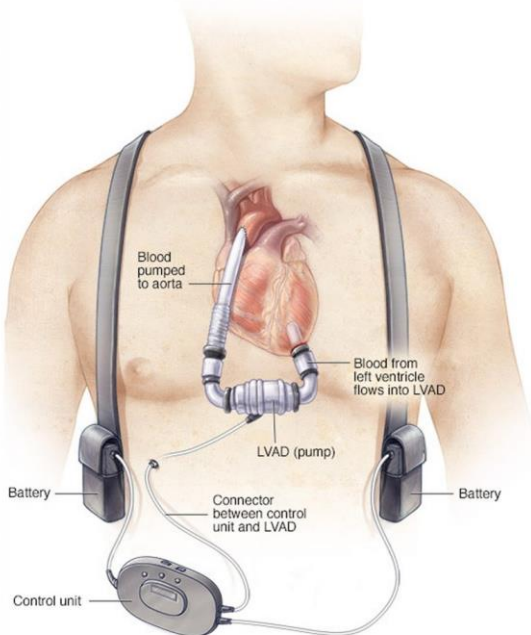
\*The PETCO<sub>2</sub> cutoff of >20 mm Hg should be used only when an ET tube or tracheostomy is used to ventilate the patient. Use of a supraglottic (eg, King) airway results in a falsely elevated PETCO<sub>2</sub> value.

- 1 To determine if pulsatility is present, palpate if a radial pulse can be appreciated
- 2 Place the BP cuff over the forearm
- 3 Place ultrasound gel on the wrist at the location of the radial artery
- 4 Use the Doppler to locate the pulse and inflate the cuff to >20mmHg above the disappearance of the Doppler sound
- 5 Slowly deflate the cuff and record the number where the Doppler sound returns

\* A similar method can be used for the brachial pulse in the antecubital fossa and by inflating the cuff on the upper arm.

The value obtained via this method is representative of the opening pressure – it is close to an MAP when the aortic valve is closed and blood flow is primarily through the LVAD (top panel) and it is close to a systolic pressure when the aortic valve is opening and flow is through both the native heart and the LVAD (bottom panel)

<b>EMT</b>	<ul style="list-style-type: none"> <li>Initiate <a href="#">Cardiac Monitoring</a></li> <li><b>IF AUTHORIZED:</b> acquire <a href="#">12 Lead ECG</a> as soon as possible.</li> <li>Transmit ECG to hospital                         <ul style="list-style-type: none"> <li>Notify ED of transmitted ECG</li> </ul> </li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>Obtain <a href="#">IV/IO Access</a></li> <li>If hypotensive or with clinical signs of dehydration or poor perfusion, administer <a href="#">Fluid Bolus – IV/IO</a></li> <li>Consider <a href="#">Waveform Capnography</a></li> <li>Transport patient to their VAD hospital unless major trauma or grossly unstable. Allow a trained caregiver to ride in the patient compartment when possible.                         <ul style="list-style-type: none"> <li>Nearby VAD hospitals include:                                 <ul style="list-style-type: none"> <li>St Luke’s</li> <li>Froedtert Hospital</li> <li>CHW (for pediatric patients)</li> </ul> </li> <li>Items to transport with the patient:                                 <ul style="list-style-type: none"> <li>VAD identification</li> <li>VAD bag</li> <li>VAD monitor</li> <li>Control unit</li> <li>Spare control unit</li> <li>2 power sources</li> </ul> </li> </ul> </li> </ul>
<b>INT</b>	
<b>PARA</b>	
<b>NOTES</b>	<ul style="list-style-type: none"> <li>Signs of inadequate perfusion may include:                         <ul style="list-style-type: none"> <li>Confusion or altered mental status</li> <li>CRT &gt; 2 seconds</li> <li>Pale, cool, mottled skin</li> </ul> </li> <li>Contact VAD coordinator for any device or patient management questions. Their phone number should be with the patient’s emergency travel bag or located on the control unit around their waist.</li> <li>Common VAD associated medical complications include heart arrhythmia, bleeding, hypovolemia, infection, and stroke.</li> <li>The basic parts of a VAD include the pump, monitor, control unit, driveline, and battery packs. The control unit is where alarms will display.</li> </ul>



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# GENERAL MEDICAL

[Universal Care](#)

[Abdominal Pain](#)

[Allergic Reaction/Anaphylaxis](#)

[Altered Mental Status](#)

[Behavioral or Psychiatric Emergencies](#)

[Bites or Envenomations](#)

[Dizziness or Vertigo](#)

[Epistaxis](#)

[Fever or Suspected Sepsis](#)

[Hyperkalemia](#)

[Hypertensive Emergencies](#)

[Hyperthermia or Heat Exposure](#)

[Hypoglycemia or Hyperglycemia](#)

[Hypotension or Shock](#)

[Hypothermia or Cold Exposure](#)

[Nausea or Vomiting](#)

[Overdose or Toxic Exposure](#)

[Pain Management](#)

[Restraints – Chemical](#)

[Sedation](#)

[Seizure](#)

[Sickle Cell Pain](#)

[Suspected Stroke](#)

[Syncope](#)

# UNIVERSAL CARE

**PURPOSE:** To standardize the process of assessing and managing all EMS patients efficiently. This guideline acts as a framework, enabling EMS providers to apply specific guidelines tailored to the individual findings observed during the assessment within this guideline

**INCLUSION Criteria:** All patient encounters that require assessment and care delivery by EMS personnel

**EXCLUSION Criteria:** None

<b>Patient Management: Assessment</b>	
<b>EMR</b>	<ul style="list-style-type: none"> <li>• Assess scene safety and evaluate for hazards to EMS personnel, patient, bystanders                             <ul style="list-style-type: none"> <li>○ Determine number of patients</li> <li>○ Determine mechanism of injury or nature of illness</li> <li>○ Request additional resources if needed</li> <li>○ Consider declaration of <a href="#">Mass Casualty</a> incident if needed</li> </ul> </li> <li>• Use appropriate personal protective equipment</li> <li>• Consider <a href="#">Spinal Motion Restriction</a></li> <li>• <b>Perform Primary Survey:</b> Evaluate Airway, Breathing, Circulation to assess for life threats or need for immediate intervention prior to moving the patient or transporting from the scene.                             <ul style="list-style-type: none"> <li>○ <b>Airway:</b> Assess for patency and open the airway as indicated                                     <ul style="list-style-type: none"> <li>▪ If patient is unable to maintain airway patency, consider:   <ul style="list-style-type: none"> <li>• <a href="#">Airway Obstruction</a></li> <li>• <a href="#">Airway Management</a></li> <li>• <a href="#">Basic Airway Adjunct – OPA, Basic Airway Adjunct – NPA</a></li> <li>• <a href="#">Suctioning</a></li> </ul> </li> </ul> </li> <li>○ <b>Breathing:</b> Evaluate rate, effort, breath sounds, accessory muscle use, retractions, patient positioning                                     <ul style="list-style-type: none"> <li>▪ Consider <a href="#">Pulse Oximetry</a> <ul style="list-style-type: none"> <li>• If pulse oximetry is less than 93%, titrate <a href="#">Oxygen</a> to lowest level to maintain pulse oximetry at 93% or greater</li> <li>• Do not withhold oxygen if patient is having difficulty breathing or if unable to assess an oxygen saturation</li> <li>• If respirations ineffective, support ventilation with <a href="#">Bag Valve Mask (BVM) Ventilation</a></li> </ul> </li> </ul> </li> <li>○ <b>Circulation:</b> evaluate perfusion status                                     <ul style="list-style-type: none"> <li>▪ Assess pulse   <ul style="list-style-type: none"> <li>• Assess rate and quality of carotid, femoral, or radial pulses</li> <li>• If pulse absent, see <a href="#">Cardiac Arrest</a></li> </ul> </li> <li>▪ Evaluate perfusion by assessing skin color and temperature   <ul style="list-style-type: none"> <li>• <a href="#">Hemorrhage Control</a></li> <li>• Evaluate capillary refill</li> </ul> </li> </ul> </li> <li>○ <b>Disability:</b> Evaluate neurological function                                     <ul style="list-style-type: none"> <li>▪ Evaluate patient responsiveness: Glasgow Coma Scale</li> <li>▪ Evaluate gross motor and sensory function in all extremities</li> <li>▪ Evaluate <a href="#">Blood Glucose</a> in patients with <a href="#">Altered Mental Status</a></li> <li>▪ If <a href="#">Suspected Stroke</a>, complete <a href="#">Stroke Scale</a></li> </ul> </li> <li>○ <b>Expose:</b> Expose the patient as appropriate to complaint                                     <ul style="list-style-type: none"> <li>▪ Keep patient warm</li> <li>▪ Be considerate of patient modesty</li> </ul> </li> </ul> </li> <li>• Consider ALS early if patient has any of the following:                             <ul style="list-style-type: none"> <li>○ Hemodynamic instability</li> <li>○ Inability to maintain and secure an airway</li> <li>○ Need for medications or advanced procedures</li> </ul> </li> <li>• If patient has evidence of a time-critical condition that requires definitive care and time-sensitive treatment (STEMI, <a href="#">Suspected Stroke</a>, or major trauma), every effort should be made to minimize scene time to &lt; 10 minutes</li> </ul>
<b>EMT</b>	
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<b>PARA</b>	

EMR	<ul style="list-style-type: none"> <li>• <b>Perform Secondary Survey:</b> The performance of the secondary survey should NOT delay transport in critical patients. Secondary survey should be tailored to the patient presentation and specific to individual chief complaints. The following are suggestive considerations for a secondary survey assessment: <ul style="list-style-type: none"> <li>○ <b>Head:</b> <ul style="list-style-type: none"> <li>▪ Pupils</li> <li>▪ Naso-oropharynx</li> <li>▪ Skull and scalp</li> </ul> </li> <li>○ <b>Neck:</b> <ul style="list-style-type: none"> <li>▪ Jugular venous distension</li> <li>▪ Tracheal position</li> <li>▪ Cervical step offs</li> </ul> </li> <li>○ <b>Chest:</b> <ul style="list-style-type: none"> <li>▪ Retractions</li> <li>▪ Breath sounds</li> <li>▪ Chest wall deformity</li> </ul> </li> <li>○ <b>Abdomen and Back:</b> <ul style="list-style-type: none"> <li>▪ Flank or abdominal tenderness</li> <li>▪ Bruising</li> <li>▪ Abdominal distention</li> </ul> </li> <li>○ <b>Extremities:</b> <ul style="list-style-type: none"> <li>▪ Edema</li> <li>▪ Pulses</li> <li>▪ Deformity</li> </ul> </li> <li>○ <b>Neurologic:</b> <ul style="list-style-type: none"> <li>▪ Mental status, orientation</li> </ul> </li> <li>○ <b>Motor/Sensory</b></li> </ul> </li> </ul>
EMT	
AEMT	
INT	<ul style="list-style-type: none"> <li>• <b>Obtain Baseline Vital Signs</b> <ul style="list-style-type: none"> <li>○ An initial full set of vital signs is required for all patient contacts: <ul style="list-style-type: none"> <li>▪ Blood pressure, heart rate, respiratory rate, SpO2, neurologic status assessment <ul style="list-style-type: none"> <li>• Neurologic status assessment involves establishing a baseline and last known well time, plus trending any changes in patient neurologic status</li> </ul> </li> <li>▪ Abnormal vital signs should be documented, addressed, and reassessed</li> </ul> </li> <li>○ Patient with cardiac or respiratory complaint: <ul style="list-style-type: none"> <li>▪ <a href="#">Pulse Oximetry</a></li> <li>▪ <a href="#">12 Lead ECG</a>, within 5 minutes of patient contact in patients with cardiac complaints</li> <li>▪ Continuous <a href="#">Cardiac Monitoring</a>, if available</li> <li>▪ Consider <a href="#">Waveform Capnography</a></li> </ul> </li> <li>○ Patient with <a href="#">Altered Mental Status</a> <ul style="list-style-type: none"> <li>▪ Assess <a href="#">Blood Glucose</a></li> <li>▪ Consider <a href="#">Waveform Capnography</a></li> </ul> </li> <li>○ Stable patients should have at least two (2) sets of pertinent vital signs. Ideally, one set should be taken shortly before arrival at receiving facility</li> <li>○ Critical patients should undergo continuous monitoring and documentation of pertinent vital signs, with readings recorded every 5 minutes or more frequently as the patient's condition dictates</li> </ul> </li> </ul>
PARA	<ul style="list-style-type: none"> <li>• Obtain <b>OPQRST</b> history as patient's condition allows <ul style="list-style-type: none"> <li>○ <b>O:</b> Onset of symptoms prompting 911 call</li> <li>○ <b>P:</b> Provocation, location; any exacerbating or alleviating factors</li> <li>○ <b>Q:</b> Quality of pain</li> <li>○ <b>R:</b> Radiation of pain</li> <li>○ <b>S:</b> Severity of symptoms; pain scale</li> <li>○ <b>T:</b> The time of onset and circumstances around onset</li> </ul> </li> </ul>



<b>EMR</b>	<ul style="list-style-type: none"> <li>• Obtain <b>SAMPLE</b> history as patient’s condition allows                             <ul style="list-style-type: none"> <li>○ <b>S:</b> Other associated symptoms</li> <li>○ <b>A:</b> Allergies - medication, environmental, and foods</li> <li>○ <b>M:</b> Medication                                     <ul style="list-style-type: none"> <li>▪ Document all medications, including prescription and over-the-counter drugs</li> <li>▪ Bring all medication containers to the hospital whenever possible</li> <li>▪ Inquire and document the timing of the last medication intake</li> <li>▪ Assess if medications are being taken as prescribed</li> <li>▪ Determine if there are any potential drug interactions</li> <li>▪ Evaluate if any medications may be contributing to the patient's current condition</li> </ul> </li> <li>○ <b>P:</b> Past medical history                                     <ul style="list-style-type: none"> <li>▪ Look for medic alert tags, portable medical records, advanced directives</li> <li>▪ Look for medical devices or implants: common devices include:   <ul style="list-style-type: none"> <li>• Dialysis shunt</li> <li>• Insulin pump</li> <li>• Pacemaker and/or defibrillator</li> <li>• PICC line or central venous access port</li> <li>• Gastric tubes</li> <li>• Urinary catheter</li> </ul> </li> </ul> </li> <li>○ <b>L:</b> Last oral intake</li> <li>○ <b>E:</b> Events leading up to the 911 call. In patient with syncope, seizure, altered mental status, or suspected stroke, consider bringing witness to the hospital, or obtain their contact information to provide to emergency department care team</li> </ul> </li> </ul>
<b>EMT</b>	
<b>AEMT</b>	
<b>AEMT</b>	
<b>INT</b>	<p><b>Treatment And Interventions:</b></p> <ul style="list-style-type: none"> <li>• Provide <b>Oxygen</b> supplementation as needed to reach target SpO2 of greater than 93%                             <ul style="list-style-type: none"> <li>○ If patient has underlying lung disease, <b>Oxygen</b> should be titrated to achieve SpO2 88-92%</li> </ul> </li> <li>• Appropriate monitoring equipment as dictated by patient assessment. These may include:                             <ul style="list-style-type: none"> <li>○ Continuous <b>Pulse Oximetry</b></li> <li>○ Continuous <b>Cardiac Monitoring</b></li> <li>○ <b>Waveform Capnography</b></li> <li>○ Carbon monoxide assessment</li> </ul> </li> <li>• <b>Intravenous (IV) Access</b> or <b>Intraosseous (IO) Access</b> should be established in patients who require IV medication, fluid resuscitation, or in patients who are at risk for clinical deterioration based on provider judgment. Routine placement of vascular access is not encouraged unless indicated.</li> <li>• Provide <b>Pain Management</b>, monitor and document pain scale in response to interventions</li> <li>• Reassess patient after every intervention</li> </ul>
<b>PARA</b>	<p><b>Patient Safety Considerations:</b></p> <ul style="list-style-type: none"> <li>• Routine use of lights and siren is not warranted</li> <li>• Be aware of legal issues and patient’s rights as they pertain to and impact patient care</li> <li>• Be aware of potential need to adjust patient care and medication doses based on age and/or comorbidities</li> <li>• The maximum weight-based dose of medication administered to a pediatric patient should not exceed the maximum adult dose, except where specifically stated in a patient care guideline</li> <li>• <b>CONTACT ONLINE MEDICAL CONTROL</b> when indicated in the guidelines or as needed for specific consultation</li> </ul>

NOTES

- Pediatric:** Use a weight-based assessment tool, such as a length-based tape, to estimate patient weight to guide medication therapy and select properly sized equipment. Although the defined age varies, the pediatric population is generally defined by those patients who weigh up to 40 kilograms or up to 14 years of age, whichever comes first.
- Geriatrics:** Although the defined age varies, the geriatric population typically includes individuals aged 65 years or older. Reduced medication dosages may be required for this age group, as well as for patients with renal or hepatic disease, regardless of age. Guideline-specified dosage adjustments for patients > 65 years of age are denoted by the term "elderly."
- Vital signs:**
  - Hypotension:** SBP below the age-appropriate lower limit
  - Hypertension:** SBP or DBP above the age-appropriate higher limit
  - Tachycardia:** Heart rate above the age-appropriate higher limit
  - Bradycardia:** Heart rate below the age-appropriate lower limit
  - Tachypnea:** Respiratory rate above the age-appropriate higher limit
  - Bradypnea:** Respiratory rate below the age-appropriate lower limit
- Secondary survey may not be completed if patient has critical primary survey problems that require immediate intervention
- In critical patients, proactive patient management should occur simultaneously with assessment. Ideally, one provider should be dedicated to monitoring and coordinating patient-focused care exclusively. Treatment and intervention should be initiated as soon as possible but without hindering extrication or delaying transportation to definitive care.

PEDIATRIC VITAL SIGNS				
Age	Pulse	Respiratory Rate	Systolic BP Lowest Normal	Lowest Normal MAP
Newborn	120-160	30-60	60	40
Up to 1 year	100-140	30-60	70	42
1-3 years	100-140	20-40	76	45
4-6 years	80-120	20-30	80	48
7-9 years	80-120	16-24	84	52
10-12 years	80-120	16-20	90	55
13-14 years	60-100	16-20	90	60

GLASGOW COMA SCALE				
RESPONSE	ADULT	CHILD	INFANT	VALUE
Eye Opening	Spontaneous	Spontaneous	Spontaneous	4
	To speech	To speech	To speech	3
	To pain	To pain	To pain	2
	None	None	None	1
Best Verbal Response	Oriented	Oriented, appropriate	Coos and babbles	5
	Confused	Confused	Irritable, cries	4
	Inappropriate words	Inappropriate words	Cries in response to pain	3
	Incomprehensible sounds	Incomprehensible words or nonspecific sounds	Moans in response to pain	2
	None	None	None	1
Best Motor Response	Obeys	Obeys commands	Moves spontaneously and purposely	6
	Localizes	Localizes painful stimulus	Withdraws in response to touch	5
	Withdraws	Withdraws in response to pain	Withdraws in response to pain	4
	Abnormal flexion	Flexion in response to pain	Decorticate posturing (abnormal flexion) in response to pain	3
	Extensor response	Extension in response to pain	Decerebrate posturing (abnormal extension) in response to pain	2
	None	None	None	1
<b>TOTAL SCORE:</b>				<b>3-15</b>

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# ABDOMINAL PAIN

**INCLUSION Criteria:** Abdominal pain or discomfort related to a non-traumatic cause

**EXCLUSION Criteria:** Abdominal pain due to trauma or abdominal pain due to suspected labor in a pregnant patient

**OTHER PROTOCOLS TO CONSIDER:** [Chest Pain/Acute Coronary Syndrome \(ACS\)](#), [Childbirth](#), [Fever or Suspected Sepsis](#), [Hypotension or Shock](#), [Nausea or Vomiting](#), [Overdose or Toxic Exposure](#), [Pain Management](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• Place patient in position of comfort</li> <li>• Assess pain based on standard pain scale</li> <li>• Maintain nothing by mouth (NPO)</li> <li>• Consider <a href="#">Pulse Oximetry</a> <ul style="list-style-type: none"> <li>○ If pulse oximetry is less than 93%, titrate <a href="#">Oxygen</a> to lowest level to maintain pulse oximetry at 93% or greater</li> <li>○ Do not withhold oxygen if patient is having difficulty breathing or if you don't have the ability to assess an oxygen saturation</li> </ul> </li> <li>• Consider <a href="#">Advanced Life Support (ALS) Response</a></li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• If pain is above the umbilicus or cardiac etiology is suspected:             <ul style="list-style-type: none"> <li>○ Initiate <a href="#">Cardiac Monitoring</a></li> <li>○ <b>IF AUTHORIZED:</b> acquire <a href="#">12 Lead ECG</a> within 5 minutes of patient contact</li> <li>○ Transmit ECG to hospital</li> </ul> </li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• For patients with no emergent cause of abdominal pain or potential to become unstable:             <ul style="list-style-type: none"> <li>○ Consider <a href="#">IV/IO Access</a></li> </ul> </li> <li>• For patients with <a href="#">Hypotension or Shock</a>, signs of dehydration, or otherwise unstable:             <ul style="list-style-type: none"> <li>○ Initiate <a href="#">IV/IO Access</a></li> <li>○ Administer <a href="#">Fluid Bolus – IV/IO</a></li> </ul> </li> <li>• For patients with moderate to severe pain, consider <a href="#">Pain Management</a></li> <li>• Consider management of <a href="#">Nausea or Vomiting</a></li> </ul> <div style="text-align: center; margin-top: 10px;"> </div>
<b>INT</b>	
<b>PARA</b>	
<b>NOTES</b>	
	<ul style="list-style-type: none"> <li>• <b>Unstable Criteria:</b> <ul style="list-style-type: none"> <li>○ Guarding or rigidity of abdominal wall</li> <li>○ Severe vomiting or diarrhea</li> <li>○ Clinical signs of poor perfusion (altered mental status, syncope, weakness, lightheadedness, fatigue, complaints of chest pain, difficulty breathing, hypoxia, pallor, diaphoresis)</li> <li>○ Shock index &gt; 0.9 (HR/SBP)</li> </ul> </li> <li>• <b>Emergent Causes of Abdominal Pain to Consider:</b> <ul style="list-style-type: none"> <li>○ <b>Cardiac Disease/MI:</b> diffuse epigastric pain, shortness of breath, diaphoresis, nausea/vomiting</li> <li>○ <b>Abdominal Aortic Aneurysm (AAA):</b> severe abdominal or back pain, pulsatile mass, hypotension; consider in older patients or those with a history of cardiovascular disease such as hypertension, diabetes, peripheral vascular disease, kidney disease, heart attack, or stroke</li> <li>○ <b>GI Bleed:</b> hypotension, pallor, tachycardia, blood in stool, or vomit</li> <li>○ <b>Ectopic Pregnancy:</b> hypotension, tachycardia, sudden onset of pain, consider in any female of childbearing age, obtain menstrual history</li> </ul> </li> </ul>

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# ALLERGIC REACTION/ANAPHYLAXIS

**INCLUSION Criteria:** Patients of all ages with suspected allergic reaction and/or anaphylaxis

**EXCLUSION Criteria:** None

**OTHER PROTOCOLS TO CONSIDER:** [Airway Management](#), [Altered Mental Status](#), [Bites or Envenomations](#), [Difficulty Breathing](#), [Hypotension or Shock](#)

EMR	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• Consider <a href="#">Pulse Oximetry</a> <ul style="list-style-type: none"> <li>○ If pulse oximetry is less than 93%, titrate <a href="#">Oxygen</a> to lowest level to maintain pulse oximetry at 93% or greater</li> <li>○ Do not withhold oxygen if patient is having difficulty breathing or if unable to assess an oxygen saturation</li> <li>○ If respirations ineffective, support ventilation with <a href="#">Bag Valve Mask (BVM) Ventilation</a></li> </ul> </li> <li>• If signs of anaphylaxis such as stridor, oropharyngeal swelling, severe dyspnea or evidence of respiratory distress, hypotension, altered mental status, extensive hives:             <ul style="list-style-type: none"> <li>○ <b>IF AUTHORIZED:</b> administer:                 <ul style="list-style-type: none"> <li>○ <a href="#">Epinephrine</a> <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> <ul style="list-style-type: none"> <li>• IM: <a href="#">Epi Pen</a> 0.3 mg</li> <li>• IM: <a href="#">Epinephrine (1:1,000)</a> 0.5 mg every 5-15 minutes if symptoms persist</li> </ul> </li> <li>▪ <b>Pediatric &lt; 50 kg:</b> <ul style="list-style-type: none"> <li>• IM: <a href="#">Epinephrine (1:1,000)</a> 0.01mg/kg every 5-15 minutes if symptoms persist (max single dose 0.5 mg)</li> </ul> </li> <li>▪ <b>Pediatric &lt; 25 kg:</b> <ul style="list-style-type: none"> <li>• IM: <a href="#">Epi Pen Jr.</a> 0.15 mg</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> <li>• If wheezing/bronchospasm present consider:             <ul style="list-style-type: none"> <li>○ <a href="#">Albuterol:</a> <ul style="list-style-type: none"> <li>▪ MDI (90 mcg) 4 puffs with spacer</li> </ul> </li> <li>OR</li> <li>▪ <b>All ages:</b> <ul style="list-style-type: none"> <li>• <b>Nebulized:</b> 2.5 mg in 3 mL via hand-held nebulizer or mask; may repeat every 10-20 minutes; max 3 doses</li> <li>• <b>For severe exacerbations:</b> 5.0 mg via hand-held nebulizer or mask; may repeat every 20 minutes; maximum 2 doses</li> <li>• <b>If critical:</b> 10 mg via hand-held nebulizer or mask</li> </ul> </li> </ul> </li> </ul>
EMT	<ul style="list-style-type: none"> <li>○ <a href="#">Ipratropium Bromide:</a> <ul style="list-style-type: none"> <li>▪ <b>All ages:</b> <ul style="list-style-type: none"> <li>• <b>Nebulized:</b> 0.5 mg in combination with <a href="#">Albuterol</a> 2.5 mg                             <ul style="list-style-type: none"> <li>○ May repeat every 10-20 minutes as needed; maximum 3 doses</li> <li>○ Initial albuterol dose can be increased if patient is severe or critical as noted above</li> </ul> </li> <li>• <b>Nebulized:</b> DuoNeb (<a href="#">Albuterol</a> 2.5 mg and <a href="#">Ipratropium Bromide</a> 0.5 mg)                             <ul style="list-style-type: none"> <li>○ May repeat DuoNeb every 10-20 minutes as needed; maximum 3 doses</li> </ul> </li> </ul> </li> <li>○ <b>Critical respiratory distress or severe difficulty breathing not improving with <a href="#">Albuterol</a>,</b> consider:                 <ul style="list-style-type: none"> <li>▪ <a href="#">Epinephrine (1:1,000)</a> <ul style="list-style-type: none"> <li>• <b>Adult:</b> <ul style="list-style-type: none"> <li>○ IM: 0.5 mg every 5-15 minutes if symptoms persist</li> </ul> </li> <li>• <b>Pediatric &lt; 50 kg:</b> <ul style="list-style-type: none"> <li>○ IM: 0.01mg/kg IM every 5-15 minutes if symptoms persist (max single dose 0.5 mg)</li> </ul> </li> </ul> </li> <li>▪ Consider <a href="#">CPAP – Non-Invasive Positive Pressure Ventilation</a> if no contraindications</li> </ul> </li> <li>• Consider <a href="#">Cardiac Monitoring</a> <ul style="list-style-type: none"> <li>○ <b>Pediatric:</b> monitor heart rate for changes; bradycardia signals deterioration</li> </ul> </li> </ul> </li></ul>
AEMT	<ul style="list-style-type: none"> <li>• Consider <a href="#">IV/IO Access</a> <ul style="list-style-type: none"> <li>○ Do not delay transport to obtain IV access</li> </ul> </li> <li>• If hypotensive or with clinical signs of poor perfusion, administer <a href="#">Fluid Bolus – IV/IO</a></li> <li>• Consider <a href="#">Waveform Capnography</a></li> </ul>

<b>INT</b>	<ul style="list-style-type: none"> <li>• For patients with severe or critical respiratory distress or moderate respiratory distress not improving with treatment:             <ul style="list-style-type: none"> <li>○ <a href="#">Epinephrine</a> <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> <a href="#">Epinephrine Push Dose (1:10,000)</a> 0.05 mg IV/IO every 2-5 minutes as needed; may double subsequent boluses to 0.1 mg</li> </ul> </li> <li>▪ <b>Pediatric &lt; 50 kg:</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> <a href="#">Epinephrine Push Dose (1:10,000)</a> 0.001 mg/kg every 2-5 minutes as needed (max initial dose 0.05 mg); may double subsequent doses to 0.002 mg/kg (max dose 0.1 mg)</li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>PARA</b>	<ul style="list-style-type: none"> <li>• For unstable patient not responding to IM or push dose epinephrine, consider:             <ul style="list-style-type: none"> <li>○ <a href="#">Epinephrine</a> <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> <ul style="list-style-type: none"> <li>• <b>IV Infusion:</b> 2-20 mcg/minute</li> </ul> </li> </ul> </li> <li>• <b>Antihistamine:</b> Consider administration of:             <ul style="list-style-type: none"> <li>○ <a href="#">Diphenhydramine (Benadryl)</a> <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> <ul style="list-style-type: none"> <li>• <b>IV/IO/PO:</b> 50 mg</li> </ul> </li> <li>▪ <b>Pediatric:</b> <ul style="list-style-type: none"> <li>• <b>IV/IO/PO:</b> 1 mg/kg (maximum dose 50 mg)</li> </ul> </li> </ul> </li> <li>• <b>Steroids:</b> Consider administration of <u>one</u> of the following steroids if available and without contraindications:             <ul style="list-style-type: none"> <li>○ <a href="#">Methylprednisolone (Solumedrol)</a> <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> <ul style="list-style-type: none"> <li>• <b>PO/IM/IV/IO:</b> 125 mg</li> </ul> </li> <li>▪ <b>Pediatric:</b> <ul style="list-style-type: none"> <li>• <b>PO/IM/IV/IO:</b> 2 mg/kg (maximum dose 125 mg)</li> </ul> </li> </ul> </li> <li>○ <a href="#">Dexamethasone (Decadron)</a> <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> <ul style="list-style-type: none"> <li>• <b>PO/IM/IV/IO:</b> 10 mg</li> </ul> </li> <li>▪ <b>Pediatric:</b> <ul style="list-style-type: none"> <li>• <b>PO/IM/IV/IO:</b> 0.3 mg/kg (maximum dose 10 mg)</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li></ul></li></ul>
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• Allergic reactions span a continuum from minor to life threatening</li> <li>• Use Epinephrine with caution or consider a reduced dose in patients who are elderly, have known coronary artery disease because of the risk of inducing myocardial ischemia – HOWEVER, in severe anaphylaxis there is no contraindication to epinephrine</li> <li>• IV form of <a href="#">Solumedrol</a> and <a href="#">Dexamethasone</a> can be given orally by having patient swallow the medication</li> </ul>

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# ALTERED MENTAL STATUS

**INCLUSION Criteria:** Patients who are confused, altered, or present with impaired decision-making capacity or a change from baseline

**EXCLUSION Criteria:** None

**OTHER GUIDELINES TO CONSIDER:** [Airway Management](#), [Behavioral or Psychiatric Emergencies](#), [Bradycardia – Adult \(8 Years & Older\)](#), [Bradycardia – Pediatric \(<8 Years Old\)](#), [Fever or Suspected Sepsis](#), [Hyperthermia or Heat Exposure](#), [Hypoglycemia or Hyperglycemia](#), [Hypothermia or Cold Exposure](#), [Hypotension or Shock](#), [Nausea or Vomiting](#), [Overdose or Toxic Exposure](#), [Seizure](#), [Suspected Stroke](#), [Tachycardia](#), [Traumatic Injuries](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• Allow or Assist patient to position of comfort</li> <li>• If patient is not conscious <b>AND</b> evidence of opiate overdose with respiratory depression:             <ul style="list-style-type: none"> <li>○ <a href="#">Airway Management</a></li> <li>○ Administer <a href="#">Naloxone</a> per <a href="#">Overdose or Toxic Exposure</a> guideline                 <ul style="list-style-type: none"> <li>▪ Administration of <a href="#">Naloxone</a> should NOT occur until after basic airway management</li> <li>▪ Consider <a href="#">Restraints-Physical</a> before administering <a href="#">Naloxone</a></li> </ul> </li> </ul> </li> <li>• If evidence of or concern for <a href="#">Suspected Stroke</a> as an etiology of presenting symptoms             <ul style="list-style-type: none"> <li>○ Complete <a href="#">Stroke Scale</a> using BE-FAST stroke screening tool</li> </ul> </li> <li>• Perform baseline neurological exam</li> <li>• Check <a href="#">Blood Glucose</a> <ul style="list-style-type: none"> <li>○ If blood glucose &lt; 60, see <a href="#">Hypoglycemia or Hyperglycemia</a> guideline</li> </ul> </li> <li>• Consider <a href="#">Pulse Oximetry</a> <ul style="list-style-type: none"> <li>○ If pulse oximetry is less than 93%, titrate <a href="#">Oxygen</a> to lowest level to maintain pulse oximetry at 93% or greater</li> <li>○ Do not withhold oxygen if patient is having difficulty breathing or if unable to assess an oxygen saturation</li> <li>○ If respirations ineffective, support ventilation with <a href="#">Bag Valve Mask (BVM) Ventilation</a></li> </ul> </li> <li>• Anticipate and search for other medical or traumatic etiology, see appropriate guideline             <ul style="list-style-type: none"> <li>○ Metabolic: <a href="#">Hypoglycemia or Hyperglycemia</a>, <a href="#">Overdose or Toxic Exposure</a></li> <li>○ Cardiac: <a href="#">Tachycardia</a> or <a href="#">Bradycardia</a>; cardiac dysrhythmias</li> <li>○ Hypovolemia: <a href="#">Hypotension or Shock</a></li> <li>○ CNS Disorder: <a href="#">Suspected Stroke</a>, <a href="#">Seizure</a></li> <li>○ Vasovagal: <a href="#">Nausea or Vomiting</a></li> <li>○ Sepsis: <a href="#">Fever or Suspected Sepsis</a></li> <li>○ <a href="#">Traumatic Injuries</a></li> </ul> </li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• Consider <a href="#">Cardiac Monitoring</a></li> <li>• <b>IF AUTHORIZED:</b> consider <a href="#">12 Lead ECG</a> <ul style="list-style-type: none"> <li>○ Transmit ECG to hospital</li> </ul> </li> <li>• Consider <a href="#">Waveform Capnography</a></li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• Consider <a href="#">IV/IO Access</a></li> <li>• If hypotensive or with clinical signs of dehydration or poor perfusion, administer <a href="#">Fluid Bolus – IV/IO</a></li> </ul>
<b>INT</b>	
<b>PARA</b>	
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• Possible etiology mnemonic for altered mental status is AEIOU TIPS-V             <ul style="list-style-type: none"> <li>○ <b>A:</b> alcohol, arrhythmias</li> <li>○ <b>E:</b> endocrine, exocrine, electrolyte imbalance</li> <li>○ <b>I:</b> insulin shock, ingestion</li> <li>○ <b>O:</b> oxygen deficit (hypoxia/hypercarbia) opiates, overdose</li> <li>○ <b>U:</b> uremia, renal problems, hypertension, hyperkalemia</li> <li>○ <b>T:</b> Trauma, temperature (hypothermia/hyperthermia)</li> <li>○ <b>I:</b> Infection</li> <li>○ <b>P:</b> Psychological</li> <li>○ <b>S:</b> Space occupying lesion, stroke, shock, seizure</li> <li>○ <b>V:</b> Vascular</li> </ul> </li> </ul>

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# BEHAVIORAL OR PSYCHIATRIC EMERGENCIES

**INCLUSION Criteria:** Patients of all ages who are exhibiting agitated, violent, or who are a danger to themselves or others

**EXCLUSION Criteria:** Patients demonstrating agitated or violent behavior attributed to medical conditions including, but not limited to, head trauma, hypoxia, and metabolic disorders (e.g. hypoglycemia)

**OTHER GUIDELINES TO CONSIDER:** [Airway Management](#), [Altered Mental Status](#), [Hypoglycemia or Hyperglycemia](#), [Overdose or Toxic Exposure](#), [Traumatic Injuries](#), [Restraint-Physical](#), [Restraint-Chemical](#), [Suspected Stroke](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• Ensure scene safety-DO NOT jeopardize your own safety                             <ul style="list-style-type: none"> <li>○ Protect yourself and others</li> <li>○ Await Law Enforcement</li> </ul> </li> <li>• Approach patient in a calm, non-threatening manner, both physically and in your conversation                             <ul style="list-style-type: none"> <li>○ Verbally attempt to calm and reorient the patient to reality as able</li> <li>○ Utilize de-escalation techniques when needed</li> <li>○ Do Not participate in the patient’s delusions or hallucinations</li> <li>○ Minimize external stimulation</li> </ul> </li> <li>• Do not touch a patient with a mental illness without first telling them your intent</li> <li>• If patient is combative, consider <a href="#">Restraint-Physical</a></li> <li>• Consider requesting ALS or paramedic unit early if patient not tolerating physical restraints or is not able to safely be restrained</li> <li>• Consider medical etiologies of behavioral disorders and treat according to guideline:                             <ul style="list-style-type: none"> <li>○ Hypoxia: <a href="#">Airway Management</a></li> <li>○ Substance abuse or overdose: <a href="#">Overdose or Toxic Exposure</a></li> <li>○ Neurological disease: <a href="#">Suspected Stroke</a></li> <li>○ Metabolic derangements: <a href="#">Hypoglycemia or Hyperglycemia</a></li> </ul> </li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• If safe to do so:                             <ul style="list-style-type: none"> <li>○ Obtain <a href="#">Blood Glucose</a></li> <li>○ Consider <a href="#">Pulse Oximetry</a> <ul style="list-style-type: none"> <li>▪ If pulse oximetry is less than 93%, titrate <a href="#">Oxygen</a> to lowest level to maintain pulse oximetry at 93% or greater</li> </ul> </li> <li>○ Consider <a href="#">Cardiac Monitoring</a></li> <li>○ Consider <a href="#">Waveform Capnography</a></li> </ul> </li> </ul>
<b>AEMT</b>	
<b>INT</b>	
<b>PARA</b>	<ul style="list-style-type: none"> <li>• If patient remains a threat to self or others, consider <a href="#">Restraints-Chemical</a> <ul style="list-style-type: none"> <li>○ NEVER administer chemical sedation at the direction of Law Enforcement. Always perform your own assessment of the patient’s condition.</li> <li>○ Before proceeding with chemical sedation, identify and treat any potential medical causes</li> <li>○ Continuous <a href="#">Cardiac Monitoring</a>, <a href="#">Pulse Oximetry</a>, and <a href="#">Waveform Capnography</a> required for any patient receiving sedation                             <ul style="list-style-type: none"> <li>▪ Monitor closely for development of:                                     <ul style="list-style-type: none"> <li>• Hypoventilation</li> <li>• Oversedation</li> <li>• Cardiac dysrhythmias</li> </ul> </li> </ul> </li> <li>○ Reposition BEFORE you administer sedatives! NEVER administer sedatives to a patient in the prone position.</li> <li>○ Reposition the patient to ensure their airway and breathing are not restricted before proceeding</li> </ul> </li> </ul>

<b>PARA</b>	<ul style="list-style-type: none"> <li>• If chemical restraint is needed, consider <b>one</b> of the following sedative medications, in order of preference below, if available and without contraindications:             <ul style="list-style-type: none"> <li>○ <b>Ketamine</b> <ul style="list-style-type: none"> <li>▪ <b>Ages ≥ 3 months:</b> <ul style="list-style-type: none"> <li>• <b>IM:</b> 5 mg/kg; maximum single dose 500 mg; may administer 250 mg IM initially; if initial dose ineffective after 2 minutes, give remaining dose in another muscle; if sedation inadequate, may repeat one-half (1/2) initial dose in 10 minutes</li> <li>• <b>IV/IO:</b> 2 mg/kg; maximum single dose 200 mg; may repeat every 5 minutes as needed</li> </ul> </li> </ul> </li> <li>○ <b>Midazolam</b> <ul style="list-style-type: none"> <li>▪ <b>Adult (ages 12 years – 64 years):</b> <ul style="list-style-type: none"> <li>• <b>IM/IN:</b> 10 mg; may repeat every 10 minutes to achieve desired effects</li> <li>• <b>IV/IO:</b> 5mg; may repeat every 3 minutes to achieve desired effects</li> </ul> </li> <li>▪ <b>Pediatric (age &lt; 12 years):</b> <ul style="list-style-type: none"> <li>• <b>IM/IN:</b> 0.2 mg/kg; maximum single dose 10 mg; may repeat every 10 minutes to achieve desired effects</li> <li>• <b>IV/IO:</b> 0.1 mg/kg; maximum single dose 10 mg; may repeat every 3 minutes to achieve desired effects</li> </ul> </li> <li>▪ <b>Elderly (ages 65 years and older):</b> <ul style="list-style-type: none"> <li>• <b>IM/IN:</b> 5 mg; may repeat every 10 minutes to achieve desired effects</li> <li>• <b>IV/IO:</b> 2 mg; may repeat every 3 minutes to achieve desired effects</li> </ul> </li> </ul> </li> <li>○ <b>Lorazepam</b> <ul style="list-style-type: none"> <li>▪ <b>Adult (age ≥ 12 years):</b> <ul style="list-style-type: none"> <li>• <b>IM:</b> 2 mg; may repeat every 20 minutes to achieve desired effects</li> <li>• <b>IV/IO:</b> 2 mg; may repeat every 5 minutes to achieve desired effects</li> </ul> </li> <li>▪ <b>Pediatric (&lt;12 years):</b> <ul style="list-style-type: none"> <li>• <b>IM:</b> 0.1 mg/kg; max single dose 2 mg; may repeat every 20 minutes to achieve desired effects</li> <li>• <b>IV/IO:</b> 0.1 mg/kg; max single dose 2 mg; may repeat every 5 minutes to achieve desired effects</li> </ul> </li> </ul> </li> <li>○ <b>Droperidol</b> <ul style="list-style-type: none"> <li>▪ <b>Adult (age &gt; 14 years):</b> <ul style="list-style-type: none"> <li>• <b>IM:</b> 5 mg may repeat in 15 minutes to achieve desired effects; max cumulative dose 20 mg</li> <li>• <b>IV/IO:</b> 2.5 mg slow IV push over 2 minutes; may repeat in 5 minutes to achieve desired effect; maximum cumulative dose of 20 mg</li> </ul> </li> <li>▪ <b>Pediatric (7 - 14 years):</b> <ul style="list-style-type: none"> <li>• <b>&lt;34 kg:</b> <ul style="list-style-type: none"> <li>○ <b>IV/IO/IM:</b> 0.625 mg</li> </ul> </li> <li>• <b>34 to 57 kg:</b> <ul style="list-style-type: none"> <li>○ <b>IV/IO/IM:</b> 1.25 mg</li> </ul> </li> <li>• <b>&gt;57 to 68 kg:</b> <ul style="list-style-type: none"> <li>○ <b>IV/IO/IM:</b> 1.875 mg</li> </ul> </li> <li>• <b>&gt;68 kg:</b> <ul style="list-style-type: none"> <li>○ <b>IV/IO/IM:</b> 2.5 mg</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• Only proceed with chemical restraint if the patient is an ACTIVE threat to themselves or others</li> <li>• Never place physical restraints for punitive reasons, or in a manner that restricts breathing and circulation, or in places that restrict access for monitoring the patient.</li> <li>• <b>CAUTION:</b> Patients who violently resist or struggle against physical restraints have an increased risk of death. Use chemical restraint as soon as available in this situation.</li> <li>• During chemical restraint, the paramedic must be focused on continuous monitoring of the patient’s airway, breathing and circulation</li> <li>• Obese patients are at increased risk of apnea</li> <li>• Alcohol and sedative drugs create a severe risk of apnea</li> </ul>

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# BITES OR ENVENOMATIONS

**INCLUSION Criteria:** Patient with suspected bite, sting, or envenomation

**EXCLUSION Criteria:** None

**OTHER GUIDELINES TO CONSIDER:** [Airway Management](#), [Allergic Reaction/Anaphylaxis](#), [Altered Mental Status](#), [Hemorrhage Control](#), [Hypotension or Shock](#), [Pain Management](#), [Seizure](#), [Traumatic Injuries](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• Protect yourself; if applicable, ensure offending organism has been neutralized before approaching the patient                             <ul style="list-style-type: none"> <li>○ Contact Animal Control as needed</li> </ul> </li> <li>• Remove clothing, jewelry, or any constricting items on the affected area or extremity</li> <li>• To help with identification of the source, consider photographing the organism. DO NOT bring spider, snake, etc. into the ambulance or emergency department                             <ul style="list-style-type: none"> <li>○ BEWARE: Organism, even if appearing dead, may bite or sting and deliver venom</li> </ul> </li> <li>• <b>Stings</b> <ul style="list-style-type: none"> <li>○ Remove stinger                                     <ul style="list-style-type: none"> <li>▪ If stinger is present, remove by scraping over area of sting with a straight edge</li> </ul> </li> </ul> </li> <li>• <b>Snakebite</b> <ul style="list-style-type: none"> <li>○ Immobilize extremity in a neutral position as soon as possible</li> <li>○ For a poisonous snakebite:                                     <ul style="list-style-type: none"> <li>▪ If antivenom available on scene, transport with the patient</li> <li>▪ DO NOT apply constricting bands such as tourniquets above or below the site of envenomation</li> <li>▪ DO NOT apply ice packs</li> <li>▪ DO NOT locally incise the bite</li> <li>▪ DO NOT copiously wash the wound</li> <li>▪ DO NOT attempt to remove venom by “sucking” or suctioning</li> </ul> </li> <li>○ BEWARE: Snakes can envenomate up to one hour after death</li> </ul> </li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• Consider marking edges of redness, if present, with marking pen</li> <li>• For patients with moderate to severe allergic reaction symptoms, or mild symptoms with a history of life-threatening allergic reaction, see <a href="#">Allergic Reaction/Anaphylaxis</a> guideline</li> <li>• Consider <a href="#">Pulse Oximetry</a> <ul style="list-style-type: none"> <li>○ If pulse oximetry is less than 93%, titrate <a href="#">Oxygen</a> to lowest level to maintain pulse oximetry at 93% or greater</li> <li>○ Do not withhold oxygen if patient is having difficulty breathing or if unable to assess an oxygen saturation</li> <li>○ If respirations ineffective, support ventilation with <a href="#">Bag Valve Mask (BVM) Ventilation</a></li> </ul> </li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• Consider <a href="#">IV/IO Access</a> in unaffected extremity</li> <li>• If hypotensive or with clinical signs of poor perfusion, administer <a href="#">Fluid Bolus – IV/IO</a></li> </ul>
<b>INT</b>	
<b>PARA</b>	<ul style="list-style-type: none"> <li>• If patient experiencing moderate to severe anxiety, consider <a href="#">Sedation</a></li> </ul>
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• Envenomations that are known to have antivenom readily available in the USA include:                             <ul style="list-style-type: none"> <li>▪ Black widow spider</li> <li>▪ Bark scorpions</li> <li>▪ Rattlesnake</li> <li>▪ Copperhead snake</li> <li>▪ Coral snake</li> </ul> </li> </ul>

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# DIZZINESS OR VERTIGO

**INCLUSION Criteria:** Patients with symptoms of dizziness or vertigo (a sensation of spinning or movement, often accompanied by nausea, vomiting, and a loss of balance)

**EXCLUSION Criteria:** Patients with other neurological complaints or with a presumed trauma etiology

**OTHER GUIDELINES TO CONSIDER:** [Nausea or Vomiting](#), [Suspected Stroke](#), [Syncope](#), [Traumatic Injuries](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• Allow patient to assume position of comfort that minimizes or eliminates symptoms</li> <li>• Avoid unnecessary movements that may worsen symptoms, nausea, or vomiting</li> <li>• Consider <a href="#">Suspected Stroke</a> as an etiology of presenting symptoms                         <ul style="list-style-type: none"> <li>○ Complete <a href="#">Stroke Scale</a> using BE-FAST stroke screening tool</li> </ul> </li> <li>• Check <a href="#">Blood Glucose</a> <ul style="list-style-type: none"> <li>○ If blood glucose &lt; 60, see <a href="#">Hypoglycemia or Hyperglycemia</a> guideline</li> </ul> </li> <li>• Consider <a href="#">Pulse Oximetry</a> <ul style="list-style-type: none"> <li>○ If pulse oximetry is less than 93%, titrate <a href="#">Oxygen</a> to lowest level to maintain pulse oximetry at 93% or greater</li> <li>○ Do not withhold oxygen if patient is having difficulty breathing or if unable to assess an oxygen saturation</li> </ul> </li> <li>• If evidence or suspicion for other medical or traumatic etiology, see appropriate guideline</li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• Consider <a href="#">Cardiac Monitoring</a></li> <li>• <b>IF AUTHORIZED:</b> Consider <a href="#">12 Lead ECG</a></li> <li>• Transmit ECG to hospital</li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• Consider <a href="#">IV/IO Access</a></li> <li>• If hypotensive or with clinical signs of dehydration or poor perfusion, administer <a href="#">Fluid Bolus – IV/IO</a></li> <li>• If patient is experiencing <a href="#">Nausea or Vomiting</a>, consider:                         <ul style="list-style-type: none"> <li>○ <a href="#">Ondansetron</a> <ul style="list-style-type: none"> <li>▪ <b>Adult ≥ 12 years:</b> <ul style="list-style-type: none"> <li>• <b>ODT/PO/IV/IO:</b> 8 mg; one time only</li> <li>• <b>IM:</b> 8 mg one time only; use thigh or gluteal site only</li> </ul> </li> <li>▪ <b>Pediatric &lt; 12 years of age:</b> <ul style="list-style-type: none"> <li>• <b>PO/IV/IO:</b> 0.2 mg/kg; max initial dose 8 mg one time dose</li> <li>• <b>IM:</b> 0.2 mg/kg; maximum initial dose 8 mg one time dose; use thigh or gluteal site only</li> </ul> </li> <li>• <b>ODT: Weight based dosing:</b> <ul style="list-style-type: none"> <li>○ 8-15 kg: 2 mg; one time only</li> <li>○ 15.1 kg to 30 kg: 4 mg; one time only</li> <li>○ &gt; 30 kg: 8 mg; one time only</li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>INT</b>	
<b>PARA</b>	<ul style="list-style-type: none"> <li>• If severe symptoms of vertigo, consider one of the following anti-motion sickness medications, in order of preference below:                         <ul style="list-style-type: none"> <li>○ <a href="#">Prochlorperazine (Compazine)</a> <ul style="list-style-type: none"> <li>▪ <b>Adult (ages 18 – 64 years):</b> <ul style="list-style-type: none"> <li>• <b>PO/IM/IV/IO:</b> 10 mg; administer IV/IO <b>slowly</b> over a minimum of 2 minutes</li> </ul> </li> <li>▪ <b>Elderly (age 65 years and older):</b> <ul style="list-style-type: none"> <li>• <b>PO/IM/IV/IO:</b> 5 mg; administer IV/IO <b>slowly</b> over a minimum of 2 minutes</li> </ul> </li> <li>▪ <b>Pediatric (≥ 2 years and ≥ 9 kg):</b> <ul style="list-style-type: none"> <li>• <b>PO/IM/IV/IO:</b> 0.1 mg/kg max single dose 10 mg; administer IV/IO <b>slowly</b> over a minimum of 2 minutes</li> </ul> </li> </ul> </li> </ul> </li> </ul>

<b>PARA</b>	<ul style="list-style-type: none"> <li>• <i>Continued</i> <ul style="list-style-type: none"> <li>○ <b>Promethazine (Phenergan)</b> <ul style="list-style-type: none"> <li>▪ <b>Adult (ages &gt; 14 - 64 years):</b> <ul style="list-style-type: none"> <li>• <b>PO/IM:</b> 25 mg</li> <li>• <b>IV/IO:</b> 12.5 mg; administer IV/IO <i>slowly</i> over a minimum of 2 minutes</li> </ul> </li> <li>▪ <b>Elderly (age 65 years and older):</b> <ul style="list-style-type: none"> <li>• <b>PO/IM:</b> 12.5 mg</li> <li>• <b>IV/IO:</b> 6.25 mg; administer IV/IO <i>slowly</i> over a minimum of 2 minutes</li> </ul> </li> <li>▪ <b>Pediatric (2 years – 14 years):</b> <ul style="list-style-type: none"> <li>• <b>PO/IM:</b> 0.25 mg/kg maximum single dose 25 mg;</li> <li>• <b>IV/IO:</b> 0.25 mg/kg; administer <i>slowly</i> over a minimum of 2 minutes; maximum single dose 12.5 mg</li> </ul> </li> </ul> </li> <li>○ <b>Droperidol (Inapsine)</b> <ul style="list-style-type: none"> <li>▪ <b>Adult (age &gt; 14 years):</b> <ul style="list-style-type: none"> <li>• <b>IM:</b> 1.25 mg; may repeat in 15 minutes; maximum cumulative dose of 5 mg</li> <li>• <b>IV/IO:</b> 1.25 mg <i>slowly</i> over 2 minutes; may repeat in 5 minutes to achieve desired effect; maximum cumulative dose of 5 mg</li> </ul> </li> <li>▪ <b>Pediatric (&gt; 2 – 14 years):</b> <ul style="list-style-type: none"> <li>• <b>IV/IO/IM:</b> 0.05 mg/kg slow IV push over 2 minutes; maximum initial dose 1.25 mg; may repeat in 15 minutes; maximum cumulative dose of 5 mg</li> </ul> </li> </ul> </li> <li>○ <b>Metoclopramide (Reglan)</b> <ul style="list-style-type: none"> <li>▪ <b>Adult (ages &gt; 14 - 64 years):</b> <ul style="list-style-type: none"> <li>• <b>PO:</b> 10 mg; may repeat once in 60 minutes if needed</li> <li>• <b>IM:</b> 10 mg; may repeat once in 15 minutes if needed</li> <li>• <b>IV/IO:</b> 10mg <i>slowly</i> over 1-2 minutes; may repeat once in 5 minutes if needed</li> </ul> </li> <li>▪ <b>Elderly (age 65 years and older):</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 5 mg <i>slowly</i> over 1-2 minutes; may repeat once in 5 minutes if needed</li> </ul> </li> <li>▪ <b>Pediatric (≥ 2 years – 14 years):</b> <ul style="list-style-type: none"> <li>• <b>PO:</b> 0.1 mg/kg; maximum initial dose 10 mg; may repeat once in 60 minutes if needed</li> <li>• <b>IM:</b> 0.1 mg/kg; maximum initial dose 10 mg; may repeat once in 15 minutes if needed</li> <li>• <b>IV/IO:</b> 0.1 mg/kg <i>slowly</i> over 1-2 minutes; maximum initial dose 10 mg; may repeat once in 5 minutes if needed</li> </ul> </li> </ul> </li> </ul> </li> <li>• If anti-motion sickness medications fail to relieve symptoms of vertigo, or patient has experienced previous unsuccessful outcomes with these medications and benzodiazepines have proven effective, consider:             <ul style="list-style-type: none"> <li>○ <b>Lorazepam</b> <ul style="list-style-type: none"> <li>▪ <b>Adult (12 – 64 years):</b> <ul style="list-style-type: none"> <li>• <b>IM:</b> 0.5 mg; may repeat every 20 minutes as needed for anxiolytic effect</li> <li>• <b>IV/IO:</b> 0.5 mg; may repeat every 10 minutes as needed for anxiolytic effect</li> </ul> </li> <li>▪ <b>Pediatric (&lt;12 years):</b> <ul style="list-style-type: none"> <li>• <b>IM:</b> 0.1 mg/kg; max single dose 1 mg; may repeat in 20 minutes as needed</li> <li>• <b>IV/IO:</b> 0.1 mg/kg; max single dose 1 mg; may repeat every 5 minutes as needed</li> </ul> </li> <li>▪ <b>Elderly (age 65 years and older):</b> <ul style="list-style-type: none"> <li>• <b>IM:</b> 0.25 mg; may repeat in 20 minutes as needed for anxiolytic effect</li> <li>• <b>IV/IO:</b> 0.25 mg; may repeat in 10 minutes as needed for anxiolytic effect</li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• <b>Dizziness</b> is a non-specific term and attempts should be made to further refine it into vertigo, presyncope, disequilibrium, or lightheadedness. These symptoms may overlap making this complaint difficult to assess and treat.</li> <li>• <b>Vertigo:</b> a false sensation of motion or a spinning sensation and is commonly associated with nausea and vomiting</li> <li>• <b>Presyncope:</b> a feeling of losing consciousness or blacking out</li> <li>• <b>Disequilibrium:</b> feeling wobbly or off balance</li> <li>• <b>Lightheadedness:</b> vague symptom, often described as a disconnection from the environment</li> <li>• <b>Vertigo &amp; Disequilibrium may be symptoms of a stroke; therefore, a <a href="#">Stroke Scale</a> should be completed to rule out this possibility.</b> More commonly, these symptoms are related to a disturbance of spatial orientation and motion sense in the inner ear, especially if it has previously occurred</li> <li>• If symptoms are more consistent with lightheadedness or presyncope, do not administer anti-motion sickness medications, as they could worsen the patient’s condition</li> </ul>

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# EPISTAXIS

**INCLUSION Criteria:** Patients with a nosebleed from a non-trauma etiology

**EXCLUSION Criteria:** Nosebleeds resulting from significant or multi-trauma etiology

**OTHER GUIDELINES TO CONSIDER:** [Airway Management](#), [Hemorrhage Control](#), [Hypertensive Emergencies](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• Place patient in position of comfort, preferably seated with head tilted forward             <ul style="list-style-type: none"> <li>○ If patient unable to sit forward, consider lateral position</li> </ul> </li> <li>• Assess for active bleeding anteriorly or posteriorly (in the throat)</li> <li>• Control hemorrhage             <ul style="list-style-type: none"> <li>○ Compress nostrils with fingers or commercial clamp                 <ul style="list-style-type: none"> <li>▪ Pinch over fleshy part of the nose, not the bony nasal bridge</li> <li>▪ Maintain continuous pressure for 10-15 minutes before inspecting</li> </ul> </li> </ul> </li> <li>• Consider <a href="#">Suctioning</a> for uncontrolled bleeding</li> <li>• Consider <a href="#">Pulse Oximetry</a> <ul style="list-style-type: none"> <li>○ If pulse oximetry is less than 93%, titrate <a href="#">Oxygen</a> to lowest level to maintain pulse oximetry at 93% or greater</li> <li>○ Do not withhold <a href="#">Oxygen</a> if patient is having difficulty breathing or if unable to assess an oxygen saturation</li> <li>○ Consider blow by <a href="#">Oxygen</a> or placing nasal cannula in mouth while nares are compressed</li> </ul> </li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• If actively bleeding and not controlled with direct pressure:             <ul style="list-style-type: none"> <li>○ Have patient tilt head forward and blow nose to expel clots from affected nostril</li> <li>○ After having patient blow out blood clots, consider if available:                 <ul style="list-style-type: none"> <li>○ <a href="#">Oxymetazoline</a>:                     <ul style="list-style-type: none"> <li>▪ <b>Age ≥ 6 years:</b> <ul style="list-style-type: none"> <li>• 2 sprays up bleeding nostril(s)</li> <li>• Insert the tip of the nozzle into the affected nostril while gently occluding the other nostril.</li> <li>• Squeeze bottle with firm, quick pressure instructing patient to gently inhale as you spray the medication</li> <li>• Repeat the process for the desired number of sprays</li> <li>• Wipe nozzle clean after each use</li> <li>• Immediately compress nostrils with either fingers or clamp after oxymetazoline spray delivered</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• Consider <a href="#">IV/IO Access</a></li> <li>• If patient is hemodynamically unstable or complaining of dizziness, administer <a href="#">Fluid Bolus – IV/IO</a></li> <li>• If active bleeding persists despite direct pressure, and oxymetazoline not available, consider using a pledget:             <ul style="list-style-type: none"> <li>○ <a href="#">Epinephrine (1:1,000)</a> <ul style="list-style-type: none"> <li>▪ <b>All Ages:</b> <ul style="list-style-type: none"> <li>• <b>Pledget:</b> Saturate a small wad of absorbent cotton ball or 2x2 or other soft dressing with 2 mg (2 mL) of <a href="#">Epinephrine (1:1,000)</a>. Add additional normal saline to ensure pledget is completely saturated allowing the epinephrine to leave the pledget and contact the nasal mucosa</li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>INT</b>	
<b>PARA</b>	<ul style="list-style-type: none"> <li>• If active bleeding persists despite direct pressure, and oxymetazoline not available, consider if available:             <ul style="list-style-type: none"> <li>○ <a href="#">Phenylephrine</a> (may use nasal spray or mucosal atomizing device (0.1 mL = 1 spray))                 <ul style="list-style-type: none"> <li>▪ <b>Ages ≥ 6 years:</b> <ul style="list-style-type: none"> <li>• <b>Nasal spray:</b> 3 sprays per nostril</li> <li>• <b>Mucosal atomizer:</b> 0.3 mL = 3 sprays</li> </ul> </li> <li>▪ <b>≤ 6 years:</b> <ul style="list-style-type: none"> <li>• <b>Nasal spray:</b> 1 spray per nostril</li> <li>• <b>Mucosal atomizer:</b> 0.1 mL = 1 spray</li> </ul> </li> </ul> </li> </ul> </li> </ul>

<b>NOTES</b>	<ul style="list-style-type: none"> <li>• Patient care goals include:             <ul style="list-style-type: none"> <li>▪ Control hemorrhage from epistaxis</li> <li>▪ Keep airway free of blood</li> <li>▪ Provide treatment for <a href="#">Hypotension or Shock</a> as needed</li> </ul> </li> <li>• Swallowing blood can lead to nausea and vomiting</li> <li>• Obtain history for all patients including use of anticoagulants or antiplatelet medications:             <ul style="list-style-type: none"> <li>▪ Warfarin (Coumadin)</li> <li>▪ Apixaban (Eliquis)</li> <li>▪ Dabigatran (Pradaxa)</li> <li>▪ Rivaroxaban (Xarelto)</li> <li>▪ Clopidogrel (Plavix)</li> <li>▪ Aspirin</li> <li>▪ Ticagrelor (Brilinta)</li> </ul> </li> </ul>
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# FEVER OR SUSPECTED SEPSIS

**INCLUSION Criteria:** Patients with fever > 100.4° F, [Altered Mental Status](#), weakness, respiratory distress, or suspected infection

**EXCLUSION Criteria:** Increased temperature from [Overdose or Toxic Exposure](#) or from a hot environment or overly insulated condition (see [Hyperthermia or Heat Exposure](#) guideline)

**OTHER GUIDELINES TO CONSIDER:** [Altered Mental Status](#), [Hyperthermia or Heat Exposure](#), [Hypotension or Shock](#), [Seizure](#)

<b>EMR</b>	<p><b>Suspected Sepsis:</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• Any patient with temperature (T) &gt; 100.4° F, altered mental status, weakness, respiratory distress, or suspected infection should be screened for sepsis by reviewing a complete set of vital signs             <ul style="list-style-type: none"> <li>○ Assess patient for two (2) or more of the following systemic illness markers:                 <ul style="list-style-type: none"> <li>▪ T &gt; 100.4° F or &lt; 96.8° F</li> <li>▪ HR &gt; 90 or age-appropriate upper limit of normal</li> <li>▪ RR &gt; 20 or age-appropriate rate OR ETCO2 &lt; 32 mmHg</li> <li>▪ SBP &lt; 90 mmHg or age-appropriate lower limit OR other signs of poor perfusion                     <ul style="list-style-type: none"> <li>• Central CRT &gt; 3 seconds, mottled or pale skin</li> </ul> </li> <li>▪ <a href="#">Altered Mental Status</a> changes from patient’s normal baseline</li> </ul> </li> <li>○ If 2 or more systemic illness markers are present and patient’s history and exam suggest infection, notify the receiving hospital of a “SEPSIS ALERT”                 <ul style="list-style-type: none"> <li>▪ Initiate appropriate PPE</li> </ul> </li> <li>○ Consider ALS</li> <li>○ Keep patient warm</li> <li>○ Consider <a href="#">Pulse Oximetry</a> <ul style="list-style-type: none"> <li>▪ If pulse oximetry is less than 93%, titrate <a href="#">Oxygen</a> to lowest level to maintain pulse oximetry at 93% or greater</li> <li>▪ Do not withhold <a href="#">Oxygen</a> if patient is having difficulty breathing or if unable to assess an oxygen saturation</li> </ul> </li> </ul> </li> </ul>
<b>EMT</b>	<p><b>Fever or Suspected Sepsis:</b></p> <ul style="list-style-type: none"> <li>• Consider <a href="#">Cardiac Monitoring</a></li> <li>• If temperature &gt; 100.4° F, and patient able to tolerate oral intake, consider <b>one</b> of the following if without contraindications:             <ul style="list-style-type: none"> <li>○ <a href="#">Acetaminophen</a> <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> <ul style="list-style-type: none"> <li>• PO: 500-650 mg every 4 hours as needed</li> </ul> </li> <li>OR</li> <li>• PO: 1 gm every 6 hours as needed; max dose 4000 mg/24 hours</li> </ul> </li> <li>▪ <b>Pediatric:</b> <ul style="list-style-type: none"> <li>• PO: 15 mg/kg every 4 hours as needed (max single dose 1000 mg)</li> </ul> </li> </ul> </li> <li>○ <a href="#">Ibuprofen</a> <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> <ul style="list-style-type: none"> <li>• PO: 600 mg; maximum dose 3.2 g/24 hours</li> </ul> </li> <li>▪ <b>Pediatric:</b> <ul style="list-style-type: none"> <li>• PO: 10 mg/kg maximum initial dose 600 mg</li> </ul> </li> </ul> </li> </ul>
<b>AEMT</b>	<p><b>Fever or Suspected Sepsis:</b></p> <ul style="list-style-type: none"> <li>• Consider <a href="#">Waveform Capnography</a></li> <li>• Patient is considered to have severe sepsis or septic shock if one of the following is present:             <ul style="list-style-type: none"> <li>○ SBP &lt; 90 mmHg or age-appropriate lower limit of OR other signs of poor perfusion (e.g. confusion, capillary refill time &gt; 2 seconds, mottled, or pale skin)</li> <li>○ ETCO2 &lt; 25 mmHg on two (2) measurements at least 5 minutes apart</li> </ul> </li> <li>• If either is present, initiate <a href="#">IV/IO Access</a></li> <li>• Administer <a href="#">Fluid Bolus – IV/IO</a> <ul style="list-style-type: none"> <li>○ 30 mL/kg, maximum initial bolus 3000 mL</li> <li>○ Stop fluid bolus if any signs of pulmonary edema develop</li> </ul> </li> </ul>

<b>AEMT</b>	<ul style="list-style-type: none"> <li>If temperature &gt; 100.4° F, and patient unable to tolerate oral medication, and patient has not received a similar medication (NSAID) within the past 4 hours, if available and without contraindications, consider:             <ul style="list-style-type: none"> <li><b>Ketorolac</b> <ul style="list-style-type: none"> <li><b>Adult (≥ 17 years):</b> <ul style="list-style-type: none"> <li><b>IM/PO:</b> 1.0 mg/kg (30 mg maximum initial dose)</li> <li><b>IV/IO:</b> 0.5 mg/kg (15 mg maximum dose)</li> </ul> </li> <li><b>Pediatric (≥ 6 months – 17 years of age):</b> <ul style="list-style-type: none"> <li><b>PO/IM/IV/IO:</b> 0.5 mg/kg (15 mg maximum initial dose)</li> </ul> </li> </ul> </li> </ul> </li> <li>If patient has nausea or vomiting, see <a href="#">Nausea or Vomiting</a> guideline</li> </ul>
<b>INT</b>	<ul style="list-style-type: none"> <li>For persistent hypotension or continued signs of shock not responding to fluid resuscitation, consider:             <ul style="list-style-type: none"> <li><b>Epinephrine</b> <ul style="list-style-type: none"> <li><b>Adult:</b> <ul style="list-style-type: none"> <li><b>IV/IO:</b> <a href="#">Epinephrine Push Dose (1:10,000)</a> 0.05 mg IV/IO every 2-5 minutes as needed; may double subsequent boluses to 0.1 mg</li> </ul> </li> <li><b>Pediatric &lt; 50 kg:</b> <ul style="list-style-type: none"> <li><b>IV/IO:</b> <a href="#">Epinephrine Push Dose (1:10,000)</a> 0.001 mg/kg every 2-5 minutes as needed (max initial dose 0.05 mg); may double subsequent doses to 0.002 mg/kg (max dose 0.1 mg)</li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>PARA</b>	<ul style="list-style-type: none"> <li><b>Persistent hypotension or signs of shock not responding to initial fluid bolus or epinephrine push dose, consider, if available:</b> <ul style="list-style-type: none"> <li><b>Norepinephrine - Preferred for septic shock and vasodilatory (distributive) shock</b> <ul style="list-style-type: none"> <li><b>Adult (&gt; 12 years old):</b> <ul style="list-style-type: none"> <li><b>IV/IO Infusion ONLY:</b> <ul style="list-style-type: none"> <li>Mix 4 mg in 250 mL NS = 16 mcg/mL <i>OR</i></li> <li>Mix 4 mg in 500 mL NS = 8 mcg/mL                             <ul style="list-style-type: none"> <li><b>Infusion:</b> 4-12 mcg/min; titrate to keep MAP &gt; 65 mmHg</li> </ul> </li> </ul> </li> <li><b>Pediatric (&lt; 12 years old):</b> <ul style="list-style-type: none"> <li><b>IV/IO Infusion ONLY:</b> <ul style="list-style-type: none"> <li>Mix 4 mg in 500 mL NS = 8 mcg/mL                             <ul style="list-style-type: none"> <li><b>Infusion:</b> 0.1 mcg/kg/min; titrate to maintain age appropriate minimum SBP; Maximum dose 2 mcg/kg/min</li> </ul> </li> </ul> </li> </ul> </li> <li><b>Epinephrine</b> <ul style="list-style-type: none"> <li><b>Adult:</b> <ul style="list-style-type: none"> <li><b>IV Infusion:</b> 2-20 mcg/minute</li> </ul> </li> <li><b>May also be initiated as a second line vasopressor if patient fails to respond to norepinephrine</b></li> </ul> </li> <li><b>Phenylephrine -</b> <ul style="list-style-type: none"> <li><b>All ages &gt;10 kg:</b> <ul style="list-style-type: none"> <li><b>IV/IO Push Dose ONLY: Mix 10 mg phenylephrine in 100 mL normal saline = 100 mcg/mL</b> <ul style="list-style-type: none"> <li>Withdraw 10 mL of diluted solution into 10 mL syringe and apply label                             <ul style="list-style-type: none"> <li><b>Starting dose:</b> 50 mcg = 0.5 mL every 2-5 minutes as needed to achieve age-appropriate MAP</li> <li>If MAP not significantly improved, increase each subsequent dose by 50 mcg                                     <ul style="list-style-type: none"> <li>2<sup>nd</sup> dose = 100 mcg (1 mL)</li> <li>3<sup>rd</sup> dose = 150 mcg (1.5 mL)</li> <li>Maximum dose 400 mcg (4 mL) or 5 mcg/kg</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> </ul> </li></ul></li></ul>

PEDIATRIC VITAL SIGNS				
Age	Pulse	Respiratory Rate	Systolic BP Lowest Normal	Lowest Normal MAP
Newborn	120-160	30-60	60	40
Up to 1 year	100-140	30-60	70	42
1-3 years	100-140	20-40	76	45
4-6 years	80-120	20-30	80	48
7-9 years	80-120	16-24	84	52
10-12 years	80-120	16-20	90	55
13-14 years	60-100	16-20	90	60

- Goal of sepsis treatment is perfusion of brain and other organs. This is best accomplished by titrating fluid resuscitation to:
  - MAP ≥ 65 mmHg or age-appropriate normal
  - If MAP not available, SBP > 80 mmHg or age-appropriate normal
  - **Pediatric:** Capillary refill time ≤ 2 seconds

Sepsis Protocol				Acetaminophen		Ibuprofen		Ketorolac		Fluid bolus 30 ml/kg
Age	Broselow	Kilos	Pounds	mg	160 mg/mL	mg	100 mg/5mL	IV	IM	NS or LR
Newborn	kg 4kg 5 k	3-5 kg	6 - 11 lbs	64	2 mL					100 mL
6 mo	PINK	6-7 kg	13 - 15 lbs	96	3 mL	60	3 mL	3 mg	6 mg	200 mL
9 mo	RED	8-9 kg	16 - 20 lbs	128	4 mL	80	4 mL	4 mg	8 mg	250 mL
1 yr	PURPLE	10-11 kg	21 - 24 lbs	160	5 mL	100	5 mL	5 mg	10 mg	300 mL
2 yrs	YELLOW	12-14 kg	25 - 31 lbs	192	6 mL	120	6 mL	6 mg	12 mg	400 mL
4 yrs	WHITE	15-18 kg	32 - 40 lbs	256	8 mL	160	8 mL	7.5 mg	15 mg	500 mL
6 yrs	BLUE	19-23 kg	41 - 48 lbs	320	10 mL	200	10 mL	10 mg	20 mg	600 mL
8 yrs	ORANGE	24-29 kg	49 - 66 lbs	416	13 mL	260	13 mL	12.5 mg	25 mg	800 mL
10 yrs	GREEN	30-36 kg	67 - 80 lbs	480	15 mL	300	15 mL	15 mg	30 mg	1000 mL
12 yrs		38.5 kg	84 lbs	576	18 mL	400	20 mL	15 mg	30 mg	1150 mL
14 yrs		44 kg	97 lbs	650	20 mL	440	22 mL	15 mg	30 mg	1300 mL
16 yrs		50 kg	110 lbs	750	23.5 mL	500	25 mL	15 mg	30 mg	1500 mL
		55 kg	121 lbs	825	26 mL	540	27 mL	15 mg	30 mg	1650 mL
		60 kg	132 lbs	900	28 mL	600	30 mL	15 mg	30 mg	1800 mL
Max dose		67+ kg	147+ lbs	1000	31 mL	600	30 mL	15 mg	30 mg	2000 mL

NOTES

Norepinephrine Drip											
Mix: 4 mg in 500 mL = 8 mcg/mL											
Shock - All Types				0.1 mcg/kg/min	0.2 mcg/kg/min	0.3 mcg/kg/min	0.4 mcg/kg/min	0.5 mcg/kg/min			
Starting dose 0.1 mcg/kg/min											
Maximum dose 2 mcg/kg/min											
Age	Broselow	Kilos	Pounds	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)	
Newborn	3-5 kg	3-5 kg	6 - 11 lbs	4	7	11	15	18			
6 mo	PINK	6-7 kg	13 - 15 lbs	5	10	15	21	26			
9 mo	RED	8-9 kg	16 - 20 lbs	6	12	20	27	33			
1 yr	PURPLE	10-11 kg	21 - 24 lbs	8	16	24	33	41			
2 yrs	YELLOW	12-14 kg	25 - 31 lbs	10	20	31	42	52			
4 yrs	WHITE	15-18 kg	32 - 40 lbs	13	26	40	54	67			
6 yrs	BLUE	19-23 kg	41 - 48 lbs	17	34	51	69	86			
8 yrs	ORANGE	24-29 kg	49 - 66 lbs	21	42	65	87	108			
10 yrs	GREEN	30-36 kg	67 - 80 lbs	27	52	81	108	135			
11-12 years		40 kg	88 lbs	30	60	90	120	150			

Norepinephrine Drip						
Mix: 4 mg in 250 mL = 16 mcg/mL						
Mix: 4 mg om 500 mL = 8 mcg/mL						
Shock - All Types	4 mcg/min	6 mcg/min	8 mcg/min	10 mcg/min	12 mcg/min	
Dose 4 - 12 mcg/min						
Ages > 12 years	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)
250 mL (16 mcg/mL)	15	22.5	30	37.5	45	
500 mL (8 mcg/mL)	30	45	60	75	90	

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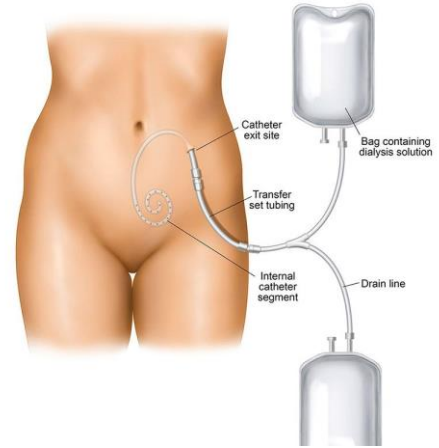
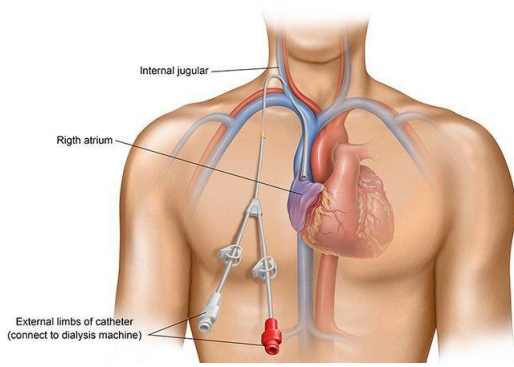
# HYPERKALEMIA

**INCLUSION Criteria:** Patients of all ages with known hyperkalemia, history of end stage renal disease (ESRD) needing dialysis, or physical findings indicating ESRD (presence of fistula, dialysis catheter (IV or peritoneal)), prolonged crush injury

**EXCLUSION Criteria:**

**OTHER PROTOCOLS TO CONSIDER:** [Cardiac Arrest](#), [Bradycardia-Adult \(8 years & Older\)](#), [Bradycardia-Pediatric \(< 8 years Old\)](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• Consider <a href="#">Pulse Oximetry</a>, <a href="#">Oxygen</a>, provide assisted ventilations as needed. If pulse ox is &lt;93% titrate oxygen to lowest level to maintain pulse ox 93% or greater. Do not withhold oxygen if patient is having difficulty breathing or if unable to assess an oxygen saturation</li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• As soon as possible acquire <a href="#">12 Lead ECG</a> if authorized.</li> <li>• Transmit ECG to hospital</li> <li>• If known or suspected hyperkalemia and QRS &gt; 120 msec or bradycardia less than 50 bpm, administer:             <ul style="list-style-type: none"> <li>○ <a href="#">Albuterol</a> <ul style="list-style-type: none"> <li>▪ <b>Adult and children over 12 years of age:</b> <ul style="list-style-type: none"> <li>▪ <b>Nebulized (HHN or Mask):</b> 10 mg via in-line nebulizer; continuous</li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• If indicated, establish <a href="#">IV/IO Access</a></li> <li>• If hypotensive or with clinical signs of poor perfusion, administer:             <ul style="list-style-type: none"> <li>○ <a href="#">Fluid Bolus – IV/IO</a></li> </ul> </li> </ul>
<b>INT</b>	
<b>PARA</b>	<ul style="list-style-type: none"> <li>• If known or suspected hyperkalemia and QRS &gt; 120 msec or bradycardia less than 50 bpm, administer:             <ul style="list-style-type: none"> <li>○ <a href="#">Calcium Chloride (10%):</a> <ul style="list-style-type: none"> <li>▪ <b>Adult (Ages ≥ 12 years):</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 1 gram <i>slowly</i> over 5 minutes; may repeat initial dose in 15 minutes if continued symptoms persist; may repeat for a total of 3 doses</li> </ul> </li> <li>▪ <b>Pediatric (Ages &lt; 12 years)</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 20 mg/kg <i>slowly</i> over 10 minutes; maximum single dose 1000 mg; may repeat initial dose in 15 minutes if continued symptoms persist; may repeat for a total of 3 doses</li> </ul> </li> </ul> </li> <li>○ <a href="#">Calcium Gluconate:</a> <ul style="list-style-type: none"> <li>▪ <b>Adult (Ages ≥ 12 years):</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 3 grams <i>slowly</i> over 5 minutes; may repeat initial dose in 15 minutes if continued symptoms persist; may repeat for a total of 3 doses</li> </ul> </li> <li>▪ <b>Pediatric (Ages &lt; 12 years)</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 60 mg/kg <i>slowly</i> over 5 minutes; maximum initial dose 3000 mg; may repeat initial dose in 15 minutes if continued symptoms persist; may repeat for total of three (3) doses</li> </ul> </li> </ul> </li> </ul> </li> <li>• If calcium not effective in normalizing EKG and there are no signs of fluid overload, may give:             <ul style="list-style-type: none"> <li>○ <a href="#">Sodium Bicarbonate:</a> <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 100 mEq (2 amps)</li> </ul> </li> <li>▪ <b>Pediatric:</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 1 mEq/kg; over 5-10 minutes; maximum initial dose 100 mEq; no repeat dose.</li> </ul> </li> </ul> </li> </ul> </li> </ul>



**NOTES**

### Hyperkalemia ECG Findings

Normal	ECG Finding	Relative risk for adverse event (95% CI)		<b>T waves:</b> HyperK vs. Hyperacute		
Mild to Moderate	Peaked T wave	0.77 (0.35-1.70)			Peaked Pointy  Fat Broad ↑ Area 	
	PR prolongation	4.11 (0.88-19.28)				
Severe	QRS prolongation (bundle branch blocks, NSIVCD)	4.74 (2.01-11.15)			      	
	2nd degree heart block	6.92 (4.88-9.82)				
	3rd degree heart block	NA				
	Killer B's of HyperK: Broad Brady Blocks Bizarre	Junctional rhythm	7.46 (4.32-12.87)			
		Ventricular escape rhythm	7.67 (5.28-11.13)			
		Bradycardia (HR<50 bpm)	12.29 (6.69-22.57)			
	Bizarre morphology, Sine wave appearance, STEMI mimics	NA				
Ventricular tachycardia, ventricular fibrillation	NA					

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# HYPERTENSIVE EMERGENCIES

**INCLUSION Criteria:** Patients with two (2) consecutive systolic blood pressures (SBP) > 220 mmHg or diastolic blood pressure (DBP) > 120 mmHg at least five (5) minutes apart of non-traumatic origin

**EXCLUSION Criteria:** Pregnancy (See [OB Complications](#)); [Traumatic Injuries](#)

**OTHER GUIDELINES TO CONSIDER:** [Altered Mental Status](#), [Chest Pain/Acute Coronary Syndrome \(ACS\)](#), [Difficulty Breathing](#), [Pain Management](#), [Sedation](#), [Suspected Stroke](#), [OB Complications](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• Assist patient to position of comfort with:             <ul style="list-style-type: none"> <li>○ Neck midline in neutral position</li> <li>○ Head of bead elevated 30°</li> </ul> </li> <li>• Obtain baseline neurological assessment</li> <li>• Consider ALS</li> <li>• Complete <a href="#">Stroke Scale</a></li> <li>• Consider <a href="#">Pulse Oximetry</a> <ul style="list-style-type: none"> <li>○ If pulse oximetry is less than 93%, titrate <a href="#">Oxygen</a> to lowest level to maintain pulse oximetry at 93% or greater</li> <li>○ Do not withhold oxygen if patient is having difficulty breathing or if unable to assess an oxygen saturation</li> </ul> </li> <li>• If patient presents with difficulty breathing and pulmonary edema is suspected, see <a href="#">Difficulty Breathing</a> guideline</li> <li>• If patient presents with chest pain, see <a href="#">Chest Pain/Acute Coronary Syndrome (ACS)</a> guideline</li> <li>• Consider other causes of increased blood pressure (e.g. anxiety, pain)</li> <li>• Consider causes and treat underlying etiology whenever possible</li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• Consider <a href="#">Cardiac Monitoring</a></li> <li>• <b>IF AUTHORIZED:</b> Consider <a href="#">12 Lead ECG</a></li> <li>• Transmit ECG to hospital</li> <li>• <b>STABLE:</b> SBP &lt; 220 mmHg and DBP &lt; 120 mmHg AND without signs of stroke, cardiac chest pain, or difficulty breathing:             <ul style="list-style-type: none"> <li>○ Transport</li> <li>○ Reassess and document patient condition and vital signs every 10 minutes</li> </ul> </li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• Consider <a href="#">IV/IO Access</a></li> <li>• <b>UNSTABLE:</b> SBP &gt; 220 mmHg or DBP &gt; 120 mmHg AND heart rate &gt; 60 at least 5 minutes apart with new neurologic deficits, altered mental status, shortness of breath, or presumed cardiac chest pain.             <ul style="list-style-type: none"> <li>○ Antihypertensive medications should be administered to reduce the mean arterial blood pressure (MAP) by 10%-20% or until the patient’s clinical presentation improves, whichever comes first.                 <ul style="list-style-type: none"> <li>▪ A paramedic unit should be requested, if not already done, as paramedic administration of labetalol or metoprolol is the recommended first-line treatment for hypertensive emergencies resulting in neurologic deficits or altered mental status. If a paramedic unit is not available, consider:                     <ul style="list-style-type: none"> <li>• <a href="#">Nitroglycerin</a> <ul style="list-style-type: none"> <li>○ <b>Adult:</b> <ul style="list-style-type: none"> <li>▪ <b>SL:</b> 0.4 mg tablet or metered spray; may repeat every 5 minutes; no maximum total dose</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>INT</b>	<ul style="list-style-type: none"> <li>• Patient remains <b>UNSTABLE:</b> Consider <a href="#">Pain Management</a></li> </ul>

<b>PARA</b>	<ul style="list-style-type: none"> <li>• Control anxiety, consider <a href="#">Sedation</a></li> <li>• <b>UNSTABLE:</b> SBP &gt; 220 mmHg or DBP &gt; 120 mmHg AND heart rate &gt; 60 at least 5 minutes apart, consider <b><u>one</u></b> of the following if available and without contraindications:             <ul style="list-style-type: none"> <li>○ <a href="#">Labetalol</a> <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 20 mg slow push over 2 minutes; may repeat every 10 minutes as needed for target BP control</li> </ul> </li> <li>▪ <b>Pediatric:</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 0.2 mg/kg slow push over 2 minutes (maximum single dose 20 mg); may repeat every 10 minutes as needed for target BP control</li> </ul> </li> </ul> </li> <li>○ <a href="#">Metoprolol</a> <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 5 mg <b><i>slowly</i></b> over 2 minutes; may repeat every 5 minutes as needed; maximum total dose 15 mg</li> </ul> </li> <li>▪ <b>Pediatric:</b> <ul style="list-style-type: none"> <li>• <b>Not Recommended</b></li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• Heart rate &lt; 60 is a contraindication for use of labetalol and metoprolol</li> <li>• Remember to treat the patient, not the number! A relatively asymptomatic patient with a high blood pressure needs no prehospital blood pressure control. If hypertension is treated, the goal of treatment is a gradual reduction in blood pressure rather than an abrupt fall which may cause neurovascular or cardiac complications.</li> <li>• The goal is not to normalize blood pressure, but to decrease the MAP by 10%-20%</li> </ul>

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# HYPERTHERMIA OR HEAT EXPOSURE

**INCLUSION Criteria:** Patients experiencing symptoms of heat cramps, heat exhaustion, or heat stroke secondary to heat exposure or exertion

**EXCLUSION Criteria:** Fever or suspected hyperthermia secondary to infection (see [Fever or Suspected Sepsis](#)), [Overdose or Toxic Exposure](#)

**OTHER GUIDELINES TO CONSIDER:** [Airway Management](#), [Altered Mental Status](#), [Burns](#), [Fever or Suspected Sepsis](#), [Hypotension or Shock](#), [Nausea or Vomiting](#), [Overdose or Toxic Exposure](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• Move patient to a cool environment if applicable</li> <li>• <b>Heat Cramps</b> (mild symptoms): normal mental status, painful muscle spasms or cramping, warm, moist skin, temperature &lt; 104° F, typically associated with dehydration and sodium deficiency                         <ul style="list-style-type: none"> <li>○ Loosen or remove as much clothing as feasible</li> <li>○ Consider fanning, ice packs to axillae and groin, sponging with cool water</li> <li>○ Consider oral fluids if patient is not nauseated or vomiting</li> </ul> </li> <li>• <b>Heat Exhaustion</b> (moderate symptoms): normal mental status, profuse sweating, dizziness, lightheadedness, headache, irritability, nausea, vomiting, generalized weakness, tachycardia, orthostatic hypotension                         <ul style="list-style-type: none"> <li>○ Treat as above</li> <li>○ Consider ALS</li> <li>○ Obtain <a href="#">Blood Glucose</a>, if &lt; 60 mg/dl, see <a href="#">Hypoglycemia or Hyperglycemia</a> guideline</li> <li>○ If SBP &lt; 90 mmHg or patient is experiencing dizziness, place in supine position with feet elevated</li> <li>○ Consider <a href="#">Pulse Oximetry</a> <ul style="list-style-type: none"> <li>▪ If pulse oximetry is less than 93%, titrate <a href="#">Oxygen</a> to lowest level to maintain pulse oximetry at 93% or greater</li> </ul> </li> <li>○ Sponge or mist bare skin with cool water and fan to encourage evaporative cooling                                 <ul style="list-style-type: none"> <li>▪ Do not cover skin with cold, wet towels as this prevents evaporation and may hinder cooling</li> </ul> </li> </ul> </li> <li>• <b>Heat Stroke</b> (severe symptoms): <u>abnormal mental status</u>, temperature &gt; 104° F, hot, flushed or ashen skin, sweating may or may not be present, hypotension, seizure, coma                         <ul style="list-style-type: none"> <li>○ Treat as above</li> <li>○ Place ice packs to groin, axillae, carotid arteries, temples, and behind knees</li> </ul> </li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• <b>Heat Exhaustion and Heat Stroke</b> <ul style="list-style-type: none"> <li>○ Initiate <a href="#">Cardiac Monitoring</a></li> </ul> </li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• <b>Heat Cramps</b> <ul style="list-style-type: none"> <li>○ Consider <a href="#">IV/IO Access</a></li> </ul> </li> <li>• <b>Heat Exhaustion and Heat Stroke</b> <ul style="list-style-type: none"> <li>○ Initiate <a href="#">IV/IO Access</a></li> <li>○ Administer <a href="#">Fluid Bolus – IV/IO</a></li> </ul> </li> </ul>
<b>INT</b>	<ul style="list-style-type: none"> <li>• If seizure occurs, see <a href="#">Seizure</a> guideline</li> </ul>
<b>PARA</b>	<ul style="list-style-type: none"> <li>• <b>Shivering:</b> If shivering occurs during cooling and is preventing effective cooling in the setting of severe symptoms, AND SBP &gt; 100 mmHg, consider the following if available and without contraindications:                         <ul style="list-style-type: none"> <li>○ <a href="#">Midazolam</a> <ul style="list-style-type: none"> <li>▪ <b>Adult: (ages 12-64 years)</b> <ul style="list-style-type: none"> <li>• <b>IN/IM:</b> 5 mg; may repeat every 10 minutes until desired effect</li> <li>• <b>IV/IO:</b> 2 mg; may repeat every 3 minutes to achieve desired effects</li> </ul> </li> <li>▪ <b>Pediatric: (age &lt; 12 years)</b> <ul style="list-style-type: none"> <li>• <b>IN/IM:</b> 0.2 mg/kg; maximum single dose 10 mg; may repeat every 10 minutes until desired effect</li> <li>• <b>IV/IO:</b> 0.1 mg/kg; maximum single dose 10 mg; may repeat every 3 minutes until desired effect</li> </ul> </li> <li>▪ <b>Elderly (ages 65 and older)</b> <ul style="list-style-type: none"> <li>• <b>IN/IM:</b> 2 mg; may repeat every 10 minutes until desired effect</li> <li>• <b>IV/IO:</b> 1 mg; may repeat every 3 minutes until desired effect</li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• <a href="#">Acetaminophen</a> and <a href="#">Ibuprofen</a> are of no benefit in patients with heat emergencies</li> <li>• The most accurate temperature in the field is rectal                         <ul style="list-style-type: none"> <li>▪ Do not rely on other temperature monitoring devices in the field as they may lead to incorrect assumptions and improper treatment</li> </ul> </li> </ul>

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# HYPOGLYCEMIA OR HYPERGLYCEMIA

**INCLUSION Criteria:** Patients with known history of diabetes and/or concern for abnormal blood sugar. Patients with symptoms of hypoglycemia and blood sugar < 60. Patients with altered mental status, seizure, stroke-like symptoms with a blood sugar < 60. Patients with symptoms of hyperglycemia (frequent urination, excessive thirst, excessive hunger, weakness, dizziness)

**EXCLUSION Criteria:** Patients in [Cardiac Arrest](#), Newborn < 48 hours old ([Neonatal Resuscitation](#))

**OTHER GUIDELINES TO CONSIDER:** [Abdominal Pain](#), [Airway Management](#), [Altered Mental Status](#), [Nausea or Vomiting](#), [Overdose or Toxic Exposure](#), [Seizure](#), [Suspected Stroke](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• Provide appropriate <a href="#">Airway Management</a></li> <li>• Consider <a href="#">Pulse Oximetry</a> <ul style="list-style-type: none"> <li>○ If pulse oximetry is less than 93%, titrate <a href="#">Oxygen</a> to lowest level to maintain pulse oximetry at 93% or greater</li> <li>○ Do not withhold oxygen if patient is having difficulty breathing or if unable to assess an oxygen saturation</li> </ul> </li> <li>• If respirations ineffective, support ventilation with <a href="#">Bag Valve Mask (BVM) Ventilation</a></li> <li>• <b>IF AUTHORIZED:</b> obtain <a href="#">Blood Glucose</a> <ul style="list-style-type: none"> <li>○ If blood glucose &lt; 60 and patient is conscious, administer:                             <ul style="list-style-type: none"> <li>▪ Regular soda or juice, if available</li> <li>▪ <a href="#">Glucose (Oral Gel)</a> <ul style="list-style-type: none"> <li>• <b>Adult (Ages &gt; 8 years):</b> <ul style="list-style-type: none"> <li>○ <b>PO:</b> 30 grams of glucose; may repeat in 15 minutes if not improved</li> </ul> </li> <li>• <b>Pediatric (Ages 1-8 years):</b> <ul style="list-style-type: none"> <li>○ <b>PO:</b> 15 grams of glucose; may repeat in 15 minutes if not improved</li> </ul> </li> <li>• <b>Infant (&lt; 1 year of age):</b> <ul style="list-style-type: none"> <li>○ <b>PO:</b> 7.5 grams of glucose; may repeat in 15 minutes if not improved</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• If blood glucose &lt; 60 and patient is unconscious or unable to protect their airway, administer:             <ul style="list-style-type: none"> <li>○ <a href="#">Glucagon</a> <ul style="list-style-type: none"> <li>▪ <b>≥ 20 kg:</b> <ul style="list-style-type: none"> <li>• <b>IM:</b> 1 mg; may repeat once in 15 minutes if not improved</li> </ul> </li> <li>▪ <b>&lt; 20 kg:</b> <ul style="list-style-type: none"> <li>• <b>IM:</b> 0.5 mg; may repeat once in 15 minutes if not improved</li> </ul> </li> </ul> </li> </ul> </li> <li>• Consider <a href="#">Waveform Capnography</a></li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• Obtain <a href="#">IV/IO Access</a> if blood glucose &lt; 60 or &gt; 250, or evidence of dehydration or hypotension</li> <li>• <b>Hypoglycemia</b> <ul style="list-style-type: none"> <li>○ If patient presents with a blood glucose level below 60 mg/dL and demonstrates altered consciousness or compromised airway protection, titrate the administration of <a href="#">Dextrose</a> until the patient achieves consciousness, symptomatic relief, or the predetermined dose limit is reached.                             <ul style="list-style-type: none"> <li>▪ <a href="#">Dextrose</a> <ul style="list-style-type: none"> <li>• <b>Adult:</b> <ul style="list-style-type: none"> <li>○ <b>IV/IO:</b> 25 grams of dextrose                                     <ul style="list-style-type: none"> <li>▪ Dextrose 50%: 50 mL</li> <li>▪ Dextrose 25%: 100 mL</li> <li>▪ Dextrose 10%: 250 mL</li> </ul> </li> </ul> </li> <li>• <b>Pediatric:</b> <ul style="list-style-type: none"> <li>○ <b>IV/IO:</b> Dextrose 10% 10 mL/kg; maximum single dose 250 mL (25 grams)</li> </ul> </li> </ul> </li> <li>• May repeat 25 grams once after 10 minutes if:                             <ul style="list-style-type: none"> <li>○ Blood glucose persists below 60 and patient continues to exhibit symptoms</li> <li>○ Patient experiences another episode of hypoglycemia</li> </ul> </li> </ul> </li> </ul> </li></ul>
<b>INT</b>	
<b>PARA</b>	<ul style="list-style-type: none"> <li>○ If patient condition improves, and patient wishes to refuse transport, see <b>Patient Refusal of Care or Transport.</b></li> <li>○ <b>CONTACT ONLINE MEDICAL CONTROL</b> for consultation and assistance if patient safety or decision-making capacity is of concern</li> </ul>

<b>AEMT</b>	<ul style="list-style-type: none"> <li>• <b>Hyperglycemia</b> <ul style="list-style-type: none"> <li>○ If blood glucose <math>\geq 250</math> with signs of dehydration, hypovolemia, or ill-appearing                             <ul style="list-style-type: none"> <li>▪ Administer <a href="#">Fluid Bolus – IV/IO</a> <ul style="list-style-type: none"> <li>• <b>Adult:</b> <ul style="list-style-type: none"> <li>○ 500 mL bolus; may repeat up to 2000 mL</li> </ul> </li> <li>• <b>Pediatric:</b> <ul style="list-style-type: none"> <li>○ 20 mL/kg; may repeat up to 60 mL/kg</li> </ul> </li> </ul> </li> <li>▪ Stop fluid bolus if any signs of pulmonary edema develop</li> </ul> </li> <li>○ <b>EMS providers are prohibited from aiding any patient in the administration of insulin products before reaching the hospital</b></li> </ul> </li> </ul>
<b>INT</b>	
<b>PARA</b>	
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• <b>Hyperglycemia:</b> consider a wide range of potential causes, including serious conditions like diabetic ketoacidosis (DKA), hyperosmolar hyperglycemic state, and infection/sepsis.</li> <li>• <b>Hypoglycemia:</b> Consider accidental or intentional overdose of insulin or oral diabetes medication as a potential cause of recurrent or persistent hypoglycemia             <ul style="list-style-type: none"> <li>○ Sulfonylurea-caused hypoglycemia may be particularly long lasting or recurrent, even after EMS treatment. These patients should be transported to the hospital for further monitoring, even if their blood glucose becomes normal. Common sulfonylurea pills include glyburide, glipizide, and glimepiride.</li> </ul> </li> <li>• Patients with a history of alcoholism or liver disease may not respond to glucagon</li> <li>• If patient has recurring episodes of hypoglycemia, check for an insulin pump</li> </ul>

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# HYPOTENSION OR SHOCK

**INCLUSION Criteria:** Patients with a MAP < 65 mmHg (adult) or age-appropriate MAP (pediatric) **WITH** clinical signs of poor perfusion (altered mental status, syncope, weakness, lightheadedness, fatigue, chest pain, difficulty breathing, hypoxia, pallor, diaphoresis); **Pediatric:** capillary refill time > 2 seconds with other signs and symptoms of poor perfusion

**EXCLUSION Criteria:** None

**OTHER GUIDELINES TO CONSIDER:** [Abdominal Pain](#), [Airway Management](#), [Allergic Reaction/Anaphylaxis](#), [Bradycardia – Adult \(8 Years & Older\)](#), [Chest Pain/Acute Coronary Syndrome \(ACS\)](#), [Fever or Suspected Sepsis](#), [Hemorrhage Control](#), [Hypoglycemia or Hyperglycemia](#), [Nausea or Vomiting](#), [Tachycardia](#), [Traumatic Injuries](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• Evaluate for external bleeding and control hemorrhage</li> <li>• Place patient in supine position with legs elevated, unless contraindicated</li> <li>• Prevent hypothermia, keep patient warm</li> <li>• If evidence of traumatic etiology or concern for multisystem trauma, consider:             <ul style="list-style-type: none"> <li>○ <a href="#">Hemorrhage Control</a></li> <li>○ <a href="#">Pelvic Binder</a></li> </ul> </li> <li>• Initiate <a href="#">Pulse Oximetry</a> <ul style="list-style-type: none"> <li>○ If pulse oximetry is less than 93%, titrate <a href="#">Oxygen</a> to lowest level to maintain pulse oximetry at 93% or greater</li> <li>○ Do not withhold oxygen if patient is having difficulty breathing or if unable to assess an oxygen saturation</li> </ul> </li> <li>• Obtain <a href="#">Blood Glucose</a>, if &lt; 60 mg/dl, see <a href="#">Hypoglycemia or Hyperglycemia</a> guideline</li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• Initiate <a href="#">Cardiac Monitoring</a></li> <li>• <b>IF AUTHORIZED:</b> acquire <a href="#">12 Lead ECG</a> within 5 minutes of patient contact</li> <li>• Transmit ECG to hospital</li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• Initiate <a href="#">IV/IO Access</a> <ul style="list-style-type: none"> <li>○ Consider second IV access site</li> <li>○ Consider early IO access in critically ill patients</li> <li>○ Do not delay transport to obtain vascular access</li> </ul> </li> <li>• Administer <a href="#">Fluid Bolus – IV/IO</a> <ul style="list-style-type: none"> <li>○ <b>Adult:</b> <ul style="list-style-type: none"> <li>▪ 500 mL bolus; may repeat up to 2000 mL</li> </ul> </li> <li>○ <b>Pediatric:</b> <ul style="list-style-type: none"> <li>▪ 20 mL/kg; may repeat up to 60 mL/kg</li> </ul> </li> <li>○ Monitor patient for signs of developing pulmonary edema (respiratory exam, respiratory effort, SpO2)</li> </ul> </li> <li>• <b>Sepsis:</b> If patient presents with 2 or more systemic illness markers AND history/physical exam suggest infection:             <ul style="list-style-type: none"> <li>○ Administer <a href="#">Fluid Bolus – IV/IO</a> <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> <ul style="list-style-type: none"> <li>• 30 mL/kg maximum initial bolus 3000 mL; may bolus with additional 500 mL as needed to maintain or increase MAP &gt; 65 mmHg</li> </ul> </li> <li>▪ <b>Pediatric:</b> <ul style="list-style-type: none"> <li>• 20 mL/kg; may repeat up to 60 mL/kg</li> </ul> </li> </ul> </li> <li>○ Stop fluid bolus if any signs of pulmonary edema develop</li> </ul> </li> </ul>
<b>INT</b>	<ul style="list-style-type: none"> <li>• <b>Tension pneumothorax</b> <ul style="list-style-type: none"> <li>○ Perform <a href="#">Needle Decompression</a> on affected side if chest trauma present and tension pneumothorax suspected</li> </ul> </li> <li>• <b>Persistent hypotension or signs of shock not responding to initial fluid bolus, consider:</b> <ul style="list-style-type: none"> <li>○ <a href="#">Epinephrine Push Dose (1:10,000)</a> <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> <ul style="list-style-type: none"> <li>• 0.05 mg IV/IO every 2-5 minutes as needed; may double subsequent boluses to 0.1 mg</li> </ul> </li> <li>▪ <b>Pediatric:</b> <ul style="list-style-type: none"> <li>• 0.001 mg/kg every 2-5 minutes as needed (max initial dose 0.05 mg); may double subsequent doses to 0.002 mg/kg (max dose 0.1 mg)</li> </ul> </li> </ul> </li> </ul> </li> </ul>



- **Traumatic hemorrhage** – in patients > 18 years old with significant hemorrhage, consider, if available:
  - **Tranexamic Acid (TXA)**
    - **Adult:** > 18 years old with major trauma and clinical evidence of marked blood loss, internal or external **AND** injury occurred < 3 hours prior **AND** HR > 110 mmHg or SBP < 90 mmHg:
      - **IV/IO:** 20 mg/kg mixed in 100 cc NS/LR/D5W and infused **slowly** over 10 minutes; maximum initial dose 1 gram. **NEVER administer as an IV bolus**
- **Persistent hypotension or signs of shock not responding to initial fluid bolus or epinephrine push dose, consider, if available:**
  - **Norepinephrine - Preferred for septic shock and vasodilatory (distributive) shock**
    - **Adult (> 12 years old):**
      - **IV/IO Infusion ONLY:**
        - Mix 4 mg in 250 mL NS = 16 mcg/mL **OR**
        - Mix 4 mg in 500 mL NS = 8 mcg/mL
          - **Infusion:** 4-12 mcg/min; titrate to keep MAP > 65 mmHg
    - **Pediatric (< 12 years old):**
      - **IV/IO Infusion ONLY:**
        - Mix 4 mg in 500 mL NS = 8 mcg/mL
          - **Infusion:** 0.1 mcg/kg/min; titrate to maintain age appropriate minimum SBP; Maximum dose 2 mcg/kg/min
  - **Epinephrine**
    - **Adult:**
      - **IV Infusion:** 2-20 mcg/minute
      - **May also be initiated as a second line vasopressor if patient fails to respond to norepinephrine**
  - **Phenylephrine -**
    - **All ages >10 kg:**
      - **IV/IO Push Dose ONLY: Mix 10 mg phenylephrine in 100 mL normal saline = 100 mcg/mL**
        - Withdraw 10 mL of diluted solution into 10 mL syringe and apply label
          - Starting dose: 50 mcg = 0.5 mL every 2-5 minutes as needed to achieve age-appropriate MAP
          - If MAP not significantly improved, increase each subsequent dose by 50 mcg
            - 2<sup>nd</sup> dose = 100 mcg (1 mL)
            - 3<sup>rd</sup> dose = 150 mcg (1.5 mL)
            - Maximum dose 400 mcg (4 mL) or 5 mcg/kg
- **Adrenal Insufficiency or Addison's Disease** - If patient is at risk for adrenal insufficiency or Addisonian Crisis (identified by medic alert bracelet, family, or history of chronic steroid use), consider assisting patient with prescribed rescue steroid or consider **one** of the following, if available:
  - **Dexamethasone**
    - **Adult:**
      - **PO/IM/IV/IO:** 10 mg
    - **Pediatric:**
      - **PO/IM/IV/IO:** 0.3 mg/kg (maximum dose 10 mg)
  - **Methylprednisolone**
    - **Adult:**
      - **PO/IM/IV/IO:** 125 mg
    - **Pediatric:**
      - **PO/IM/IV/IO:** 2 mg/kg maximum single dose 125 mg
- If vasoactive medications have reached maximum dosages and the patient fails to improve, **CONTACT ONLINE MEDICAL CONTROL**

**NOTES**

- Consider causes and treat underlying etiology whenever possible
  - **Hypovolemic:** Insufficient circulating volume
    - Most common
    - Causes: Diarrhea/vomiting, sepsis, burns, hemorrhage, spinal cord injury, dehydration, heat emergencies, drugs/toxins, anaphylaxis
  - **Cardiogenic:** Failure of the heart to pump effectively causing pulmonary edema
    - Causes: Cardiac dysrhythmias, cardiomyopathy, myocarditis, congestive heart failure, cardiac valve problems
  - **Obstructive:** Blockage or obstruction to blood flow in the circulatory system that impairs the heart’s ability to pump blood effectively
    - Causes: Tension pneumothorax, cardiac tamponade, pulmonary embolism
  - **Distributive:** Widespread dilation of blood vessels, resulting in inadequate blood flow to tissues and organs resulting in impaired utilization of [Oxygen](#)
    - **Septic shock:** overwhelming systemic infection resulting in vasodilation leading to hypotension
    - **Anaphylactic shock:** Widespread vasodilation caused by histamine release leading to increased capillary permeability and hypotension
    - **Neurogenic shock:** High spinal injuries resulting in loss of sympathetic tone and widespread vasodilation; skin is pink and warm due to lack of vasoconstriction
- [Norepinephrine](#) is the recommended first line vasopressor for patients suffering from septic and vasodilatory (distributive) shock
- Epinephrine push dose is the preferred vasopressor for **pediatrics**
- Hemorrhagic shock
  - Every effort should be made to control blood loss. Blood products are the optimal resuscitation fluid. Since blood products are not available prehospital, the goal is to maintain adequate perfusion with IV fluids and vasopressors and provide rapid transport.

Norepinephrine Drip					
Mix: 4 mg in 250 mL = 16 mcg/mL					
Mix: 4 mg om 500 mL = 8 mcg/mL					
Shock - All Types Dose 4 - 12 mcg/min	4 mcg/min	6 mcg/min	8 mcg/min	10 mcg/min	12 mcg/min
Ages > 12 years	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)
250 mL (16 mcg/mL)	15	22.5	30	37.5	45
500 mL (8 mcg/mL)	30	45	60	75	90

Norepinephrine Drip								
Mix: 4 mg in 500 mL = 8 mcg/mL								
Shock - All Types Starting dose 0.1 mcg/kg/min Maximum dose 2 mcg/kg/min				0.1 mcg/kg/min	0.2 mcg/kg/min	0.3 mcg/kg/min	0.4 mcg/kg/min	0.5 mcg/kg/min
Age	Broselow	Kilos	Pounds	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)
Newborn	3-5 kg	3-5 kg	6 - 11 lbs	4	7	11	15	18
6 mo	PINK	6-7 kg	13 - 15 lbs	5	10	15	21	26
9 mo	RED	8-9 kg	16 - 20 lbs	6	12	20	27	33
1 yr	PURPLE	10-11 kg	21 - 24 lbs	8	16	24	33	41
2 yrs	YELLOW	12-14 kg	25 - 31 lbs	10	20	31	42	52
4 yrs	WHITE	15-18 kg	32 - 40 lbs	13	26	40	54	67
6 yrs	BLUE	19-23 kg	41 - 48 lbs	17	34	51	69	86
8 yrs	ORANGE	24-29 kg	49 - 66 lbs	21	42	65	87	108
10 yrs	GREEN	30-36 kg	67 - 80 lbs	27	52	81	108	135
11-12 years		40 kg	88 lbs	30	60	90	120	150

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# HYPOTHERMIA OR COLD EXPOSURE

**INCLUSION Criteria:** Patients suffering from hypothermia, localized or systemic cold injuries

**EXCLUSION Criteria:** Patients without cold exposure or with cold exposure and no evidence of symptoms or injury related to hypothermia

**OTHER GUIDELINES TO CONSIDER:** [Airway Management](#), [Cardiac Arrest](#), [Hypotension or Shock](#), [Pain Management](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care – Trauma Management</a></li> <li>• Move patient to a warm environment</li> <li>• Remove wet clothing and dry patient</li> <li>• Keep patient warm with blankets and prevent re-exposure</li> </ul> <p><b>Frostbite</b></p> <ul style="list-style-type: none"> <li>• Handle skin/extremities gently</li> <li>• Do NOT rub the affected area</li> <li>• Protect affected area with loosely covered sterile dressing</li> </ul> <p><b>Mild/Moderate Hypothermia</b></p> <ul style="list-style-type: none"> <li>• Temperature 86-95° F</li> <li>• Conscious or altered sensorium with shivering</li> <li>• Treatment:             <ul style="list-style-type: none"> <li>○ Apply hot packs wrapped in towels to axillae, groin, and thorax</li> </ul> </li> <li>• <a href="#">Airway Management</a></li> </ul> <p><b>Severe Hypothermia</b></p> <ul style="list-style-type: none"> <li>• Temperature 86° F or less</li> <li>• Signs and Symptoms include:             <ul style="list-style-type: none"> <li>○ Altered sensorium: Confused, withdrawn, disoriented, comatose</li> <li>○ Poor muscle control: Uncoordinated, rigidity simulating rigor mortis</li> <li>○ ECG: anticipate bradycardia, asystole, ventricular fibrillation</li> <li>○ No shivering is present</li> </ul> </li> <li>• Treatment:             <ul style="list-style-type: none"> <li>○ Move patient gently to avoid precipitating ventricular fibrillation</li> <li>○ Check <a href="#">Blood Glucose</a></li> <li>○ Apply hot packs wrapped in towels to axillae, groin, and thorax</li> <li>○ If pulseless, begin CPR unless patient fits any <b>one</b> of the following criteria for cold death:                 <ul style="list-style-type: none"> <li>▪ Patient is frozen solid preventing chest from being compressed</li> <li>▪ Ice is present in the airway</li> <li>▪ Patient has evidence of predation</li> <li>▪ Head was submerged underwater for more than the following:                     <ul style="list-style-type: none"> <li>• <b>Adult:</b> 60 minutes</li> <li>• <b>Pediatric:</b> 90 minutes</li> </ul> </li> </ul> </li> <li>○ If patient in <a href="#">Cardiac Arrest</a> with a shockable rhythm (ventricular fibrillation or pulseless ventricular tachycardia):                 <ul style="list-style-type: none"> <li>▪ Limit defibrillation to one (1) shock</li> </ul> </li> <li>○ If patient has a pulse, no matter how slow or how weak, do not initiate chest compressions</li> </ul> </li> </ul>
<b>EMT</b>	<p><b>Severe Hypothermia</b></p> <ul style="list-style-type: none"> <li>• Consider <a href="#">Cardiac Monitoring</a></li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• Establish <a href="#">IV/IO Access</a></li> <li>• If hypotensive or with clinical signs of dehydration or poor perfusion, administer <a href="#">Fluid Bolus – IV/IO</a> with warm normal saline</li> </ul> <p><b>Frostbite</b></p> <ul style="list-style-type: none"> <li>• Consider <a href="#">Pain Management</a></li> </ul>
<b>INT</b>	<p><b>Severe Hypothermia</b></p> <ul style="list-style-type: none"> <li>• If patient in <a href="#">Cardiac Arrest</a>, administer only <b>ONE</b> (1) dose of <a href="#">Epinephrine IV</a> until body temperature is &gt; 86° F</li> </ul>
<b>PARA</b>	
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• If the underlying cause of arrest is thought to have preceded the hypothermia, termination of resuscitation may be reasonable. <b>CONTACT ONLINE MEDICAL CONTROL</b> for consultation</li> </ul>

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# NAUSEA OR VOMITING

**INCLUSION Criteria:** Patients suffering from nausea and/or vomiting or prevention of nausea or vomiting for patients with penetrating eye injury, risk for aspiration following opioid administration, or suspected intracranial hemorrhage

**EXCLUSION Criteria:** None

**OTHER GUIDELINES TO CONSIDER:** [Abdominal Pain](#), [Airway Management](#), [Chest Pain/Acute Coronary Syndrome \(ACS\)](#), [Hypoglycemia or Hyperglycemia](#), [Pain Management](#), [Sedation](#), [Suspected Stroke](#), [Traumatic Injuries](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• Allow patient to assume position of comfort whenever possible                         <ul style="list-style-type: none"> <li>○ If appropriate, position patient to avoid aspiration</li> </ul> </li> <li>• Obtain <a href="#">Blood Glucose</a></li> <li>• If patient is capable of following instructions, consider:                         <ul style="list-style-type: none"> <li>○ <a href="#">Isopropyl Alcohol</a> <ul style="list-style-type: none"> <li>▪ <b>All patients:</b> <ul style="list-style-type: none"> <li>• Hold alcohol prep pad 2.5 cm from their nose and inhale deeply for up to 60 seconds; may stop if nausea resolves; If nausea persists or returns, may repeat 60 second inhalation at 2 minutes and 4 minutes.</li> </ul> </li> </ul> </li> </ul> </li> <li>• Consider and treat underlying causes of nausea or vomiting</li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• <b>IF AUTHORIZED:</b> Consider <a href="#">12 Lead ECG</a></li> <li>• Transmit ECG to hospital</li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• Consider <a href="#">IV/IO Access</a></li> <li>• Consider <a href="#">Fluid Bolus – IV/IO</a> for signs of hypovolemia</li> <li>• If nonpharmacologic interventions fail to alleviate nausea or vomiting, consider:                         <ul style="list-style-type: none"> <li>○ <a href="#">Ondansetron</a> <ul style="list-style-type: none"> <li>▪ <b>Adult ≥ 12 years:</b> <ul style="list-style-type: none"> <li>• <b>ODT/PO/IV/IO:</b> 8 mg; one time only</li> <li>• <b>IM:</b> 8 mg one time only; use thigh or gluteal site only</li> </ul> </li> <li>▪ <b>Pediatric &lt; 12 years of age:</b> <ul style="list-style-type: none"> <li>• <b>PO/IV/IO:</b> 0.2 mg/kg; max initial dose 8 mg one time dose</li> <li>• <b>IM:</b> 0.2 mg/kg; maximum initial dose 8 mg one time dose; use thigh or gluteal site only</li> <li>• <b>ODT: Weight based dosing:</b> <ul style="list-style-type: none"> <li>○ 8-15 kg: 2 mg; one time only</li> <li>○ 15.1 kg to 30 kg: 4 mg; one time only</li> <li>○ &gt; 30 kg: 8 mg; one time only</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li></ul>
<b>INT</b>	
<b>PARA</b>	<ul style="list-style-type: none"> <li>• Consider additional antiemetic administration if ondansetron is unavailable or ineffective:                         <ul style="list-style-type: none"> <li>○ <a href="#">Diphenhydramine</a> <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> <ul style="list-style-type: none"> <li>• <b>PO/IM/IV/IO:</b> 50 mg</li> </ul> </li> <li>▪ <b>Pediatric (&gt;1 month):</b> <ul style="list-style-type: none"> <li>• <b>PO/IM/IV/IO:</b> 1 mg/kg; maximum single dose 50 mg</li> </ul> </li> </ul> </li> <li>○ <a href="#">Droperidol (Contraindicated for known or suspected QT prolongation)</a> <ul style="list-style-type: none"> <li>▪ <b>Adult (age &gt; 14 years):</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 1.25 mg <i>slowly</i> over 2 minutes; may repeat in 5 minutes to achieve desired effect; maximum cumulative dose of 5 mg</li> <li>• <b>IM:</b> 1.25 mg; may repeat in 15 minutes; maximum cumulative dose of 5 mg</li> </ul> </li> <li>▪ <b>Pediatric (&gt; 2 – 14 years):</b> <ul style="list-style-type: none"> <li>• <b>IV/IO/IM:</b> 0.05 mg/kg slow IV push over 2 minutes; maximum initial dose 1.25 mg; may repeat in 15 minutes; maximum cumulative dose of 5 mg</li> </ul> </li> </ul> </li> </ul> </li> </ul>

<b>PARA</b>	<ul style="list-style-type: none"> <li>○ <b>Metoclopramide</b> <ul style="list-style-type: none"> <li>▪ <b>Adult (ages &gt; 14 - 64 years):</b> <ul style="list-style-type: none"> <li>• <b>PO:</b> 10 mg; may repeat once in 60 minutes if needed</li> <li>• <b>IM:</b> 10 mg; may repeat once in 15 minutes if needed</li> <li>• <b>IV/IO:</b> 10mg <b>slowly</b> over 1-2 minutes; may repeat once in 5 minutes if needed</li> </ul> </li> <li>▪ <b>Elderly (age 65 years and older):</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 5 mg <b>slowly</b> over 1-2 minutes; may repeat once in 5 minutes if needed</li> </ul> </li> <li>▪ <b>Pediatric (≥ 2 years – 14 years):</b> <ul style="list-style-type: none"> <li>• <b>PO:</b> 0.1 mg/kg; maximum initial dose 10 mg; may repeat once in 60 minutes if needed</li> <li>• <b>IM:</b> 0.1 mg/kg; maximum initial dose 10 mg; may repeat once in 15 minutes if needed</li> <li>• <b>IV/IO:</b> 0.1 mg/kg <b>slowly</b> over 1-2 minutes; maximum initial dose 10 mg; may repeat once in 5 minutes if needed</li> </ul> </li> </ul> </li> <li>○ <b>Prochlorperazine</b> <ul style="list-style-type: none"> <li>▪ <b>Adult (age 18-64 years):</b> <ul style="list-style-type: none"> <li>• <b>PO/IM/IV/IO:</b> 10 mg; administer IV/IO <b>slowly</b> over a minimum of 2 minutes</li> </ul> </li> <li>▪ <b>Elderly (age 65 years and older):</b> <ul style="list-style-type: none"> <li>• <b>PO/IM/IV/IO:</b> 5 mg; for IV/IO, administer <b>slowly</b> over a minimum of 2 minutes</li> </ul> </li> <li>▪ <b>Pediatric (≥ 2 years and ≥ 9 kg):</b> <ul style="list-style-type: none"> <li>• <b>PO/IM/IV/IO:</b> 0.1 mg/kg max single dose 10 mg; administer IV/IO <b>slowly</b> over a minimum of 2 minutes</li> </ul> </li> </ul> </li> <li>○ <b>Promethazine</b> <ul style="list-style-type: none"> <li>▪ <b>Adult (ages &gt; 14 - 64 years):</b> <ul style="list-style-type: none"> <li>• <b>PO/IM:</b> 25 mg</li> <li>• <b>IV/IO:</b> 12.5 mg; administer IV/IO <b>slowly</b> over a minimum of 2 minutes</li> </ul> </li> <li>▪ <b>Elderly (age 65 years and older):</b> <ul style="list-style-type: none"> <li>• <b>PO/IM:</b> 12.5 mg</li> <li>• <b>IV/IO:</b> 6.25 mg; administer IV/IO <b>slowly</b> over a minimum of 2 minutes</li> </ul> </li> <li>▪ <b>Pediatric (≥ 2 years – 14 years):</b> <ul style="list-style-type: none"> <li>• <b>PO/IM:</b> 0.25 mg/kg maximum single dose 25 mg</li> <li>• <b>IV/IO:</b> 0.25 mg/kg; administer <b>slowly</b> over a minimum of 2 minutes; maximum single dose 12.5 mg</li> </ul> </li> </ul> </li> <li>• If severe and not improved with other treatments, consider <b>Sedation</b>, as anxiety can contribute to nausea or vomiting.             <ul style="list-style-type: none"> <li>○ Continuous <b>Cardiac Monitoring</b>, <b>Pulse Oximetry</b>, and <b>Waveform Capnography</b> required for any patient receiving sedation</li> </ul> </li> </ul>
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• Nausea and vomiting serve as symptoms of an underlying illness. In addition to addressing the patient's nausea and vomiting, conducting a comprehensive history and physical examination is essential for identifying any potential underlying disease processes that may require urgent treatment.</li> <li>• Nausea or vomiting can manifest as initial symptoms of Acute Coronary Syndrome (ACS), particularly in patients at higher risk of atypical presentations, such as the elderly, females, and those with diabetes.</li> </ul>

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# OVERDOSE OR TOXIC EXPOSURE

**INCLUSION Criteria:** Patients of all ages with suspected or known ingestion, overdose, or toxic exposure

**EXCLUSION Criteria:** [Cardiac Arrest](#), [Hyperthermia or Heat Exposure](#)

**OTHER GUIDELINES TO CONSIDER:** [Airway Management](#), [Behavioral or Psychiatric Emergencies](#), [Bradycardia – Adult \(8 Years & Older\)](#), [Bradycardia-Pediatric \(< 8 years old\)](#), [Hypotension or Shock](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• If exposure to toxic agent suspected:             <ul style="list-style-type: none"> <li>○ Do not enter scene until determined safe to do so</li> <li>○ Don appropriate PPE</li> <li>○ Remove patient from the environment if safe for EMS providers</li> <li>○ Be suspicious of scenes where multiple people or animals appear to be affected</li> <li>○ Ensure proper decontamination prior to initiating care</li> </ul> </li> <li>• Suspected opioid intoxication <b>AND</b> patient has respiratory depression:             <ul style="list-style-type: none"> <li>○ Support ventilation with <a href="#">Bag Valve Mask (BVM) Ventilation</a></li> <li>○ Consider <a href="#">Pulse Oximetry</a> <ul style="list-style-type: none"> <li>▪ If pulse oximetry is less than 93%, titrate <a href="#">Oxygen</a> to lowest level to maintain pulse oximetry at 93% or greater</li> </ul> </li> <li>○ <b>IF AUTHORIZED:</b> consider soft restraints, followed by:                 <ul style="list-style-type: none"> <li>▪ <a href="#">Naloxone</a> <ul style="list-style-type: none"> <li>• <b>Adult or Pediatric ≥20 kg:</b> <ul style="list-style-type: none"> <li>○ <b>IN:</b> 1 mg (0.5 mg each nostril); may repeat every 5 minutes as needed</li> </ul> </li> <li>• <b>Pediatric &lt; 20 kg:</b> <ul style="list-style-type: none"> <li>○ <b>IN:</b> 0.1 mg/kg; may repeat every 2 minutes as needed; maximum single dose 2 mg</li> </ul> </li> <li>• Patient may experience <a href="#">Nausea or Vomiting</a>, agitation, or become combative following administration of Narcan</li> </ul> </li> </ul> </li> </ul> </li> <li>• Suspected carbon monoxide (CO) poisoning:             <ul style="list-style-type: none"> <li>○ Obtain carbon monoxide level if available</li> <li>○ Administer high flow <a href="#">Oxygen</a> regardless of SPO2</li> </ul> </li> <li>• Suspected oral ingestion:             <ul style="list-style-type: none"> <li>○ Do NOT induce vomiting</li> <li>○ Attempt to identify the ingested substance</li> </ul> </li> <li>• If patient is altered, obtain <a href="#">Blood Glucose</a>, if &lt; 60 mg/dl, see <a href="#">Hypoglycemia or Hyperglycemia</a> guideline</li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• Consider <a href="#">Cardiac Monitoring</a></li> <li>• <b>IF AUTHORIZED:</b> acquire <a href="#">12 Lead ECG</a> <ul style="list-style-type: none"> <li>○ Transmit ECG to hospital                 <ul style="list-style-type: none"> <li>▪ Notify ED of transmitted ECG and request interpretation</li> </ul> </li> </ul> </li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• Initiate <a href="#">IV/IO Access</a> <ul style="list-style-type: none"> <li>○ Consider large bore IV catheter whenever possible</li> </ul> </li> <li>• If hypotensive or with clinical signs of dehydration or poor perfusion, administer <a href="#">Fluid Bolus – IV/IO</a></li> <li>• Consider <a href="#">Waveform Capnography</a></li> <li>• Suspected opioid intoxication <b>AND</b> patient has respiratory depression and IV has been established, consider:             <ul style="list-style-type: none"> <li>○ <a href="#">Naloxone</a> <ul style="list-style-type: none"> <li>▪ <b>Adult or Pediatric ≥20 kg:</b> <ul style="list-style-type: none"> <li>• <b>IM:</b> 0.5 mg; may repeat every 5 minutes as needed</li> <li>• <b>IV/IO:</b> 0.4 mg – 0.5 mg; may repeat every 2 minutes as needed</li> </ul> </li> <li>▪ <b>Pediatric &lt; 20 kg:</b> <ul style="list-style-type: none"> <li>• <b>IM/IV/IO:</b> 0.1 mg/kg; may repeat every 2 minutes as needed; maximum single dose 2 mg</li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>INT</b>	<ul style="list-style-type: none"> <li>• For persistent hypotension or signs of shock not responding to initial fluid resuscitation, see <a href="#">Hypotension or Shock</a></li> </ul>

<b>PARA</b>	<ul style="list-style-type: none"> <li>• <b>Acute Dystonic Reaction:</b> Sustained muscle contractions, frequently causing twisting, repetitive movements, or abnormal postures. Most related to antipsychotic or antiemetic use             <ul style="list-style-type: none"> <li>○ <u>Diphenhydramine</u> <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> <ul style="list-style-type: none"> <li>• PO/IM/IV/IO: 50 mg</li> </ul> </li> <li>▪ <b>Pediatric (&gt; 1 month):</b> <ul style="list-style-type: none"> <li>• PO/IM/IV/IO: 1mg/kg; maximum single dose 50 mg</li> </ul> </li> </ul> </li> </ul> </li> </ul>	
<b>NOTES</b>	<p><b>Beta-Blockers:</b> <i>Bradycardia, heart blocks, hypotension</i></p>	<p><b>Calcium Channel Blockers:</b> <i>Bradycardia, heart blocks, hypotension</i></p>
	<ul style="list-style-type: none"> <li>• <u>Bradycardia – Adult (8 Years &amp; Older)</u></li> <li>• <u>Bradycardia-Pediatric</u></li> <li>• <u>Hypotension or Shock</u></li> <li>• Initiate vasopressors early</li> <li>• Consider, if no response to <u>Epinephrine Push Dose</u> <ul style="list-style-type: none"> <li>○ <u>Calcium Chloride:</u> <ul style="list-style-type: none"> <li>▪ <b>Adult (Ages ≥ 12 years):</b> 1 gram IV/IO <i>slowly</i> over 5 minutes</li> <li>▪ <b>Pediatric (Ages &lt; 12 years):</b> 20 mg/kg IV/IO slowly over 10 minutes <b>OR</b></li> </ul> </li> <li>○ <u>Calcium Gluconate:</u> <ul style="list-style-type: none"> <li>▪ <b>Adult (Ages ≥ 12 years):</b> 3 grams IV/IO <i>slowly</i> over 5 minutes</li> <li>▪ <b>Pediatric (Ages &lt; 12 years):</b> 60 mg/kg IV/IO slowly over 5 minutes</li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <u>Bradycardia – Adult (8 Years &amp; Older)</u></li> <li>• <u>Bradycardia-Pediatric</u></li> <li>• <u>Hypotension or Shock</u></li> <li>• Initiate vasopressors early</li> <li>• Consider, if no response to <u>Epinephrine Push Dose</u> <ul style="list-style-type: none"> <li>○ <u>Calcium Chloride:</u> <ul style="list-style-type: none"> <li>▪ <b>Adult (Ages ≥ 12 years):</b> 1 gram IV/IO <i>slowly</i> over 5 minutes</li> <li>▪ <b>Pediatric (Ages &lt; 12 years):</b> 20 mg/kg IV/IO slowly over 10 minutes <b>OR</b></li> </ul> </li> <li>○ <u>Calcium Gluconate</u> <ul style="list-style-type: none"> <li>▪ <b>Adult (Ages ≥ 12 years):</b> 3 grams IV/IO <i>slowly</i> over 5 minutes</li> <li>▪ <b>Pediatric (Ages &lt; 12 years):</b> 60 mg/kg IV/IO slowly over 5 minutes</li> </ul> </li> </ul> </li> </ul>
	<p><b>Benzodiazepines:</b> <i>Respiratory depression, altered mental status, slurred speech</i></p>	<p><b>Tricyclic Antidepressant (TCA):</b> <i>Decreased LOC, hypotension, wide QRS, arrhythmias, seizures</i></p>
<ul style="list-style-type: none"> <li>• <u>Airway Management</u></li> <li>• <u>Bradycardia – Adult (8 Years &amp; Older)</u></li> <li>• <u>Bradycardia-Pediatric</u></li> <li>• <u>Hypotension or Shock</u></li> <li>• Initiate vasopressors early</li> </ul>	<ul style="list-style-type: none"> <li>• If QRS &gt; 0.12 sec, consider for all ages:             <ul style="list-style-type: none"> <li>○ <u>Sodium Bicarbonate</u> 1 mEq/kg IV/IO over 5 minutes; maximum single dose 50 mEq</li> </ul> </li> <li>• <u>Seizure</u></li> <li>• <u>Hypotension or Shock</u></li> </ul>	
<p><b>Stimulants:</b> <i>Agitated, violent or uncooperative behavior, hyperthermia, tachycardia, hypertension</i></p>	<p><b>Organophosphates:</b> <i>DUMBELSS = diarrhea, urination, miosis (constricted pupils), bronchospasm, bradycardia, excitation of muscles, lacrimation (tearing), salivation, sweating</i></p>	
<ul style="list-style-type: none"> <li>• <u>Behavioral or Psychiatric Emergencies</u></li> <li>• <u>Restraints – Physical</u></li> <li>• <u>Restraints – Chemical</u> <ul style="list-style-type: none"> <li>○ Benzodiazepines are preferred</li> </ul> </li> <li>• <u>Tachycardia</u></li> </ul>	<ul style="list-style-type: none"> <li>• <u>Bradycardia – Adult (8 Years &amp; Older)</u></li> <li>• <u>Bradycardia-Pediatric</u></li> <li>• <u>Hypotension or Shock</u> <ul style="list-style-type: none"> <li>○ <u>Atropine:</u> <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> 2 mg IV/IO; repeat every 3 minutes until S&amp;S resolve</li> <li>▪ <b>Pediatric:</b> 0.05 mg/kg IV/IO, max dose 2 mg; repeat every 3 minutes until S&amp;S resolve</li> </ul> </li> </ul> </li> </ul>	

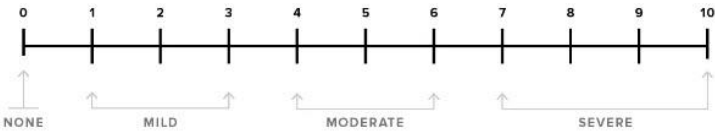

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# PAIN MANAGEMENT

**INCLUSION Criteria:** Patients who are experiencing pain

**EXCLUSION Criteria:** Pain related to active labor or pregnancy ([Childbirth](#))

**OTHER GUIDELINES TO CONSIDER:** Follow appropriate medical protocol first

<b>EMR</b>	<ul style="list-style-type: none"> <li><a href="#">Universal Care</a></li> <li>Assess pain based on a standard pain scale             <ul style="list-style-type: none"> <li><b>Adult:</b> use a 0-10 pain scale                 <ul style="list-style-type: none"> <li>Zero = no pain and 10 = worst possible pain</li> </ul> </li> <li><b>Pediatric:</b> use a <a href="#">FACES</a> pain scale</li> </ul> </li> <li>Identify and treat sources of pain whenever feasible. This may involve:             <ul style="list-style-type: none"> <li>Offering verbal reassurance and maintaining a calm, compassionate demeanor</li> <li>Positioning the patient for optimal comfort</li> <li>Application of ice/cold packs to injured or affected area</li> <li>Offering distractions to divert the patient’s attention away from their injuries</li> </ul> </li> <li>For musculoskeletal injuries consider <a href="#">Splinting</a></li> <li>Reassess and document pain after all interventions</li> </ul>	<p><b>0-10 NUMERIC PAIN RATING SCALE</b></p> 
<b>EMT</b>	<ul style="list-style-type: none"> <li>If nonpharmacologic interventions fail to alleviate pain, and pain remains mild to moderate, consider <b>one</b> of the following options if without contraindications:             <ul style="list-style-type: none"> <li><a href="#">Acetaminophen</a> <ul style="list-style-type: none"> <li><b>Adult:</b> <ul style="list-style-type: none"> <li>PO: 500-650 mg every 4 hours as needed</li> </ul> </li> <li>OR</li> <li>PO: 1 gm every 6 hours as needed; max dose 4000 mg/24 hours</li> </ul> </li> <li><b>Pediatric:</b> <ul style="list-style-type: none"> <li>PO: 15 mg/kg every 4-6 hours as needed (max single dose 1000 mg)</li> </ul> </li> <li><a href="#">Ibuprofen</a> <ul style="list-style-type: none"> <li><b>Adult:</b> <ul style="list-style-type: none"> <li>PO: 600 mg; maximum dose 3.2 g/24 hours</li> </ul> </li> <li><b>Pediatric &gt; 6 months old:</b> <ul style="list-style-type: none"> <li>PO: 10mg/kg; maximum initial dose 600 mg</li> </ul> </li> </ul> </li> </ul> </li> </ul>	<p><b>Wong-Baker FACES® Pain Rating Scale</b></p> 
<b>AEMT</b>	<ul style="list-style-type: none"> <li>Consider <a href="#">IV/IO Access</a></li> <li>Consider <a href="#">Fluid Bolus – IV/IO</a></li> <li>If patient has not already received similar medication within the past 4 hours and PO administration is not appropriate, consider <b>one</b> of the following options if available and without contraindications:             <ul style="list-style-type: none"> <li><a href="#">Ketorolac</a> (Preferred IV medication for patients experiencing pain associated with known or suspected kidney stones)                 <ul style="list-style-type: none"> <li><b>Adult (≥ 17 years):</b> <ul style="list-style-type: none"> <li>IV/IO: 0.5 mg/kg (maximum 15 mg one dose only)</li> <li>IM/PO: 1.0 mg/kg (maximum 30 mg one dose only)</li> </ul> </li> <li><b>Pediatric (≥ 6 months – 17 years of age):</b> <ul style="list-style-type: none"> <li>PO/IM/IV/IO: 0.5 mg/kg (15 mg maximum initial dose)</li> </ul> </li> </ul> </li> <li><a href="#">Nitrous Oxide</a> <ul style="list-style-type: none"> <li><b>All ages:</b> <ul style="list-style-type: none"> <li>Self-administered inhalation; 50% nitrous oxide and 50% oxygen</li> </ul> </li> </ul> </li> </ul> </li> <li>If patient has known Sickie Cell disease, see <a href="#">Sickle Cell Pain</a> guideline</li> </ul>	



<b>INT</b>	<ul style="list-style-type: none"> <li>• If signs and symptoms of hypovolemia are present, ensure a 500 mL fluid bolus has been administered prior to administration of narcotic analgesics</li> <li>• <b>Moderate acute pain:</b> Consider the following if available and without contraindications:             <ul style="list-style-type: none"> <li>○ <b>Morphine</b> <ul style="list-style-type: none"> <li>▪ <b>All ages &lt; 65 years of age:</b> <ul style="list-style-type: none"> <li>• <b>IV/IO/IM:</b> 0.05 mg/kg; maximum initial dose 5 mg; may repeat every 10 minutes as needed for pain control.</li> </ul> </li> <li>▪ <b>Elderly ≥ 65 years of age or any age chemically or otherwise impaired</b> <ul style="list-style-type: none"> <li>• <b>IV/IO/IM:</b> 0.025 mg/kg; maximum initial dose 2.5 mg; may repeat every 10 minutes as needed for pain control</li> </ul> </li> </ul> </li> </ul> </li> <li>• <b>Moderate or severe pain:</b> Consider the following if available and without contraindications:             <ul style="list-style-type: none"> <li>○ <b>Fentanyl</b> <ul style="list-style-type: none"> <li>▪ <b>Adult (age &gt; 14 years):</b> <ul style="list-style-type: none"> <li>• <b>IN:</b> 100 mcg; may repeat every 10 minutes as needed for pain control</li> <li>• <b>Nebulized:</b> 300 mcg; may repeat every 15 minutes as needed for pain control</li> <li>• <b>IM:</b> 50 mcg; may repeat every 10 minutes as needed for pain control</li> <li>• <b>IV/IO:</b> 50 mcg; may repeat every 5 minutes as needed for pain control</li> </ul> </li> <li>▪ <b>Pediatric</b> <ul style="list-style-type: none"> <li>• <b>IN:</b> may repeat every 10 minutes as needed for pain control                             <ul style="list-style-type: none"> <li>○ 2 mcg/kg (Age &lt;2 years)</li> <li>○ 50 mcg (Age 2 years - 8 years)</li> <li>○ 100 mcg (Age ≥9 years)</li> </ul> </li> <li>• <b>Nebulized:</b> 4 mcg/kg; maximum single dose 300 mcg; may repeat every 15 minutes as needed for pain control</li> <li>• <b>IM:</b> 1 mcg/kg; maximum single dose 50 mcg; may repeat every 10 minutes as needed for pain control.</li> <li>• <b>IV/IO:</b> 1 mcg/kg; maximum single dose 50 mcg; may repeat every 5 minutes as needed for pain control</li> </ul> </li> </ul> </li> </ul> </li> <li>• <b>Severe pain:</b> Consider the following if available and without contraindications:             <ul style="list-style-type: none"> <li>○ <b>Morphine</b> <ul style="list-style-type: none"> <li>▪ <b>All ages &lt; 65 years of age:</b> <ul style="list-style-type: none"> <li>• <b>IV/IO/IM:</b> 0.1 mg/kg; maximum initial dose 10 mg; may repeat every 10 minutes as needed for pain control.</li> </ul> </li> <li>▪ <b>Elderly ≥ 65 years of age or any age chemically or otherwise impaired:</b> <ul style="list-style-type: none"> <li>• <b>IV/IO/IM:</b> 0.05 mg/kg; maximum initial dose 5 mg; may repeat every 10 minutes as needed for pain control</li> </ul> </li> </ul> </li> </ul> </li> <li>• Continuous <b>Cardiac Monitoring</b>, <b>Pulse Oximetry</b>, and <b>Waveform Capnography</b> required for any patient receiving narcotic analgesics</li> </ul>
<b>PARA</b>	<ul style="list-style-type: none"> <li>• <b>Moderate acute pain:</b> Consider the following if available and without contraindications:             <ul style="list-style-type: none"> <li>○ <b>Hydromorphone</b> <ul style="list-style-type: none"> <li>▪ <b>Adult (age &gt; 14 years):</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 0.5 mg; may repeat every 15 minutes as needed for pain control</li> </ul> </li> <li>▪ <b>Pediatric (&lt; 14 years):</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 0.0075 mg/kg; maximum dose 0.5 mg; may repeat every 15 minutes as needed for pain control</li> </ul> </li> </ul> </li> </ul> </li> <li>• <b>Severe pain:</b> Consider the following if available and without contraindications:             <ul style="list-style-type: none"> <li>○ <b>Hydromorphone</b> <ul style="list-style-type: none"> <li>▪ <b>Adult (14 – 64 years):</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 1 mg; may repeat every 15 minutes as needed for pain control</li> </ul> </li> <li>▪ <b>Pediatric (&lt; 14 years):</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 0.015 mg/kg; maximum single dose 1 mg; may repeat every 15 minutes as needed for pain control</li> </ul> </li> <li>▪ <b>Elderly (65 years or older) OR any age chemically or otherwise impaired IV/IO:</b> 0.5 mg; may repeat every 15 minutes as needed for pain control</li> </ul> </li> </ul> </li> </ul>

<b>PARA</b>	<ul style="list-style-type: none"> <li>• In situations involving allergies or contraindications to administration of narcotic analgesics, consider:             <ul style="list-style-type: none"> <li>○ <b>Ketamine</b> <ul style="list-style-type: none"> <li>▪ <b>Adult (≥ 16 years):</b> <ul style="list-style-type: none"> <li>• <b>IN/IM:</b> 40 mg; may repeat every 15 minutes as needed for pain control</li> <li>• <b>IV/IO:</b> 10 mg; may repeat every 5 minutes as needed for pain control</li> </ul> </li> <li>▪ <b>Pediatric (≥ 3 months – 15 years):</b> <ul style="list-style-type: none"> <li>• <b>IN/IM:</b> 1 mg/kg (maximum dose 40 mg); may repeat every 15 minutes as needed for pain control</li> <li>• <b>IV/IO:</b> 0.2 mg/kg (maximum dose 10 mg); may repeat every 5 minutes as needed for pain control</li> </ul> </li> </ul> </li> <li>• Continuous <b>Cardiac Monitoring</b>, <b>Pulse Oximetry</b>, and <b>Waveform Capnography</b> required for any patient receiving narcotic analgesics or ketamine</li> <li>• Consider <b>Sedation</b>, in addition to pain medications if pain is not responding to 3 or 4 doses of narcotic pain medication             <ul style="list-style-type: none"> <li>○ Continuously monitor patient for signs of respiratory depression and inadequate respirations</li> </ul> </li> <li>• <b>Headache or Migraine:</b> For treatment of headache or migraine with a normal neurological exam, consider <b>one</b> of the following options if available and without contraindications:             <ul style="list-style-type: none"> <li>○ <b>Metoclopramide</b> <ul style="list-style-type: none"> <li>▪ <b>Adult (ages &gt; 14 - 64 years):</b> <ul style="list-style-type: none"> <li>• <b>PO:</b> 10 mg; may repeat once in 60 minutes if needed</li> <li>• <b>IM:</b> 10 mg; may repeat once in 15 minutes if needed</li> <li>• <b>IV/IO:</b> 10mg <b>slowly</b> over 1-2 minutes; may repeat once in 5 minutes if needed</li> </ul> </li> <li>▪ <b>Elderly (age 65 years and older):</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 5 mg <b>slowly</b> over 1-2 minutes; may repeat once in 5 minutes if needed</li> </ul> </li> <li>▪ <b>Pediatric (≥ 2 years – 14 years):</b> <ul style="list-style-type: none"> <li>• <b>PO:</b> 0.1 mg/kg; maximum initial dose 10 mg; may repeat once in 60 minutes if needed</li> <li>• <b>IM:</b> 0.1 mg/kg; maximum initial dose 10 mg; may repeat once in 15 minutes if needed</li> <li>• <b>IV/IO:</b> 0.1 mg/kg <b>slowly</b> over 1-2 minutes; maximum initial dose 10 mg; may repeat once in 5 minutes if needed</li> </ul> </li> </ul> </li> <li>○ <b>Prochlorperazine</b> <ul style="list-style-type: none"> <li>▪ <b>Adult (age 18-64 years):</b> <ul style="list-style-type: none"> <li>• <b>PO/IM/IV/IO:</b> 10 mg; administer IV/IO <b>slowly</b> over a minimum of 2 minutes</li> </ul> </li> <li>▪ <b>Elderly (age 65 years and older):</b> <ul style="list-style-type: none"> <li>• <b>PO/IM/IV/IO:</b> 5 mg; for IV/IO, administer <b>slowly</b> over a minimum of 2 minutes</li> </ul> </li> <li>▪ <b>Pediatric (≥ 2 years and ≥ 9 kg):</b> <ul style="list-style-type: none"> <li>• <b>PO/IM/IV/IO:</b> 0.1 mg/kg max single dose 10 mg; administer IV/IO <b>slowly</b> over a minimum of 2 minutes</li> </ul> </li> </ul> </li> <li>○ <b>Promethazine</b> <ul style="list-style-type: none"> <li>▪ <b>Adult (ages &gt; 14 - 64 years):</b> <ul style="list-style-type: none"> <li>• <b>PO/IM:</b> 25 mg</li> <li>• <b>IV/IO:</b> 12.5 mg; administer IV/IO <b>slowly</b> over a minimum of 2 minutes</li> </ul> </li> <li>▪ <b>Elderly (age 65 years and older):</b> <ul style="list-style-type: none"> <li>• <b>PO/IM:</b> 12.5 mg; administer IV/IO <b>slowly</b> over a minimum of 2 minutes</li> <li>• <b>IV/IO:</b> 6.25 mg; administer IV/IO <b>slowly</b> over a minimum of 2 minutes</li> </ul> </li> <li>▪ <b>Pediatric (≥ 2 years – 14 years):</b> <ul style="list-style-type: none"> <li>• <b>PO/IM:</b> 0.25 mg/kg maximum single dose 25 mg</li> <li>• <b>IV/IO:</b> 0.25 mg/kg; administer <b>slowly</b> over a minimum of 2 minutes; maximum single dose 12.5 mg</li> </ul> </li> </ul> </li> </ul> </li> <li>• If pain management measures are unsuccessful, <b>CONTACT ONLINE MEDICAL CONTROL</b> for further guidance and intervention</li> </ul> </li></ul>
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• EMS providers should exercise discretion when treating patients with chronic pain issues. It's important to note that a history of chronic pain does not exclude the patient from receiving treatment for acute pain-related conditions</li> <li>• Patients presenting with <b>Sickle Cell Pain</b> crisis are at a heightened risk of life-threatening conditions, particularly at a young age. These may include acute chest syndrome, meningitis, stroke, septic arthritis, and splenic sequestration syndrome. Be aware that they may have a high tolerance for opioid pain medications.</li> </ul>

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# RESTRAINTS – CHEMICAL

**INDICATIONS:** Patients of all ages exhibiting agitated or violent behavior, or who are a danger to themselves or others

**CONTRAINDICATIONS:** Patients demonstrating agitated or violent behavior attributed to medical conditions including, but not limited to, head trauma, hypoxia, and metabolic disorders (e.g. hypoglycemia)

**OTHER GUIDELINE TO CONSIDER:** [Airway Management](#), [Altered Mental Status](#), [Overdose or Toxic Exposure](#), [Traumatic Injuries](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <b>Universal Care</b></li> <li>• Ensure scene safety                         <ul style="list-style-type: none"> <li>○ Protect yourself and others</li> <li>○ Await Law Enforcement</li> </ul> </li> <li>• Approach patient in a calm, non-threatening manner, both physically and in your conversation</li> <li>• Minimize external stimulation</li> <li>• Utilize de-escalation techniques when needed</li> <li>• If patient is refusing care, see <b>Patient Refusal of Care or Transport</b></li> <li>• Consider requesting ALS or paramedic unit early if patient not tolerating physical restraints or is not able to safely be restrained</li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• If safe to do so:                         <ul style="list-style-type: none"> <li>○ Obtain <b>Blood Glucose</b></li> <li>○ Consider <b>Pulse Oximetry</b> <ul style="list-style-type: none"> <li>▪ If pulse oximetry is less than 93%, titrate <b>Oxygen</b> to lowest level to maintain pulse oximetry at 93% or greater</li> </ul> </li> <li>○ Consider <b>Cardiac Monitoring</b></li> <li>○ Consider <b>Waveform Capnography</b></li> </ul> </li> </ul>
<b>AEMT</b>	
<b>INT</b>	
<b>PARA</b>	<ul style="list-style-type: none"> <li>• NEVER administer chemical sedation at the direction of Law Enforcement. Always perform your own assessment of the patient's condition</li> <li>• Before proceeding with chemical sedation, identify and treat any potential medical causes</li> <li>• Continuous <b>Cardiac Monitoring</b>, <b>Pulse Oximetry</b>, and <b>Waveform Capnography</b> required for any patient receiving sedation                         <ul style="list-style-type: none"> <li>○ Monitor closely for development of:                                 <ul style="list-style-type: none"> <li>▪ Hypoventilation</li> <li>▪ Oversedation</li> <li>▪ Cardiac dysrhythmias</li> </ul> </li> </ul> </li> <li>• Reposition BEFORE you administer sedatives! NEVER administer sedatives to a patient in the prone position.                         <ul style="list-style-type: none"> <li>○ Reposition the patient to ensure their airway and breathing are not restricted before proceeding</li> </ul> </li> </ul>

<b>PARA</b>	<ul style="list-style-type: none"> <li>• If chemical restraint is needed, consider <b>one</b> of the following sedative medications, in order of preference below, if available and without contraindications:             <ul style="list-style-type: none"> <li>○ <b>Ketamine</b> <ul style="list-style-type: none"> <li>▪ <b>Ages ≥ 3 months:</b> <ul style="list-style-type: none"> <li>• <b>IM:</b> 5 mg/kg; maximum single dose 500 mg; may administer 250 mg IM initially; if initial dose ineffective after 2 minutes, give remaining dose in another muscle; if sedation inadequate, may repeat one-half (1/2) initial dose in 10 minutes</li> <li>• <b>IV/IO:</b> 2 mg/kg; maximum single dose 200 mg; may repeat every 5 minutes as needed</li> </ul> </li> </ul> </li> <li>○ <b>Midazolam</b> <ul style="list-style-type: none"> <li>▪ <b>Adult (ages 12 years – 64 years):</b> <ul style="list-style-type: none"> <li>• <b>IM/IN:</b> 10 mg; may repeat every 10 minutes until desired effect</li> <li>• <b>IV/IO:</b> 5mg; may repeat every 3 minutes until desired effect</li> </ul> </li> <li>▪ <b>Pediatric (age &lt; 12 years):</b> <ul style="list-style-type: none"> <li>• <b>IM/IN:</b> 0.2 mg/kg; maximum single dose 10 mg; may repeat in 10 minutes</li> <li>• <b>IV/IO:</b> 0.1 mg/kg; maximum single dose 10 mg; may repeat in 3 minutes</li> </ul> </li> <li>▪ <b>Elderly (ages 65 years and older):</b> <ul style="list-style-type: none"> <li>• <b>IM/IN:</b> 5 mg; repeat every 10 minutes until desired effect</li> <li>• <b>IV/IO:</b> 2 mg; repeat every 3 minutes until desired effect</li> </ul> </li> </ul> </li> <li>○ <b>Lorazepam</b> <ul style="list-style-type: none"> <li>▪ <b>Adult (age ≥ 12 years):</b> <ul style="list-style-type: none"> <li>• <b>IM:</b> 2 mg; may repeat every 20 minutes until desired effect</li> <li>• <b>IV/IO:</b> 2 mg; may repeat every 5 minutes until desired effect</li> </ul> </li> <li>▪ <b>Pediatric (&lt;12 years):</b> <ul style="list-style-type: none"> <li>• <b>IM:</b> 0.1 mg/kg; max single dose 2 mg; may repeat every 20 minutes until desired effect</li> <li>• <b>IV/IO:</b> 0.1 mg/kg; max single dose 2 mg; may repeat every 5 minutes until desired effect</li> </ul> </li> </ul> </li> <li>○ <b>Droperidol</b> <ul style="list-style-type: none"> <li>▪ <b>Adult (age &gt; 14 years):</b> <ul style="list-style-type: none"> <li>• <b>IM:</b> 5 mg; may repeat in 15 minutes until desired effect; maximum cumulative dose 20 mg</li> <li>• <b>IV/IO:</b> 2.5 mg slow IV push over 2 minutes; may repeat in 5 minutes until desired effect; maximum cumulative dose of 20 mg</li> </ul> </li> <li>▪ <b>Pediatric (7-14 years):</b> <ul style="list-style-type: none"> <li>• <b>&lt;34 kg:</b> <ul style="list-style-type: none"> <li>○ <b>IV/IO/IM:</b> 0.625 mg</li> </ul> </li> <li>• <b>34 to 57 kg:</b> <ul style="list-style-type: none"> <li>○ <b>IV/IO/IM:</b> 1.25 mg</li> </ul> </li> <li>• <b>&gt;57 to 68 kg:</b> <ul style="list-style-type: none"> <li>○ <b>IV/IO/IM:</b> 1.875 mg</li> </ul> </li> <li>• <b>&gt;68 kg:</b> <ul style="list-style-type: none"> <li>○ <b>IV/IO/IM:</b> 2.5 mg</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• Only proceed with chemical restraint if the patient is an ACTIVE threat to themselves or others</li> <li>• During sedation, the paramedic must be focused on continuous monitoring of the patient’s airway, breathing and circulation</li> <li>• Obese patients are at increased risk of apnea</li> <li>• Alcohol and sedative drugs combined create a heightened risk of apnea</li> </ul>

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# SEDATION

**INCLUSION Criteria:** Patients who require anxiolytic and sedation medications including amideate (Etomidate), diazepam (Valium), ketamine, lorazepam (Ativan), and midazolam (Versed)

**EXCLUSION Criteria:** Reversible causes of anxiety such as hypoglycemia, hypoxia, shock, and tension pneumothorax

**OTHER GUIDELINES TO CONSIDER:** Follow appropriate medical protocol first

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <b>Universal Care</b></li> <li>• Approach patient in a calm, non-threatening manner, both physically and in your conversation</li> <li>• Minimize external stimulation</li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• Utilize de-escalation techniques when needed</li> <li>• Request ALS</li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• Consider <b>IV/IO Access</b> if procedure does not increase anxiety</li> <li>• Consider the following options if available and without contraindications:                             <ul style="list-style-type: none"> <li>○ <b>Nitrous Oxide</b> <ul style="list-style-type: none"> <li>▪ <b>All ages:</b> <ul style="list-style-type: none"> <li>• Self-administered inhalation; 50% nitrous oxide and 50% oxygen</li> </ul> </li> </ul> </li> </ul> </li> <li>• Continuous <b>Cardiac Monitoring, Pulse Oximetry,</b> and <b>Waveform Capnography</b> required for any patient receiving sedation</li> <li>• <b>Procedural: Cardioversion</b> – conscious procedural sedation                             <ul style="list-style-type: none"> <li>○ <b>Fentanyl</b> <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> <ul style="list-style-type: none"> <li>• IV/IO: 100 mcg</li> </ul> </li> <li>▪ <b>Pediatric:</b> <ul style="list-style-type: none"> <li>• IV/IO: 1 mcg/kg; maximum single dose 100 mcg</li> </ul> </li> </ul> </li> </ul> </li></ul>
<b>INT</b>	
<b>PARA</b>	<ul style="list-style-type: none"> <li>• <b>Anxiety</b> - For moderate to severe anxiety consider <b>one</b> of the following options if available and without contraindications:                             <ul style="list-style-type: none"> <li>○ <b>Midazolam</b> <ul style="list-style-type: none"> <li>▪ <b>Adult (ages 12 years – 64 years):</b> <ul style="list-style-type: none"> <li>• IM/IN: 5 mg; may repeat every 10 minutes until desired effect</li> <li>• IV/IO: 2mg; may repeat every 3 minutes until desired effect</li> </ul> </li> <li>▪ <b>Pediatric (age &lt; 12 years):</b> <ul style="list-style-type: none"> <li>• IM/IN: 0.2 mg/kg; maximum single dose 10 mg; may repeat every 10 minutes until desired effect</li> <li>• IV/IO: 0.1 mg/kg; maximum single dose 10 mg; may repeat every 3 minutes until desired effect</li> </ul> </li> <li>▪ <b>Elderly (ages 65 years and older): (more prone to adverse reactions)</b> <ul style="list-style-type: none"> <li>• IM/IN: 2 mg; repeat every 10 minutes until desired effect</li> <li>• IV/IO: 1 mg; repeat every 3 minutes until desired effect</li> </ul> </li> </ul> </li> <li>○ <b>Lorazepam</b> <ul style="list-style-type: none"> <li>▪ <b>Adult (12 - 64 years):</b> <ul style="list-style-type: none"> <li>• IM: 0.5 mg; may repeat every 20 minutes as needed for anxiolytic effect</li> <li>• IV/IO: 0.5 mg; may repeat every 10 minutes as needed for anxiolytic effect</li> </ul> </li> <li>▪ <b>Pediatric (&lt;12 years):</b> <ul style="list-style-type: none"> <li>• IM: 0.1 mg/kg; max single dose 1 mg; may repeat in 20 minutes as needed</li> <li>• IV/IO: 0.1 mg/kg; max single dose 1 mg; may repeat every 5 minutes as needed</li> </ul> </li> <li>▪ <b>Elderly (65 years and older):</b> <ul style="list-style-type: none"> <li>• IM: 0.25 mg; may repeat in 20 minutes as needed for anxiolytic effect</li> <li>• IV/IO: 0.25 mg; may repeat in 10 minutes as needed for anxiolytic effect</li> </ul> </li> </ul> </li> <li>○ <b>Diazepam</b> <ul style="list-style-type: none"> <li>▪ <b>Adult (ages 12-64 years):</b> <ul style="list-style-type: none"> <li>• IV/IO: 5 mg IV/IO may repeat every 3 minutes as needed.</li> </ul> </li> <li>▪ <b>Pediatric (&lt;12 years):</b> <ul style="list-style-type: none"> <li>• IV/IO: 0.1 mg/kg max single dose 10 mg; may repeat every 3 minutes as needed</li> </ul> </li> <li>▪ <b>Elderly (65 years and older):</b> <ul style="list-style-type: none"> <li>• IV/IO: 2.5 mg IV/IO may repeat every 3 minutes as needed.</li> </ul> </li> </ul> </li> </ul> </li></ul>

<b>PARA</b>	<ul style="list-style-type: none"> <li>• <b>Procedural: Cardioversion</b> – conscious procedural sedation             <ul style="list-style-type: none"> <li>○ <b>Etomidate</b> <ul style="list-style-type: none"> <li>▪ <b>All ages</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 0.1 mg/kg; max single dose 10mg; may repeat once</li> </ul> </li> </ul> </li> <li>○ <b>Midazolam (if MAP &gt; 65 mmHg or age-appropriate)</b> <ul style="list-style-type: none"> <li>▪ <b>Adult (ages 12 years and older):</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 5mg; may repeat every 3 minutes until desired effect</li> </ul> </li> <li>▪ <b>Pediatric (&lt; 12 years):</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 0.1 mg/kg; maximum single dose 10 mg; may repeat every 3 minutes until desired effect</li> </ul> </li> </ul> </li> </ul> </li> <li>• <b>Airway Management</b> – If after successful airway placement patient demonstrates any signs of discomfort (increasing blood pressure, increasing heart rate, tearing, coughing, or gagging on invasive airway device, clinical signs of agitation) AND MAP &gt; 65 mmHg (adult) or age appropriate (pediatric), administer one or more of the following for <b>Sedation</b>:             <ul style="list-style-type: none"> <li>○ <b>Ketamine</b> <ul style="list-style-type: none"> <li>▪ <b>Ages ≥ 3 months:</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 2 mg/kg; maximum single dose 200 mg</li> </ul> </li> <li>▪ If after 2 minutes, patient not adequately sedated and MAP &gt; 65 mmHg or age appropriate administer:</li> </ul> </li> <li>○ <b>Midazolam</b> <ul style="list-style-type: none"> <li>▪ <b>Adult (ages 12 years – 64 years):</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 5mg; may repeat every 3 minutes until desired effect</li> </ul> </li> <li>▪ <b>Pediatric (age &lt; 12 years):</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 0.1 mg/kg; maximum single dose 10 mg; may repeat every 3 minutes until desired effect</li> </ul> </li> <li>▪ <b>Elderly (ages 65 years and older):</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 2 mg; repeat every 3 minutes until desired effect</li> </ul> </li> <li>▪ If patient not adequately sedated after subsequent doses and MAP &gt; 65 mmHg or age appropriate consider administration of one of the following narcotic medications:</li> </ul> </li> <li>○ <b>Fentanyl</b> <ul style="list-style-type: none"> <li>▪ <b>All ages:</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 1 mcg/kg max single dose 200 mcg; repeat every 5 minutes until desired effect</li> </ul> </li> </ul> </li> <li>○ <b>Morphine</b> <ul style="list-style-type: none"> <li>▪ <b>All ages &lt; 65 years:</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 0.1 mg/kg max single dose 10 mg; repeat every 10 minutes until desired effect</li> </ul> </li> <li>▪ <b>Elderly (age 65 years and older) OR otherwise impaired:</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 0.05 mg/kg; maximum initial dose 5 mg; may repeat every 10 minutes as needed for pain control</li> </ul> </li> </ul> </li> <li>○ <b>Hydromorphone</b> <ul style="list-style-type: none"> <li>▪ <b>All ages:</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 0.015 mg/kg max single dose 1 mg; repeat every 10 minutes until desired effect</li> </ul> </li> </ul> </li> </ul> </li> <li>• If sedation management measures are unsuccessful, <b>CONTACT ONLINE MEDICAL CONTROL</b> for further guidance and intervention</li> </ul>
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• All patients receiving sedation should be closely monitored for hypotension, respiratory depression, and signs of clinical deterioration</li> <li>• Blood pressure, heart rate, and continuous monitoring of SpO2, ETCO2, and ECG should be documented before administration, within 5 minutes of administration and throughout patient care</li> </ul>

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# SEIZURE

**INCLUSION Criteria:** Patients with suspected seizure or witnessed seizure activity

**EXCLUSION Criteria:** >20 weeks pregnant or up to 6 weeks post-delivery (see [Childbirth – Complications](#))

**OTHER GUIDELINES TO CONSIDER:** [Abdominal Pain](#), [Airway Management](#), [Brief Resolved Unexplained Event \(BRUE\)](#), [Cardiac Arrest](#), [Chest Pain/Acute Coronary Syndrome \(ACS\)](#), [Childbirth – Complications](#), [Hypoglycemia or Hyperglycemia](#), [Pain Management](#), [Suspected Stroke](#), [Traumatic Injuries](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• Protect the patient from harming themselves                         <ul style="list-style-type: none"> <li>○ Clear potential hazards away from patient</li> <li>○ Place a pillow or padding under the head</li> <li>○ Consider placing patient in recovery position, unless contraindicated</li> <li>○ Do not restrain patient</li> <li>○ Do not place anything in the patient’s mouth</li> </ul> </li> <li>• Consider <b>Advanced Life Support (ALS) Response</b> early for patients who are actively seizing or if patient is pregnant</li> <li>• Consider <a href="#">Pulse Oximetry</a> <ul style="list-style-type: none"> <li>○ If pulse oximetry is less than 93%, titrate <a href="#">Oxygen</a> to lowest level to maintain <a href="#">Pulse Oximetry</a> at 93% or greater</li> <li>○ Do not withhold oxygen if patient is having difficulty breathing or if unable to assess an oxygen saturation</li> <li>○ If respirations ineffective, support ventilation with <a href="#">Bag Valve Mask (BVM) Ventilation</a></li> </ul> </li> <li>• Obtain <a href="#">Blood Glucose</a> <ul style="list-style-type: none"> <li>○ Seizure should be treated before treating hypoglycemia</li> <li>○ If blood glucose &lt; 60, see <a href="#">Hypoglycemia or Hyperglycemia</a> guideline</li> </ul> </li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• Consider <a href="#">Cardiac Monitoring</a></li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• Consider <a href="#">IV/IO Access</a></li> <li>• If hypotensive or with clinical signs of poor perfusion, administer <a href="#">Fluid Bolus – IV/IO</a></li> </ul>
<b>INT</b>	<ul style="list-style-type: none"> <li>• Under <b>Wisconsin Scope of Practice</b>, Intermediate services may choose only ONE seizure medication (benzodiazepine). <a href="#">Midazolam</a> (Versed) is preferred.</li> <li>• If patient is actively seizing (generalized tonic-clonic, partial, absence, febrile) for more than 2 minutes or patient has recurrent seizures, consider <b>one</b> of the following benzodiazepines if available and without contraindications:                         <ul style="list-style-type: none"> <li>○ <a href="#">Midazolam</a> (IM administration preferred if IV access not established)                                 <ul style="list-style-type: none"> <li>▪ <b>Adult (ages 12 years and older):</b> <ul style="list-style-type: none"> <li>• <b>IM:</b> 10 mg; may repeat every 5 minutes until seizure stops</li> <li>• <b>IV/IO:</b> 5mg; may repeat every 3 minutes until seizure stops</li> </ul> </li> <li>▪ <b>Pediatric (age &lt; 12 years):</b> <ul style="list-style-type: none"> <li>• <b>IM:</b> &lt; 13 kg: 0.2 mg/kg; may repeat every 5 minutes until seizure stops</li> <li>• <b>IM: 13-40 kg:</b> 5 mg; may repeat every 5 minutes until seizure stops</li> <li>• <b>IM: &gt; 40 kg:</b> 10 mg; may repeat every 5 minutes until seizure stops</li> <li>• <b>IV/IO:</b> 0.1 mg/kg; maximum initial dose 5 mg; may repeat every 3 minutes until seizure stops</li> </ul> </li> </ul> </li> <li>○ <a href="#">Lorazepam</a> <ul style="list-style-type: none"> <li>▪ <b>Adult (Age &gt; 12 years):</b> <ul style="list-style-type: none"> <li>• <b>IM:</b> 4 mg; may repeat every 20 minutes until seizure stops</li> <li>• <b>IV/IO:</b> 2 mg; may repeat every 5 minutes until seizure stops</li> </ul> </li> <li>▪ <b>Pediatric (&lt;12 years):</b> <ul style="list-style-type: none"> <li>• <b>IM:</b> 0.1 mg/kg; max single dose 2 mg; may repeat every 20 minutes until seizure stops</li> <li>• <b>IV/IO:</b> 0.1 mg/kg; max single dose 2 mg; may repeat every 5 minutes until seizure stops</li> </ul> </li> </ul> </li> <li>○ <a href="#">Diazepam</a> <ul style="list-style-type: none"> <li>▪ <b>Adult (age &gt; 12 years):</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 5 mg; may repeat every 5 minutes until seizure stops</li> </ul> </li> <li>▪ <b>Pediatric (&lt;12 years):</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 0.1 mg/kg max single dose 10 mg; may repeat every 5 minutes until seizure stops</li> </ul> </li> </ul> </li> </ul> </li> <li>• Continuous <a href="#">Cardiac Monitoring</a>, <a href="#">Pulse Oximetry</a>, and <a href="#">Waveform Capnography</a> required for any patient receiving benzodiazepines</li> </ul>

<b>PARA</b>	<ul style="list-style-type: none"> <li>• If benzodiazepines are unavailable and patient is still seizing, consider:             <ul style="list-style-type: none"> <li>○ <a href="#">Ketamine</a> <ul style="list-style-type: none"> <li>▪ <b>Ages ≥ 3 months:</b> <ul style="list-style-type: none"> <li>▪ <b>IM:</b> 5 mg/kg; maximum single dose 500 mg</li> <li>▪ <b>IV/IO:</b> 1.5 mg/kg; maximum single dose 200 mg; may repeat 0.5 mg/kg every 5 minutes until seizure stops</li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• All patients receiving benzodiazepines should be closely monitored for hypotension, respiratory depression, and signs of clinical deterioration</li> <li>• Blood pressure, heart rate, and continuous monitoring of SpO2, ETCO2, and ECG should be documented before administration, within 5 minutes of administration and throughout patient care</li> <li>• Seizures typically last 1-3 minutes and may involve a loss of consciousness, abnormal behaviors or movements, or convulsions</li> <li>• Subtle indications of a seizure include:             <ul style="list-style-type: none"> <li>○ Persistent gaze deviation</li> <li>○ Jaw clenching</li> <li>○ Rhythmic eye or facial movements</li> <li>○ Focal stiffening</li> <li>○ Rhythmic twitching of an extremity</li> </ul> </li> <li>• Following a generalized seizure, individuals enter a postictal phase characterized by confusion, and in some cases, they may exhibit aggression or combativeness.</li> <li>• Do not delay IM medication administration to obtain IV access in an actively seizing patient</li> <li>• For suspected febrile seizures, gradually remove layers of clothing and consider applying cold packs. Administer antipyretic treatment only after the seizure has stopped (see <a href="#">Fever or Suspected Sepsis</a> guideline). Antipyretic medications provide relief from fever symptoms but do not stop the seizure.</li> <li>• Make sure to document medication amounts/routes/times given by bystanders</li> <li>• Note and report the following:             <ul style="list-style-type: none"> <li>○ Any apparent cause of seizure</li> <li>○ History of seizure</li> <li>○ Seizure medications: amount and time of last dose</li> <li>○ Seizure origin: whole body or one limb</li> <li>○ Presence of eye deviation prior to or during seizure</li> <li>○ Trauma to oral cavity</li> <li>○ Incontinence</li> <li>○ Patient’s sensorium and airway status during the postictal period, including time and duration of any confusion</li> </ul> </li> </ul>

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# SICKLE CELL PAIN

**INCLUSION Criteria:** Patient with known sickle cell disease

**EXCLUSION Criteria:** Pain due to acute traumatic injury; abdominal pain due to or related to pregnancy; sickle cell trait

**OTHER PROTOCOLS TO CONSIDER:**

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• Consider <a href="#">Pulse Oximetry</a>, <a href="#">Oxygen</a>, provide assisted ventilations as needed. If pulse ox is &lt;93% titrate oxygen to lowest level to maintain pulse ox 93% or greater. Do not withhold oxygen if patient is having difficulty breathing or if unable to assess an oxygen saturation</li> <li>• Assess for other serious complications of sickle cell disease</li> <li>• Keep patient warm and dry</li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• If patient has chest pain, acquire <a href="#">12 Lead ECG</a></li> <li>• Transmit ECG to hospital</li> <li>• Provide analgesia per Pain protocol</li> <li>• Transport in position of comfort unless a different clinical condition requires otherwise.</li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• If indicated, establish <a href="#">IV/IO Access</a> <ul style="list-style-type: none"> <li>○ <a href="#">Fluid Bolus – IV/IO</a> <ul style="list-style-type: none"> <li>▪ Give 10 ml/kg fluid bolus up to 1000 mL</li> </ul> </li> </ul> </li> <li>• If hypotensive or with clinical signs of poor perfusion, see <a href="#">Hypotension or Shock</a></li> </ul>
<b>INT</b>	
<b>PARA</b>	
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• Assess for potentially serious complications other than pain crisis which may include:                             <ul style="list-style-type: none"> <li>○ Acute chest syndrome- Chest pain, hypoxia, fever</li> <li>○ Stroke</li> <li>○ Meningitis- Headache, altered mental status, fever</li> <li>○ Septic arthritis- Severe pain in a single joint, fever</li> <li>○ Splenic sequestration crisis (usually young pediatric patients)- Abdominal pain, LUQ; splenic enlargement (examine with care); hypotension, tachycardia</li> <li>○ Severe anemia/aplastic anemia- Pallor, fatigue, dyspnea or dyspnea on exertion, shock</li> <li>○ Infections- ex. Pneumonia (cough, fever, sputum shortness of breath)</li> <li>○ Priapism- Painful, prolonged erection in the absence of sexual activity</li> <li>○ Venous thromboembolism- Calf pain, tenderness, swelling, chest/back pain especially with inspiration, shortness of breath</li> </ul> </li> </ul>

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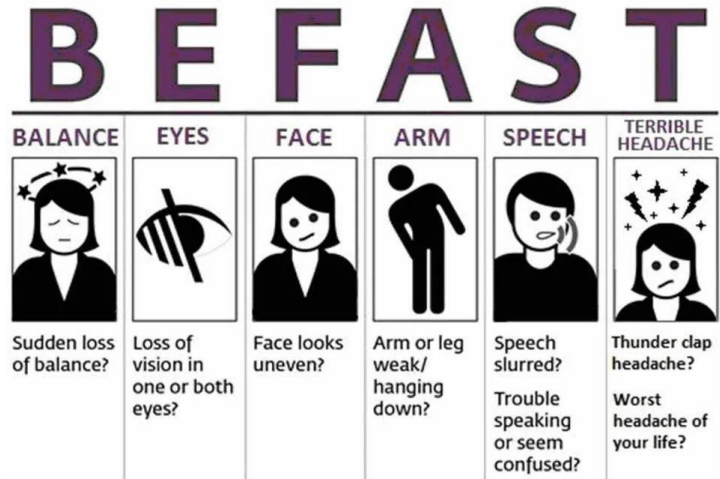
# SUSPECTED STROKE

**INCLUSION Criteria:** Patient has signs or symptoms consistent with possible stroke or a Transient Ischemic Attack (TIA)

**EXCLUSION Criteria:** Patients with symptoms that are readily resolved with treatment of hypoglycemia; patients with symptoms secondary to traumatic injury

**OTHER GUIDELINES TO CONSIDER:** [Airway Management](#), [Chest Pain/Acute Coronary Syndrome \(ACS\)](#), [Dizziness or Vertigo](#), [Hypoglycemia or Hyperglycemia](#), [Syncope](#), [Traumatic Injuries](#)

- [Universal Care](#)
- If patient has impaired protective reflexes:
  - Initiate [Suctioning](#), if indicated
- Position patient with:
  - Neck midline in neutral position
  - Head of bead elevated 30° if SBP > 90 mmHg
- Protect paralyzed limbs from injury
- Complete [Stroke Scale](#) using BE-FAST stroke screening tool
  - If at least one BE-FAST criteria is positive and last known well time is < 24 hours or unknown:
    - Perform SNOw exam for large vessel occlusion (LVO) stroke
      - **Speech:** unable to speak/expressive aphasia
      - **Neglect:** lack of awareness to one side of body; patient neglects one side of their body or surroundings
      - **Ocular deviation:** eye gaze deviates to one side only and patient cannot look past midline to other side
  - If BE-FAST criteria negative document:
    - Results of BE-FAST stroke screen
    - Last known well time
    - Time of symptom identification
    - History of anticoagulants



EMIR

LVO Large Vessel Occlusion Screening Criteria		
	ASSESSMENT	Positive if ANY:
<b>S</b> <i>Speech Changes</i>	1) Ask patient to repeat the phrase: "You can't teach an old dog new tricks"	Mute Speaking gibberish Trouble speaking or understanding Trouble following commands
<b>N</b> <i>Neglect</i>	<i>With patient's eyes closed:</i> 1) Touch patient's RIGHT hand 2) Touch patient's LEFT hand 3) Touch patient's R & L hand at the same time	Patient can only feel touch on ONE side
<b>O</b> <i>Ocular Deviation</i>	1) Ask patient to look to the right 2) Ask patient to look to the left	Obvious difficulty looking in one direction Both eyes deviate to one side & do not pass midline

- Check [Blood Glucose](#)
  - If blood glucose < 60, see [Hypoglycemia or Hyperglycemia](#) guideline
- Consider [Pulse Oximetry](#)
  - If pulse oximetry is less than 93%, titrate [Oxygen](#) to lowest level to maintain pulse oximetry at 93% or greater
  - Do not withhold oxygen if patient is having difficulty breathing or if unable to assess an oxygen saturation
  - If respirations ineffective, support ventilation with [Bag Valve Mask \(BVM\) Ventilation](#)

<b>EMT</b>	<ul style="list-style-type: none"> <li>• If BE-FAST or SNOw criteria negative:             <ul style="list-style-type: none"> <li>○ Transport to closest appropriate hospital</li> <li>○ Notify hospital of neuro/stroke alert as soon as possible</li> </ul> </li> <li>• If at least one SNOw criteria is positive and last known well time is &lt; 24 hours or unknown:             <ul style="list-style-type: none"> <li>○ Consider transport to the closest interventional stroke facility</li> <li>○ Notify hospital of neuro/stroke alert and potential LVO stroke as soon as possible</li> <li>○ Document:                 <ul style="list-style-type: none"> <li>▪ Results of BE-FAST &amp; SNOw stroke screen</li> <li>▪ Last known well time</li> <li>▪ Time of symptom identification</li> <li>▪ History of anticoagulants</li> </ul> </li> </ul> </li> <li>• If stroke suspected, DO NOT give medications to lower blood pressure unless directed by medical control             <ul style="list-style-type: none"> <li>○ If SBP &gt; 220 mg Hg or DBP &gt; 120 mmHg, <b>CONTACT ONLINE MEDICAL CONTROL</b></li> </ul> </li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• Consider <a href="#">IV/IO Access</a> <ul style="list-style-type: none"> <li>○ Do not delay transport to obtain IV access</li> </ul> </li> <li>• Consider <a href="#">Waveform Capnography</a></li> <li>• Consider <a href="#">Cardiac Monitoring</a></li> <li>• If hypotensive or with clinical signs of dehydration or poor perfusion, administer <a href="#">Fluid Bolus – IV/IO</a></li> </ul>
<b>INT</b>	
<b>PARA</b>	
<b>NOTES</b>	
	<ul style="list-style-type: none"> <li>• Bradycardia may be present in patients experiencing a stroke. Atropine is NOT to be given if the blood pressure is elevated</li> <li>• Presume a stroke until proven otherwise. Explore alternative conditions that mimic stroke:             <ul style="list-style-type: none"> <li>○ Alcohol intoxication</li> <li>○ Drug overdose</li> <li>○ Hypoglycemia</li> <li>○ Hypoxia</li> <li>○ Infection</li> <li>○ Seizure</li> <li>○ Migraine</li> <li>○ Neuropathies (Bell’s Palsy)</li> </ul> </li> </ul>

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- Interventional Stroke Hospitals**
- MILWAUKEE**  
Ascension St. Mary's  
Froedtert  
Aurora St. Luke's
  - MADISON**  
UW Madison
  - WAUKESHA**  
ProHealth Waukesha Memorial
  - ILLINOIS**  
Javon Bea -Riverside

**Suspected Stroke – All Levels**

- Initial medical care
- Check blood glucose and treat hypoglycemia per protocol
- DO NOT give meds to lower BP unless directed by medical control
  - Contact Medical Control if SBP > 220 mmHg or DBP > 120 mmHg
- Keep NPO
- Position patient with:
  - Neck midline in neutral position
  - Head of bed elevated 30° if SBP>90 mmHg

**Perform Neuro Exam Using BE FAST**

- Balance: Sudden loss of balance, sudden trouble walking, loss of coordination, vertigo
- Eyes: Sudden trouble seeing or loss of vision in one or both eyes
- Face weakness; have patient smile and look for unevenness of droop
- Arm or leg weakness that is sudden (have patient hold both arms out in front of them with eyes closed and look for drift)
- Speech: unable to speak, slurred or confused speech that is sudden (have patient say, "You can't teach an old dog new tricks.")
- Time: Last known well time
- Terrible headache: sudden, worst

At least one BE FAST criteria is positive

Last known well time is < 24 hours or unknown

- Transport to closest appropriate hospital
- Document:
  - Results of BE FAST stroke screen
  - Last known well time
  - Time of symptom identification
  - History of anticoagulants

**Perform SNOw Exam for Large Vessel Occlusion (LVO) Stroke**

- Speech: Unable to speak/expressive aphasia
- Neglect: lack of awareness; patient neglects one side of their body or one side of their surroundings
- Ocular deviation: eye gaze deviates to one side only and patient cannot look past midline to the other side

At least one SNOw criteria is positive

- Transport to closest appropriate hospital
- Notify hospital of neuro/stroke alert as soon as possible

- Transport; consider closest interventional stroke facility
- Notify hospital of neuro/stroke alert and potential LVO stroke as soon as possible

- Document:
  - Results of BE FAST & SNOw stroke screen
  - Last known well time
  - Time of symptom identification
  - History of anticoagulants

# SYNCOPE

**INCLUSION Criteria:** Patients with an episode of abrupt loss of consciousness with loss of postural tone with or without convulsions; unlike seizures, patient regains consciousness quickly and without postictal confusion

**EXCLUSION Criteria:** Patients with altered mental status or who do not quickly return to mental baseline or who have a loss of consciousness from other causes, such as trauma to the head

**OTHER GUIDELINES TO CONSIDER:** [Bradycardia – Adult \(8 Years & Older\)](#), [Bradycardia – Pediatric \(<8 Years Old\)](#), [Chest Pain/Acute Coronary Syndrome \(ACS\)](#), [Dizziness or Vertigo](#), [Hypoglycemia or Hyperglycemia](#), [Hypotension or Shock](#), [Seizure](#), [Suspected Stroke](#), [Tachycardia](#), [Overdose or Toxic Exposure](#), [Traumatic Injuries](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• Assist patient to position of comfort</li> <li>• Perform baseline neurological exam</li> <li>• Consider <a href="#">Suspected Stroke</a> as an etiology of presenting symptoms                             <ul style="list-style-type: none"> <li>○ Complete <a href="#">Stroke Scale</a> using BE-FAST stroke screening tool</li> </ul> </li> <li>• Check <a href="#">Blood Glucose</a> <ul style="list-style-type: none"> <li>○ If blood glucose &lt; 60, see <a href="#">Hypoglycemia or Hyperglycemia</a> guideline</li> </ul> </li> <li>• Consider <a href="#">Pulse Oximetry</a> <ul style="list-style-type: none"> <li>○ If pulse oximetry is less than 93%, titrate <a href="#">Oxygen</a> to lowest level to maintain pulse oximetry at 93% or greater</li> <li>○ Do not withhold oxygen if patient is having difficulty breathing or if unable to assess an oxygen saturation</li> <li>○ If respirations ineffective, support ventilation with <a href="#">Bag Valve Mask (BVM) Ventilation</a></li> </ul> </li> <li>• Consider obtaining orthostatic vital signs</li> <li>• Anticipate and search for other medical or traumatic etiology, see appropriate guideline                             <ul style="list-style-type: none"> <li>○ Metabolic: <a href="#">Hypoglycemia or Hyperglycemia</a>, <a href="#">Overdose or Toxic Exposure</a></li> <li>○ Cardiac: <a href="#">Tachycardia</a> or <a href="#">Bradycardia</a>; cardiac dysrhythmias</li> <li>○ Hypovolemia: <a href="#">Hypotension or Shock</a></li> <li>○ CNS Disorder: <a href="#">Suspected Stroke</a>, intracranial hemorrhage</li> <li>○ Sepsis: <a href="#">Fever or Suspected Sepsis</a></li> <li>○ Vascular: aortic dissection, aortic aneurysm, pulmonary embolism</li> <li>○ Obstetrical: ruptured ectopic pregnancy</li> </ul> </li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• Consider <a href="#">Cardiac Monitoring</a></li> <li>• <b>IF AUTHORIZED:</b> consider <a href="#">12 Lead ECG</a></li> <li>• Transmit ECG to hospital</li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• Consider <a href="#">IV/IO Access</a></li> <li>• If hypotensive or with clinical signs of dehydration or poor perfusion, administer <a href="#">Fluid Bolus – IV/IO</a></li> <li>• If patient is experiencing nausea or vomiting, consider:                             <ul style="list-style-type: none"> <li>○ <a href="#">Ondansetron</a> <ul style="list-style-type: none"> <li>▪ <b>Adult ≥ 12 years:</b> <ul style="list-style-type: none"> <li>• <b>ODT/PO/IV/IO:</b> 8 mg; one time only</li> <li>• <b>IM:</b> 8 mg one time only; use thigh or gluteal site only</li> </ul> </li> <li>▪ <b>Pediatric &lt; 12 years of age:</b> <ul style="list-style-type: none"> <li>• <b>PO/IV/IO:</b> 0.2 mg/kg; max initial dose 8 mg one time dose</li> <li>• <b>IM:</b> 0.2 mg/kg; maximum initial dose 8 mg one time dose; use thigh or gluteal site only</li> <li>• <b>ODT: Weight based dosing:</b> <ul style="list-style-type: none"> <li>○ 8-15 kg: 2 mg; one time only</li> <li>○ 15.1 kg to 30 kg: 4 mg; one time only</li> <li>○ &gt; 30 kg: 8 mg; one time only</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>INT</b>	
<b>PARA</b>	
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• Syncope is defined as a loss of consciousness. There are many causes, but the etiology is always due to a lack of oxygen or glucose in the brain from either a deficiency within the blood or the lack of sufficient blood flow to the brain</li> <li>• Orthostatic hypotension is characterized by a decrease in systolic blood pressure of 20 mmHg or more and/or an increase in pulse rate by 20 beats per minute or more</li> <li>• Checking orthostatic vital signs is contraindicated in patients that are already noted to be hypotensive</li> </ul>

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# OB/NEONATAL

[Childbirth](#)

[Childbirth - Complications](#)

[Neonatal Resuscitation](#)




























[OB - Complications](#)

# CHILDBIRTH

**INCLUSION Criteria:** Pregnant patients with suspected imminent delivery or visible crowning, or who are immediately postpartum

**EXCLUSION Criteria:** Patients who are not pregnant or with evidence of imminent delivery

**OTHER PROTOCOLS TO CONSIDER:** [Childbirth – Complications](#), [Neonatal Resuscitation](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <b>Universal Care</b></li> <li>• <b>If suspected imminent birth</b>, check for presentation by visualizing the perineum                             <ul style="list-style-type: none"> <li>○ If no crowning or bulging of perineum:                                     <ul style="list-style-type: none"> <li>▪ Recommend immediate transport in position of comfort, preferably on patient's left side, to patient's requested hospital if time and conditions allow or the nearest appropriate ED</li> <li>▪ Monitor for progression to imminent delivery</li> </ul> </li> </ul> </li> <li>• <b>If evidence of imminent delivery</b>, prepare OB kit and area for delivery                             <ul style="list-style-type: none"> <li>○ Apply PPE and do not initiate or continue transport</li> <li>○ If evidence of complication, see <a href="#">Childbirth – Complications</a></li> <li>○ In the absence of complication, place in supine position with knees flexed and legs apart</li> <li>○ Do not attempt to prevent or delay delivery</li> <li>○ Control rate of delivery of head by using the palm of your hand, applying gentle pressure to protect the perineum</li> <li>○ When head is delivered, check to see if cord is wrapped around baby's neck                                     <ul style="list-style-type: none"> <li>▪ If so, gently attempt to slip cord over baby's head if loose enough</li> <li>▪ If unable to remove, see <a href="#">Childbirth – Complications</a> guideline and <b>CONTACT ONLINE MEDICAL CONTROL</b></li> </ul> </li> <li>○ After delivery of the head, the baby's body rotates on its own so that the shoulders are in an anteroposterior position</li> <li>○ First, apply gentle downward pressure on the head to deliver the anterior shoulder under the symphysis.</li> <li>○ Next, apply gentle upward pressure on the head to deliver the bottom shoulder, followed by the lower body</li> <li>○ As baby delivers, maintain good grasp on body and head as baby will be slippery. Consider use of a towel</li> <li>○ Clamp and cut umbilical cord (minimum 6 inches from the neonate) unless already done. Consider waiting at least 1 minute post-delivery unless infant is unstable</li> </ul> </li> </ul>	<b>EMT</b>																								
<b>AEMT</b>		<b>INT</b>																								
<b>PARA</b>		<b>APGAR</b> Test Scoring																								
		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">Score 0</th> <th style="text-align: center;">Score 1</th> <th style="text-align: center;">Score 2</th> </tr> </thead> <tbody> <tr> <td><b>A</b>ppearance</td> <td style="text-align: center;"> Blue all over</td> <td style="text-align: center;"> Blue only at extremities</td> <td style="text-align: center;"> No blue coloration</td> </tr> <tr> <td><b>P</b>ulse</td> <td style="text-align: center;">No pulse</td> <td style="text-align: center;">&lt;100 beats/min.</td> <td style="text-align: center;">&gt;100 beats/min.</td> </tr> <tr> <td><b>G</b>rimace</td> <td style="text-align: center;"> No response to stimulation</td> <td style="text-align: center;"> Grimace or feeble cry when stimulated</td> <td style="text-align: center;"> Sneezing, coughing, or pulling away when stimulated</td> </tr> <tr> <td><b>A</b>ctivity</td> <td style="text-align: center;"> No movement</td> <td style="text-align: center;"> Some movement</td> <td style="text-align: center;"> Active movement</td> </tr> <tr> <td><b>R</b>espiration</td> <td style="text-align: center;">No breathing</td> <td style="text-align: center;">Weak, slow, or irregular breathing</td> <td style="text-align: center;">Strong cry</td> </tr> </tbody> </table>		Score 0	Score 1	Score 2	<b>A</b> ppearance	 Blue all over	 Blue only at extremities	 No blue coloration	<b>P</b> ulse	No pulse	<100 beats/min.	>100 beats/min.	<b>G</b> rimace	 No response to stimulation	 Grimace or feeble cry when stimulated	 Sneezing, coughing, or pulling away when stimulated	<b>A</b> ctivity	 No movement	 Some movement	 Active movement	<b>R</b> espiration	No breathing	Weak, slow, or irregular breathing	Strong cry
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<b>NOTES</b>	<p><b>Postpartum Care of Mother:</b></p> <ul style="list-style-type: none"> <li>• Assess for maternal bleeding and other signs of placental separation, such as lengthening of cord and pelvic cramping                             <ul style="list-style-type: none"> <li>○ Placenta should deliver in ~10-30 minutes</li> <li>○ Once delivered, place in plastic bag and bring to hospital</li> <li>○ Do not pull cord and do not delay transport awaiting delivery of placenta</li> </ul> </li> <li>• If evidence of perineal tear with bleeding, apply direct pressure with gauze</li> <li>• If evidence of continued vaginal bleeding, perform fundal massage, feeling for increased uterine tone or decreased bleeding. If no improvement, see <a href="#">Childbirth - Complications</a></li> </ul>	<p><b>Postpartum Care of Neonate:</b></p> <ul style="list-style-type: none"> <li>• If baby is term gestation (&gt;36 weeks), has good tone, and is breathing/crying                             <ul style="list-style-type: none"> <li>○ Provide warm environment, place infant on mother's chest, wipe neonate's mouth and nose with a towel, dry, cover and wrap in a clean blanket. Routine suctioning is no longer recommended</li> <li>○ Continue to observe breathing, activity and color</li> </ul> </li> <li>• Calculate APGAR at 1, 5, and 10 minutes</li> <li>• If baby is preterm (&lt;36 weeks), has abnormal tone, is not breathing/crying or APGAR is &lt;7:                             <ul style="list-style-type: none"> <li>○ See <a href="#">Neonatal Resuscitation</a></li> </ul> </li> </ul>
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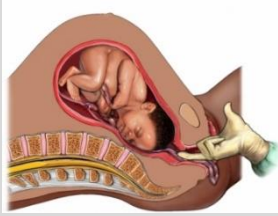

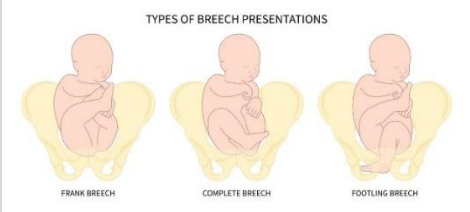
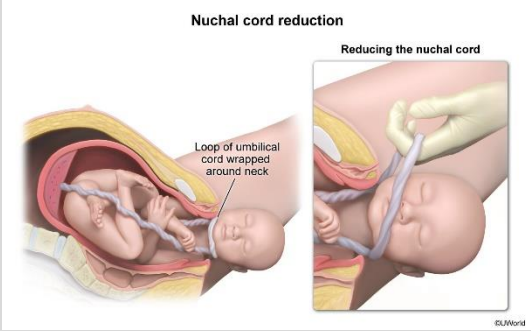
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# CHILDBIRTH - COMPLICATIONS

**INCLUSION Criteria:** Pregnant patients with evidence of complications found during childbirth or immediately postpartum

**EXCLUSION Criteria:** Patients who are not pregnant or immediately postpartum

**OTHER GUIDELINES TO CONSIDER:** [Airway Management](#), [Cardiac Arrest](#), [Childbirth](#), [Hypotension or Shock](#), [Neonatal Resuscitation](#), [Seizure](#)

EMR	EMT	AEMT	INT	PARA
<b>PROLAPSED UMBILICAL CORD</b>		<b>SHOULDER DYSTOCIA</b>		
<p>Cord precedes baby through the vagina</p> <ul style="list-style-type: none"> <li>Discourage mother from pushing</li> <li>Position mother in knee-chest or high Trendelenburg position</li> <li>Check for pulse in the cord:                             <ul style="list-style-type: none"> <li><b>If <math>\geq 100</math>:</b> transport and monitor; keep cord warm and moist</li> <li><b>If <math>&lt; 100</math> or absent:</b> Insert sterile, gloved hand into the vagina; hold back presenting part to achieve or maintain a pulse</li> </ul> </li> </ul> 		<p>Head presents, then withdraws and does not progress</p> <ul style="list-style-type: none"> <li>Discourage mother from pushing</li> <li>Support babies head if delivered, but <b>DO NOT PULL</b></li> <li>Reposition to hyperflex the mother’s legs; thighs to chest (McRoberts position)</li> <li>Using a flat, gloved hand apply suprapubic pressure; apply steady downward pressure just above the symphysis pubis, towards the side the fetus is facing to facilitate delivery</li> </ul> 		
<b>BREECH DELIVERY</b>		<b>NUCHAL CORD</b>		
<p>Presenting part is the buttocks, one or both feet, or single limb</p>  <ul style="list-style-type: none"> <li>Discourage mother from pushing</li> <li><b>If single limb or other abnormal presentation, DO NOT ATTEMPT field delivery;</b> position mother in high Trendelenburg; expeditious transport</li> <li>If only buttocks or lower extremities are delivered:                             <ul style="list-style-type: none"> <li><b>DO NOT PULL ON PRESENTING PART</b></li> <li>Stay on scene for <b>One Contraction Only</b> to attempt delivery of the head</li> <li>If the head does not deliver within 3 minutes after the arms deliver, position the fetal body in an attempt to bring the infant’s face into the perineal opening to create an airway</li> </ul> </li> </ul>		<p>Umbilical cord is looped around the newborn’s neck</p> <ul style="list-style-type: none"> <li>Discourage mother from pushing</li> <li>Support the head and attempt to slide the cord over the head</li> <li>If cord is too tight to dislodge and delivery continues, clamp the cord in two places and cut between the clamps; cord may be wrapped more than once</li> </ul> 		
<b>POSTPARTUM HEMORRHAGE</b>				
<p>Postpartum hemorrhage is defined as <math>&gt; 500</math> mL blood loss following vaginal delivery</p> <ul style="list-style-type: none"> <li>Encourage breastfeeding whenever possible to stimulate uterine contraction</li> <li>Perform fundal massage using a 2 handed technique with firm, direct pressure until uterus feels firm or vaginal bleeding decreases                             <ul style="list-style-type: none"> <li>Fundus can be felt near the maternal umbilicus</li> </ul> </li> <li>Consider <a href="#">Hypotension or Shock</a> guideline</li> <li>Consider <a href="#">IV/IO Access, IV Fluid Bolus</a></li> <li>If bleeding uncontrolled with fundal massage, and hypotension or signs of shock persist, consider:                             <ul style="list-style-type: none"> <li><b>Oxytocin (IM administration ONLY)</b> <ul style="list-style-type: none"> <li><b>IM: 10 units</b></li> </ul> </li> </ul> </li> </ul>				

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# NEONATAL RESUSCITATION

**INCLUSION Criteria:** Newborns > 22 weeks or unknown gestational age with an APGAR < 7 or who demonstrate ineffective or absent oxygenation, ventilation, or circulation following birth

**EXCLUSION Criteria:** Preterm newborns < 22 weeks gestational age (<10 inches long or < 300 grams) that are pulseless and/or apneic; infants > 48 hours old

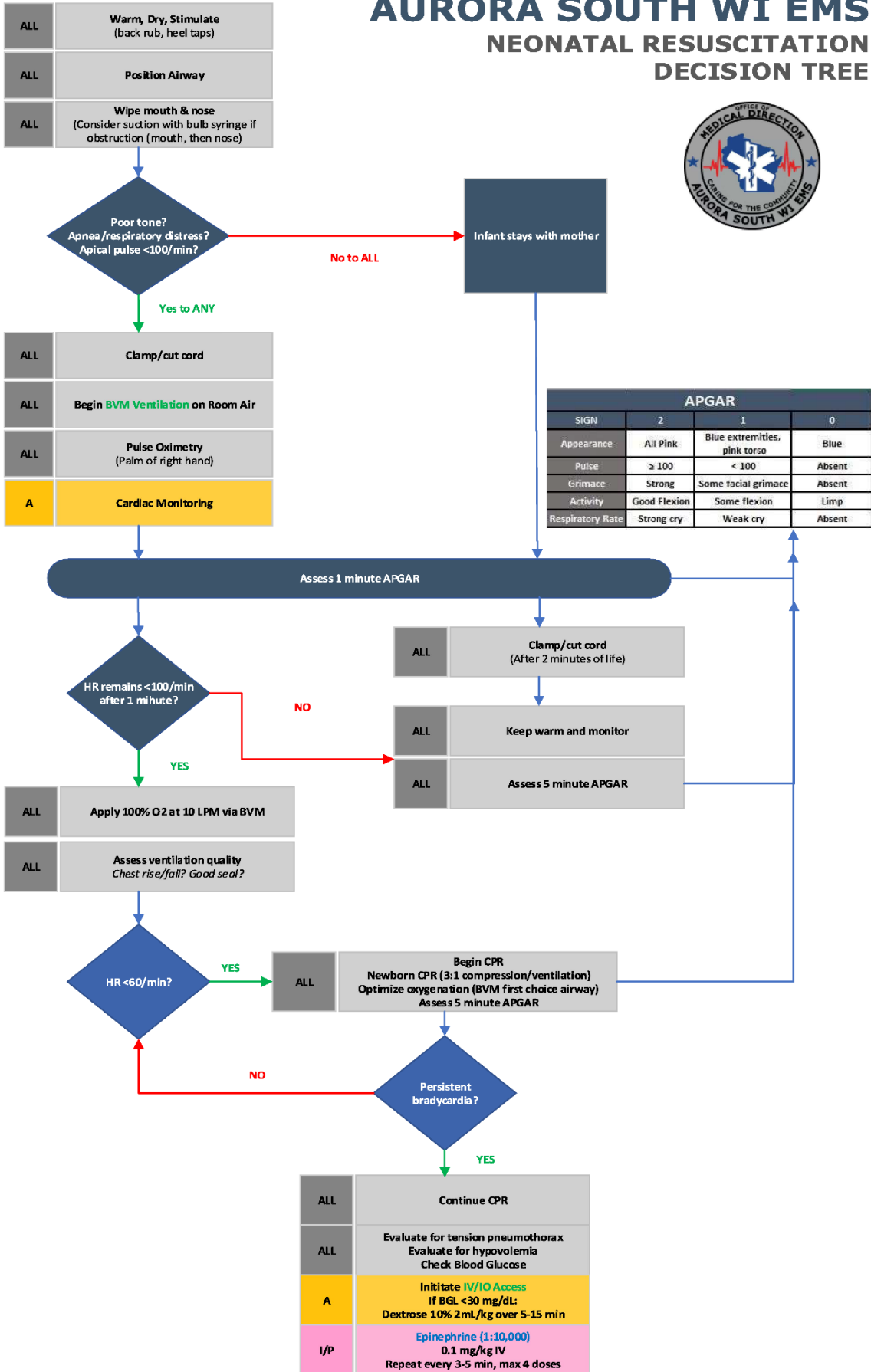
**OTHER PROTOCOLS TO CONSIDER:** [Airway Management](#), [Childbirth](#), [Childbirth - Complications](#)

<b>EMR</b>	<p style="color: red; font-weight: bold;">Remember: Ventilation of the baby's lungs is the <u><b>MOST</b></u> important and effective step during neonatal resuscitation.</p> <ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• Perform initial steps of newborn care:             <ul style="list-style-type: none"> <li>○ Warm, dry, and stimulate the baby by rubbing the back and flicking the soles of the feet</li> <li>○ Position the head and neck to open the airway</li> <li>○ Wipe mouth and nose; consider <a href="#">Suctioning</a> with a bulb syringe if evidence of obstruction</li> </ul> </li> <li>• Perform a rapid evaluation of the baby:             <ul style="list-style-type: none"> <li>○ <i>Does the baby have poor muscle tone (some flexion or limp)?</i></li> <li>○ <i>Is the baby apneic or in respiratory distress? (weak cry, grunting)</i></li> <li>○ <i>Is the apical pulse ≤ 100?</i> (use a stethoscope; count number of beats in 6 seconds and multiply by 10)                 <ul style="list-style-type: none"> <li>▪ If <b>NO</b> to <u><b>ALL</b></u> of the above, allow the baby to remain with the mother and continue newborn care on the mother's chest or abdomen                     <ul style="list-style-type: none"> <li>• Assess 1-minute APGAR                             <ul style="list-style-type: none"> <li>○ If HR &gt; 100:                                     <ul style="list-style-type: none"> <li>▪ Clamp/cut cord</li> <li>▪ Continue to keep baby warm and monitor</li> <li>▪ Assess 5-minute APGAR</li> </ul> </li> </ul> </li> <li>▪ If <b>YES</b> to <u><b>ANY</b></u> of the above, perform the following:                             <ul style="list-style-type: none"> <li>• Clamp or cut the cord</li> <li>• Begin <a href="#">Bag Valve Mask (BVM) Ventilation</a>, even if the baby is breathing; use neonatal BVM and ventilate 40-60 breaths/minute with BVM on room air; reassess in 30 seconds</li> <li>• <a href="#">Pulse Oximetry</a>; place on right palm</li> <li>• If authorized, initiate <a href="#">Cardiac Monitoring</a></li> <li>• Assess 1-minute APGAR and baby's response to <a href="#">Bag Valve Mask (BVM) Ventilation</a> <ul style="list-style-type: none"> <li>○ If HR ≥ 100 bpm = ventilation has been successful                                     <ul style="list-style-type: none"> <li>▪ Continue ventilating at a rate of 40-60 breaths/minute</li> <li>▪ Monitor baby's chest movement, heart rate, and respiratory effort every 30 seconds</li> <li>▪ BVM ventilations can be discontinued when:   <ul style="list-style-type: none"> <li>• HR is continuously &gt; 100 bpm with sustained spontaneous breathing</li> </ul> </li> </ul> </li> <li>○ If HR remains &lt; 100 bpm (HR ≥ 60 bpm, but &lt; 100 bpm)                                     <ul style="list-style-type: none"> <li>▪ Continue <a href="#">Bag Valve Mask (BVM) Ventilation</a>, even if the baby is breathing   <ul style="list-style-type: none"> <li>• Apply 100% <a href="#">Oxygen</a> 10 LPM; reassess in 30 seconds</li> <li>• Perform ventilation corrective steps (<b>MR. SOPA</b>) sequentially until you achieve chest movement with assisted breaths.</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> </ul> </li></ul></li></ul>																						
<b>EMT</b>	<table border="1" style="width: 100%; border-collapse: collapse; background-color: #e0e0e0;"> <thead> <tr> <th colspan="2" style="text-align: center; padding: 5px;">VENTILATION CORRECTIVE STEPS - MR. SOPA</th> </tr> </thead> <tbody> <tr> <td colspan="2" style="text-align: center; padding: 5px;">When one of the following steps results in chest movement, ventilate the infant for 30 seconds and reassess heart rate</td> </tr> <tr> <td style="width: 30px; text-align: center; padding: 5px;"><b>M</b></td> <td style="padding: 5px;"><b>Mask:</b> Reapply the mask on face &amp; lift the jaw forward; consider the 2-hand hold to achieve a good seal</td> </tr> <tr> <td style="width: 30px; text-align: center; padding: 5px;"><b>R</b></td> <td style="padding: 5px;"><b>Reposition:</b> Reposition the head to open the airway; ear to sternal notch</td> </tr> <tr> <td colspan="2" style="text-align: center; padding: 5px;"><i>Give 5 breaths &amp; assess chest movement. If no chest movement, do next steps.</i></td> </tr> <tr> <td style="width: 30px; text-align: center; padding: 5px;"><b>S</b></td> <td style="padding: 5px;"><b>Suction:</b> Use bulb syringe to suction mouth, then nose</td> </tr> <tr> <td style="width: 30px; text-align: center; padding: 5px;"><b>O</b></td> <td style="padding: 5px;"><b>Open:</b> Use a finger to gnetly open mouth</td> </tr> <tr> <td colspan="2" style="text-align: center; padding: 5px;"><i>Give 5 breaths &amp; assess chest movement. If no chest movement, do next steps.</i></td> </tr> <tr> <td style="width: 30px; text-align: center; padding: 5px;"><b>P</b></td> <td style="padding: 5px;"><b>Pressure:</b> Gradually increase pressure (not rate) every few breaths until visible chest rise is noted</td> </tr> <tr> <td colspan="2" style="text-align: center; padding: 5px;"><i>Give 5 breaths &amp; assess chest movement. If no chest movement, do next steps.</i></td> </tr> <tr> <td style="width: 30px; text-align: center; padding: 5px;"><b>A</b></td> <td style="padding: 5px;"><b>Advanced Airway:</b> i-gel first; if not effective, consider ETT</td> </tr> </tbody> </table>	VENTILATION CORRECTIVE STEPS - MR. SOPA		When one of the following steps results in chest movement, ventilate the infant for 30 seconds and reassess heart rate		<b>M</b>	<b>Mask:</b> Reapply the mask on face & lift the jaw forward; consider the 2-hand hold to achieve a good seal	<b>R</b>	<b>Reposition:</b> Reposition the head to open the airway; ear to sternal notch	<i>Give 5 breaths &amp; assess chest movement. If no chest movement, do next steps.</i>		<b>S</b>	<b>Suction:</b> Use bulb syringe to suction mouth, then nose	<b>O</b>	<b>Open:</b> Use a finger to gnetly open mouth	<i>Give 5 breaths &amp; assess chest movement. If no chest movement, do next steps.</i>		<b>P</b>	<b>Pressure:</b> Gradually increase pressure (not rate) every few breaths until visible chest rise is noted	<i>Give 5 breaths &amp; assess chest movement. If no chest movement, do next steps.</i>		<b>A</b>	<b>Advanced Airway:</b> i-gel first; if not effective, consider ETT
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<b>EMR</b>	<ul style="list-style-type: none"> <li>• If HR &lt; 60 bpm                             <ul style="list-style-type: none"> <li>○ Begin CPR                                     <ul style="list-style-type: none"> <li>▪ Chest compressions are indicated when the HR remains &lt; 60 bpm despite at least 30 seconds of BVM ventilations that inflate the lungs (chest rise/fall)</li> <li>▪ Newborn CPR 3:1 (compressions:ventilations)</li> <li>▪ Place your thumbs in the center of the sternum, just below the nipple line</li> <li>▪ Encircle the torso with both hands</li> <li>▪ Support the back with your fingers (fingers do not need to touch each other)</li> <li>▪ Use enough downward pressure to depress the sternum 1/3 of the anterior-posterior diameter of the chest</li> </ul> </li> </ul> </li> <li>• Optimize oxygenation (<i>See Target Oxygen Saturation Table</i>)                             <ul style="list-style-type: none"> <li>○ BVM is first choice airway</li> <li>○ If BVM ventilations ineffective, if authorized, consider advanced airway (<a href="#">i-gel®</a> or <a href="#">Endotracheal Intubation</a>)                                     <ul style="list-style-type: none"> <li>▪ <a href="#">i-gel®</a> should be a first back up if appropriate size is available</li> <li>▪ Intubation should be a last resort; the time taken to intubate the baby successfully is time taken away from providing good ventilations</li> </ul> </li> </ul> </li> </ul>	<b>EMT</b>																			
		<ul style="list-style-type: none"> <li>• Assess 5-minute APGAR                             <ul style="list-style-type: none"> <li>○ If persistent bradycardia (HR &lt; 60 bpm):                                     <ul style="list-style-type: none"> <li>▪ Continue CPR</li> <li>▪ Check <a href="#">Blood Glucose</a></li> </ul> </li> </ul> </li> </ul>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #cccccc;"> <th colspan="2">Target Oxygen Saturation Table</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1 min</td> <td style="text-align: center;">60% - 65%</td> </tr> <tr> <td style="text-align: center;">2 min</td> <td style="text-align: center;">65% - 70%</td> </tr> <tr> <td style="text-align: center;">3 min</td> <td style="text-align: center;">70% - 75%</td> </tr> <tr> <td style="text-align: center;">4 min</td> <td style="text-align: center;">75% - 80%</td> </tr> <tr> <td style="text-align: center;">5 min</td> <td style="text-align: center;">80% - 85%</td> </tr> <tr> <td style="text-align: center;">10 min</td> <td style="text-align: center;">85% - 95%</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #cccccc;"> <th colspan="2">Initial Oxygen Concentration by PPV</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">≥ 35 weeks' GA</td> <td style="text-align: center;">21% oxygen</td> </tr> <tr> <td style="text-align: center;">≤ 35 weeks' GA</td> <td style="text-align: center;">21%-30% oxygen</td> </tr> </tbody> </table>	Target Oxygen Saturation Table		1 min	60% - 65%	2 min	65% - 70%	3 min	70% - 75%	4 min	75% - 80%	5 min	80% - 85%	10 min	85% - 95%	Initial Oxygen Concentration by PPV		≥ 35 weeks' GA	21% oxygen
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<b>AEMT</b>	<ul style="list-style-type: none"> <li>• If <a href="#">Blood Glucose</a> ≤ 30 mg/dl:                             <ul style="list-style-type: none"> <li>○ <a href="#">Dextrose</a> 10% 2 mL/kg over 5-15 minutes</li> </ul> </li> <li>• Evaluate for tension pneumothorax</li> <li>• Evaluate for hypovolemia</li> <li>• Initiate <a href="#">IV/IO Access</a></li> <li>• Consider <a href="#">Fluid Bolus – IV/IO</a>:                             <ul style="list-style-type: none"> <li>○ <b>Normal Saline</b> 10 mL/kg slow, steady infusion over 5-10 minutes; use caution in preterm newborns &lt; 32 weeks gestation</li> </ul> </li> </ul>																				
<b>INT</b>	<ul style="list-style-type: none"> <li>• If HR remains &lt; 60 bpm after 30 seconds of BVM ventilation that inflate the lungs as evidenced by chest movement, <b>AND</b> another 60 seconds of chest compressions coordinated with BVM ventilations using 100% oxygen, consider:                             <ul style="list-style-type: none"> <li>○ <a href="#">Epinephrine (1:10,000)</a> <ul style="list-style-type: none"> <li>▪ <b>IV/IO:</b> 0.01 mg/kg followed by a 3-mL flush; may repeat every 3 minutes; maximum 4 doses</li> </ul> </li> </ul> </li> </ul>																				
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Initiated: 2/26/2024	Last Review/Revision Date:	Next Review Date: 6/1/2025
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# AURORA SOUTH WI EMS NEONATAL RESUSCITATION DECISION TREE



# OB COMPLICATIONS

**INCLUSION Criteria:** Pregnant patients ≥ 20 weeks gestation or up to 4 weeks postpartum with seizure, history of hypertensive disorder in pregnancy with SBP > 140 mmHg or DBP > 90 mmHg, or severe preeclampsia with SBP > 160 mmHg or DBP > 110 mmHg with additional signs or symptoms that include, but are not limited to, headache, visual disturbances, or altered mental status.

**EXCLUSION Criteria:** None

**OTHER GUIDELINES TO CONSIDER:** [Childbirth](#), [Childbirth - Complications](#), [Seizure](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• Place in position of comfort                             <ul style="list-style-type: none"> <li>○ If patient is hypotensive, place in left lateral recumbent position</li> </ul> </li> <li>• Maintain an open airway, use airway adjuncts as needed</li> <li>• If <a href="#">Altered Mental Status</a> or <a href="#">Seizure</a>, check <a href="#">Blood Glucose</a></li> <li>• Request ALS</li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• Initiate <a href="#">Cardiac Monitoring</a> to identify rhythm</li> <li>• <b>IF AUTHORIZED:</b> acquire <a href="#">12 Lead ECG</a> when condition permits                             <ul style="list-style-type: none"> <li>○ Transmit ECG to hospital</li> </ul> </li> <li>• Consider <a href="#">Waveform Capnography</a></li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• Establish <a href="#">IV/IO Access</a></li> </ul>
<b>INT</b>	<ul style="list-style-type: none"> <li>• <b>Seizure:</b> If patient is actively seizing, administer:                             <ul style="list-style-type: none"> <li>○ <a href="#">Midazolam</a> <ul style="list-style-type: none"> <li>▪ <b>IM:</b> 10 mg; may repeat every 5 minutes until seizure stops</li> <li>▪ <b>IV/IO:</b> 5 mg; may repeat every 3 minutes until seizure stops</li> </ul> </li> <li>○ If midazolam unavailable, administer an alternate benzodiazepine per <a href="#">Seizure</a> guideline</li> </ul> </li> </ul>
<b>PARA</b>	<ul style="list-style-type: none"> <li>• <b>Sustained hypertension without seizure:</b> SBP &gt; 160 or DBP &gt; 110 over 2 consecutive readings 15 minutes apart with:                             <ul style="list-style-type: none"> <li>○ Associated symptoms: Altered mental status, visual disturbances, and/or headache, administer:                                     <ul style="list-style-type: none"> <li>▪ <a href="#">Magnesium Sulfate</a> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 4 grams in 20 mL NS/D5W <i>slowly</i> over 10 minutes</li> </ul> </li> <li>▪ If following magnesium administration, SBP &gt; 160 and/or DBP &gt; 110 over 2 consecutive readings 15 minutes apart, administer:   <ul style="list-style-type: none"> <li>• <a href="#">Labetalol</a> <ul style="list-style-type: none"> <li>○ IV/IO: 20 mg <i>slowly</i> over 2 minutes</li> </ul> </li> </ul> </li> </ul> </li> <li>○ NO associated symptoms, administer:                                     <ul style="list-style-type: none"> <li>▪ <a href="#">Labetalol</a> <ul style="list-style-type: none"> <li>• IV/IO: 20 mg <i>slowly</i> over 2 minutes</li> </ul> </li> </ul> </li> </ul> </li> <li>• <b>Actively Seizing:</b> <ul style="list-style-type: none"> <li>○ If not already given, administer:                                     <ul style="list-style-type: none"> <li>▪ <a href="#">Midazolam</a> <ul style="list-style-type: none"> <li>• <b>IM:</b> 10 mg</li> <li>• <b>IV/IO:</b> 5 mg</li> </ul> </li> <li>▪ <a href="#">Magnesium Sulfate</a> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 4 grams in 20 mL NS/D5W <i>slowly</i> over 4 minutes</li> </ul> </li> </ul> </li> <li>○ If seizure is unresolved or reoccurs, repeat benzodiazepines per <a href="#">Seizure</a> Guideline</li> </ul> </li> <li>• <b>Post seizure, including postictal state:</b> <ul style="list-style-type: none"> <li>○ If not already given, administer:                                     <ul style="list-style-type: none"> <li>▪ <a href="#">Magnesium Sulfate</a> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 4 grams in 20 mL NS/D5W <i>slowly</i> over 10 minutes</li> </ul> </li> <li>▪ If BP remains high, SBP &gt; 160 or DBP &gt; 110 over 2 consecutive readings 15 minutes apart, administer:   <ul style="list-style-type: none"> <li>• <a href="#">Labetalol</a> <ul style="list-style-type: none"> <li>○ IV/IO: 20 mg <i>slowly</i> over 2 minutes</li> </ul> </li> </ul> </li> </ul> </li> <li>▪ If seizure is unresolved or reoccurs, repeat benzodiazepines per <a href="#">Seizure</a> Guideline</li> </ul> </li> </ul>

<b>NOTES</b>	<ul style="list-style-type: none"> <li>• <b>Definitions:</b> <ul style="list-style-type: none"> <li>○ <b>Preeclampsia</b> is a hypertensive disorder in pregnancy. The initial parameters for diagnosis are defined as a SBP &gt; 140 mmHg and/or DBP &gt; 90 on 2 occasions at least 4 hours apart. Signs and symptoms of preeclampsia include:                             <ul style="list-style-type: none"> <li>▪ Persistent and/or severe headache</li> <li>▪ Visual abnormalities such as blurred vision or photophobia</li> <li>▪ Upper abdominal pain</li> <li>▪ Altered mental status, including confusion or agitated behavior</li> <li>▪ New shortness of breath</li> <li>▪ Nausea or vomiting</li> <li>▪ Sudden weight gain or edema, especially in the face and hands</li> </ul> </li> <li>○ <b>Severe preeclampsia</b> is defined as SBP&gt;160 and/or DBP &gt;110 over 2 consecutive readings 15 minutes apart with associated symptoms such as altered mental status, visual disturbances, and/or headache</li> <li>○ <b>Eclampsia</b> is defined as the new onset of generalized tonic-clonic seizures in a woman with preeclampsia</li> </ul> </li> <li>• If patient is actively seizing, request a paramedic unit, and if not available, do not delay transport             <ul style="list-style-type: none"> <li>○ If available, do not delay IM benzodiazepine administration while attempting to start an IV</li> </ul> </li> <li>• Nitroglycerin has not had any large studies in preeclampsia and is not recommended as a first- or second-line agent to treat hypertension associated with preeclampsia or eclampsia</li> </ul>
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# PEDIATRIC

[Bradycardia – Pediatric \(<8 Years Old\)](#)

[Brief Resolved Unexplained Event \(BRUE\)](#)

# BRADYCARDIA – PEDIATRIC (<8 YEARS OLD)

**INCLUSION Criteria:** Children < 8 years old; heart rate less than age-appropriate lower limit of normal **AND** SBP less than age-appropriate lower limit of normal **WITH** clinical signs of poor perfusion (altered mental status, lethargy, weakness, lightheadedness, fatigue, complaints of chest pain, difficulty breathing, hypoxia, pallor, and diaphoresis)

**EXCLUSION Criteria:** Children ≥ 8 years old; Neonates

**OTHER GUIDELINES TO CONSIDER:** [Airway Management](#), [Chest Pain/Acute Coronary Syndrome \(ACS\)](#), [Cardiac Arrest](#), [Difficulty Breathing](#), [Dizziness or Vertigo](#), [Hypotension or Shock](#), [Neonatal Resuscitation](#), [Overdose or Toxic Exposure](#), [Syncope](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• Request ALS response</li> <li>• Assess appropriateness for clinical condition                             <ul style="list-style-type: none"> <li>○ HR typically &lt; 60 if bradyarrhythmia; is the bradycardia causing:                                     <ul style="list-style-type: none"> <li>▪ Hypotension</li> <li>▪ Acutely <a href="#">Altered Mental Status</a></li> <li>▪ Signs of shock</li> </ul> </li> </ul> </li> <li>• If patient unconscious and unresponsive to pain or if respirations ineffective, support ventilation with <a href="#">Bag Valve Mask (BVM) Ventilation</a></li> <li>• Initiate <a href="#">Pulse Oximetry</a> <ul style="list-style-type: none"> <li>○ If pulse oximetry is less than 93%, titrate <a href="#">Oxygen</a> to lowest level to maintain pulse oximetry at 93% or greater</li> <li>○ Do not withhold oxygen if patient is having difficulty breathing or if you don't have the ability to assess an oxygen saturation</li> </ul> </li> <li>• Consider <a href="#">Airway Management</a></li> <li>• If heart rate &lt; 60 with signs of poor perfusion despite oxygenation and ventilation after 30-60 seconds, begin CPR                             <ul style="list-style-type: none"> <li>○ See <a href="#">Cardiac Arrest</a></li> </ul> </li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• Initiate <a href="#">Cardiac Monitoring</a> to identify rhythm</li> <li>• <b>IF AUTHORIZED:</b> acquire <a href="#">12 Lead ECG</a> when condition permits                             <ul style="list-style-type: none"> <li>○ Transmit ECG to hospital</li> </ul> </li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• If bradycardia persists and HR &lt; 60, continue CPR and reassess every 2 minutes</li> <li>• Establish <a href="#">IV/IO Access</a></li> <li>• If hypotensive or with clinical signs of dehydration or poor perfusion, administer <a href="#">Fluid Bolus – IV/IO</a> <ul style="list-style-type: none"> <li>○ 20 mL/kg over 10 minutes</li> <li>○ May repeat as needed to maximum of 60 mL/kg</li> </ul> </li> <li>• <a href="#">Identify and treat possible underlying causes</a> <ul style="list-style-type: none"> <li>○ Hypothermia</li> <li>○ Hypoxia</li> <li>○ Medication or toxin effect</li> </ul> </li> </ul>
<b>INT</b>	<ul style="list-style-type: none"> <li>• If bradycardia persists and child is hypotensive or with clinical signs of dehydration or poor perfusion, consider:                             <ul style="list-style-type: none"> <li>○ <a href="#">Epinephrine 1:10,000 Push Dose</a> <ul style="list-style-type: none"> <li>▪ <b>Pediatric &lt; 50 kg:</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 0.001 mg/kg; maximum initial dose 0.05 mg; may repeat every 3-5 minutes for a maximum of 4 doses</li> </ul> </li> </ul> </li> </ul> </li> <li>• If bradycardia persists and HR &lt; 60, continue CPR and reassess every 2 minutes; see <a href="#">Cardiac Arrest</a> <ul style="list-style-type: none"> <li>○ <a href="#">Epinephrine 1:10,000</a> <ul style="list-style-type: none"> <li>▪ <b>Pediatric:</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 0.01 mg/kg every 3-5 minutes as needed; maximum initial dose 1 mg; maximum of 4 doses</li> </ul> </li> </ul> </li> </ul> </li> <li>• If bradycardia persists with suspected primary AV-block or increased vagal tone, consider:                             <ul style="list-style-type: none"> <li>○ <a href="#">Atropine</a> <ul style="list-style-type: none"> <li>▪ <b>Pediatric:</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 0.02 mg/kg; minimum dose 0.1 mg; maximum single dose 1.0 mg; may repeat one additional dose</li> </ul> </li> </ul> </li> </ul> </li> <li>• For unstable patients with a pulse who are not responding to previous interventions, consider:                             <ul style="list-style-type: none"> <li>○ <a href="#">Transcutaneous Cardiac Pacing (TCP)</a></li> </ul> </li> </ul>

<b>PARA</b>	<ul style="list-style-type: none"> <li>• For known or suspected calcium channel blocker or beta blocker overdose not responding to Epinephrine, administer:             <ul style="list-style-type: none"> <li>○ <b>Calcium Chloride (10%):</b> <ul style="list-style-type: none"> <li>▪ <b>Pediatric (&lt; Age 8 years)</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 20 mg/kg <i>slowly</i> over 10 minutes; maximum single dose 1 gram; may repeat initial dose once in 15 minutes if symptoms persist</li> </ul> </li> </ul> </li> <li>○ <b>Calcium Gluconate:</b> <ul style="list-style-type: none"> <li>▪ <b>Pediatric (&lt; Age 8 years)</b> <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 60 mg/kg <i>slowly</i> over 5 minutes; may repeat initial dose once in 15 minutes if symptoms persist; maximum single dose 3000 mg; may repeat for a total of three (3) doses</li> </ul> </li> </ul> </li> </ul> </li> </ul>																																													
<b>NOTES</b>	<p><b>MEDICATIONS THAT CAUSE BRADYCARDIA:</b></p> <ul style="list-style-type: none"> <li>• Bradycardia in children is most often caused by hypoxia, therefore, optimizing oxygenation and ventilation is critical</li> <li>• <b>MEDICATIONS THAT CAUSE BRADYCARDIA:</b> <ul style="list-style-type: none"> <li>○ <b>Beta-blockers:</b> <ul style="list-style-type: none"> <li>○ (metoprolol, atenolol, labetalol, sotalol, propranolol, carvedilol, pindolol, nadolol)</li> </ul> </li> <li>○ <b>Calcium channel blockers:</b> <ul style="list-style-type: none"> <li>○ (amlodipine, diltiazem, felodipine, isradipine, nicardipine, nifedipine, verapamil)</li> </ul> </li> <li>○ <b>Digitalis:</b> <ul style="list-style-type: none"> <li>○ (Digoxin, Lanoxin, Digitek, Lanoxicaps)</li> </ul> </li> </ul> </li> </ul> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr style="background-color: #2c3e50; color: white;"> <th colspan="5">PEDIATRIC VITAL SIGNS</th> </tr> <tr style="background-color: #34495e; color: white;"> <th>Age</th> <th>Pulse</th> <th>Respiratory Rate</th> <th>Systolic BP Lowest Normal</th> <th>Lowest Normal MAP</th> </tr> </thead> <tbody> <tr> <td>Newborn</td> <td>120-160</td> <td>30-60</td> <td>60</td> <td>40</td> </tr> <tr> <td>Up to 1 year</td> <td>100-140</td> <td>30-60</td> <td>70</td> <td>42</td> </tr> <tr> <td>1-3 years</td> <td>100-140</td> <td>20-40</td> <td>76</td> <td>45</td> </tr> <tr> <td>4-6 years</td> <td>80-120</td> <td>20-30</td> <td>80</td> <td>48</td> </tr> <tr> <td>7-9 years</td> <td>80-120</td> <td>16-24</td> <td>84</td> <td>52</td> </tr> <tr> <td>10-12 years</td> <td>80-120</td> <td>16-20</td> <td>90</td> <td>55</td> </tr> <tr> <td>13-14 years</td> <td>60-100</td> <td>16-20</td> <td>90</td> <td>60</td> </tr> </tbody> </table>	PEDIATRIC VITAL SIGNS					Age	Pulse	Respiratory Rate	Systolic BP Lowest Normal	Lowest Normal MAP	Newborn	120-160	30-60	60	40	Up to 1 year	100-140	30-60	70	42	1-3 years	100-140	20-40	76	45	4-6 years	80-120	20-30	80	48	7-9 years	80-120	16-24	84	52	10-12 years	80-120	16-20	90	55	13-14 years	60-100	16-20	90	60
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Initiated: 2/26/2024	Last Review/Revision Date:	Next Review Date: 6/1/2025
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# BRIEF RESOLVED UNEXPLAINED EVENT (BRUE)

**INCLUSION Criteria:** An event in an infant <1 year of age, reported by bystander that meets BRUE criteria below

**EXCLUSION Criteria:** An infant with any of the following present: Ill appearing, abnormal vital signs, vomiting, signs of trauma, noisy breathing, respiratory distress, or color change involving only redness or isolated perioral hand/feet cyanosis

**OTHER GUIDELINES TO CONSIDER:** [Airway Management](#), [Altered Mental Status](#), [Difficulty Breathing](#), [Traumatic Injuries](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• The term BRUE is defined as an event occurring in an infant &lt;1 year of age, when an observer reports a sudden, brief, and now completely resolved episode. Recognize most infants will appear to be in no apparent distress or have any abnormal findings on EMS assessment. A BRUE includes one or more of the following:                         <ul style="list-style-type: none"> <li>○ Color change (central cyanosis or pallor)</li> <li>○ Absent, decreased, or irregular breathing</li> <li>○ Marked change in muscle tone</li> <li>○ Altered level of responsiveness</li> </ul> </li> <li>• If the parent/guardian is refusing EMS transport, and they will not take the patient to the hospital, <b>CONTACT ONLINE MEDICAL CONTROL</b> for physician counseling before completing the refusal</li> <li>• Continuous <a href="#">Pulse Oximetry</a>, if available</li> <li>• Consider <a href="#">Oxygen</a>, provide assisted ventilations as needed</li> <li>• If pulse ox &lt;93% titrate oxygen to lowest level to maintain pulse ox 93% or greater. Do not withhold oxygen if patient is having difficulty breathing or if unable to assess an oxygen saturation</li> <li>• <b>IF AUTHORIZED:</b> obtain <a href="#">Blood Glucose</a> measurement</li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• Suction excessive secretions from the nose and/or mouth</li> <li>• Acquire <a href="#">12 Lead ECG</a></li> <li>• Transmit ECG to hospital</li> <li>• All infants with BRUE should be transported to an ED for evaluation. Consider direct transport to a children’s hospital if infant has high risk criteria:                         <ul style="list-style-type: none"> <li>○ Less than 2 months of age</li> <li>○ History of prematurity (less than 32 weeks gestation)</li> <li>○ More than one BRUE, now or in the past</li> <li>○ Event duration greater than 1 minute</li> <li>○ CPR or resuscitation by caregivers or trained rescuers</li> </ul> </li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• If hypotensive or with clinical signs of poor perfusion, establish <a href="#">IV/IO Access</a> and administer <a href="#">Fluid Bolus – IV/IO</a></li> </ul>
<b>INT</b>	
<b>PARA</b>	
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• BRUE is a group of symptoms, not a disease process</li> <li>• If an infant is not completely well upon assessment, this excludes possible BRUE event. Treat and transport according to guidelines.</li> <li>• Avoid using acronyms (BRUE, ALTE, SIDS) with parent/guardian.</li> <li>• EMS plays a unique and important role in obtaining an accurate history after the event and observing, documenting, and reporting environmental, scene, and social indicators that may point to an alternate diagnosis.</li> <li>• High-risk patients with a possible BRUE have worse outcomes and may require emergency department (ED) or inpatient testing, intervention, and/or follow-up</li> <li>• The determination of a BRUE is made only after hospital evaluation.</li> <li>• All patients should be transported to an ED.</li> <li>• Contact medical direction if parent/guardian is refusing medical care and/or transport, especially if high-risk criteria are present.</li> </ul>

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# TRAUMA

[Universal Care – Trauma Management](#)

[Burns](#)

[Hemorrhage Control](#)

[Traumatic Injuries](#)

# UNIVERSAL CARE – TRAUMA MANAGEMENT

**PURPOSE:** To provide EMS providers with a standardized framework for efficiently assessing and managing life-threatening injuries while also facilitating the safe transportation of patients with [Traumatic Injuries](#).

**INCLUSION Criteria:** All patients with [Traumatic Injuries](#) that require assessment and care delivery by EMS personnel

**EXCLUSION Criteria:** None

<b>EMR</b>	<p><b>Patient Management: Assessment</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• Assess scene safety and evaluate for hazards to EMS personnel, patient, bystanders                             <ul style="list-style-type: none"> <li>○ Determine number of patients</li> <li>○ Determine mechanism of injury or nature of illness</li> <li>○ Request additional resources if needed</li> <li>○ Consider declaration of <a href="#">Mass Casualty</a> incident if needed</li> </ul> </li> <li>• Use appropriate personal protective equipment</li> <li>• <b>Perform Primary Survey:</b> Rapid evaluation of Circulation, Airway, Breathing to identify hemorrhage and other immediate life threats. This process allows for prioritization of life-saving interventions prior to moving the patient or transporting from the scene.</li> <li>• <b>Circulation:</b> <ul style="list-style-type: none"> <li>○ Assess pulse                                     <ul style="list-style-type: none"> <li>▪ If pulse absent, resuscitative efforts should be withheld for any patient in traumatic cardiac arrest if, on arrival of first EMS unit, the patient has one or more of the following:   <ul style="list-style-type: none"> <li>○ Pulseless, apneic, and without other signs of life (pupillary reflexes, spontaneous movement, response to pain)</li> <li>○ Asystole on ECG</li> </ul> </li> <li>▪ If above criteria are not met, or if mechanism of injury suggests possible non-traumatic cause of arrest, initiate resuscitation according to <a href="#">Cardiac Arrest</a> guideline</li> <li>▪ <b>Termination or Withholding Resuscitative Efforts</b> <ul style="list-style-type: none"> <li>• Resuscitative efforts should be withheld for a patient of any age who is pulseless and apneic if any one or more of the following criteria is present:   <ul style="list-style-type: none"> <li>○ Decapitation</li> <li>○ Hemicorporectomy (trans-lumbar amputation)</li> <li>○ Incineration</li> <li>○ Decomposition of body tissue</li> <li>○ Rigor mortis and/or dependent lividity</li> <li>○ Cold death   <ul style="list-style-type: none"> <li>▪ Body frozen preventing chest from being compressed</li> <li>▪ Ice in the airway</li> <li>▪ Signs of predation</li> <li>▪ Head underwater for more than 60 minutes in an adult or 90 minutes in a child</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> <li>○ Control any major bleeding or life-threatening hemorrhage                             <ul style="list-style-type: none"> <li>▪ <a href="#">Hemorrhage Control</a></li> <li>▪ <a href="#">Tourniquet – Intentional</a></li> <li>▪ <a href="#">Tourniquet – Junctional</a></li> <li>▪ <a href="#">Hemostatic Agents</a></li> <li>▪ <a href="#">Wound Packing</a></li> <li>▪ <a href="#">Pelvic Binder</a></li> <li>▪ <a href="#">Splinting</a></li> <li>▪ <b>IF AUTHORIZED AND AVAILABLE:</b> without contraindications, consider <a href="#">Tranexamic Acid (TXA)</a></li> </ul> </li> </ul> </li></ul>
<b>EMT</b>	
<b>AEMT</b>	
<b>INT</b>	
<b>PARA</b>	

EMR	<ul style="list-style-type: none"> <li>• <b>Airway:</b> Assess for patency and open the airway as indicated             <ul style="list-style-type: none"> <li>○ Consider <a href="#">Spinal Motion Restriction</a></li> <li>○ If patient is unable to maintain airway patency, consider:                 <ul style="list-style-type: none"> <li>▪ Opening airway using jaw thrust</li> <li>▪ <a href="#">Airway Obstruction</a></li> <li>▪ <a href="#">Airway Management</a></li> <li>▪ <a href="#">Basic Airway Adjunct – OPA, Basic Airway Adjunct – NPA</a></li> <li>▪ <a href="#">Suctioning</a></li> <li>▪ <a href="#">i-gel®</a></li> <li>▪ <a href="#">Endotracheal Intubation</a></li> <li>▪ <a href="#">Cricothyrotomy – Surgical</a></li> </ul> </li> </ul> </li> </ul>
EMT	<ul style="list-style-type: none"> <li>• <b>Breathing:</b> Evaluate rate, effort, breath sounds, accessory muscle use, retractions, patient positioning             <ul style="list-style-type: none"> <li>○ <a href="#">Pulse Oximetry</a> <ul style="list-style-type: none"> <li>▪ If pulse oximetry is less than 93%, titrate <a href="#">Oxygen</a> to lowest level to maintain pulse oximetry at 93% or greater</li> <li>▪ Do not withhold oxygen if patient is having difficulty breathing or if unable to assess an oxygen saturation</li> <li>▪ If respirations ineffective, support ventilation with <a href="#">Bag Valve Mask (BVM) Ventilation</a></li> </ul> </li> <li>○ Perform <a href="#">Needle Decompression</a> on affected side if chest trauma present and tension pneumothorax suspected</li> <li>○ Cover open chest wounds with an occlusive dressing and secure on three sides</li> <li>○ Stabilize flail chest</li> <li>○ Consider <a href="#">Waveform Capnography</a></li> <li>○</li> </ul> </li> </ul>
AEMT	<ul style="list-style-type: none"> <li>• <b>Disability:</b> Evaluate baseline neurological function             <ul style="list-style-type: none"> <li>○ Evaluate patient responsiveness: Glasgow Coma Scale, AVPU</li> </ul> </li> <li>• <b>Expose:</b> Expose the patient             <ul style="list-style-type: none"> <li>○ Keep patient warm; prevent hypothermia</li> <li>○ Assess the back</li> <li>○ Splint fractures if life-threats have been corrected</li> <li>○ Stabilize impaled objects</li> </ul> </li> </ul>
INT	<ul style="list-style-type: none"> <li>• Consider ALS early if patient has any of the following:             <ul style="list-style-type: none"> <li>○ Hemodynamic instability</li> <li>○ Inability to control hemorrhage</li> <li>○ Inability to maintain and secure an airway</li> <li>○ Need for medications or advanced procedures</li> </ul> </li> </ul>
PARA	<ul style="list-style-type: none"> <li>• <b>Perform a Rapid Trauma Survey</b></li> <li>• <b>Maintain Perfusion</b> <ul style="list-style-type: none"> <li>○ <b>Obtain Baseline Vital Signs</b> <ul style="list-style-type: none"> <li>▪ An initial full set of vital signs is required for all patient contacts:                     <ul style="list-style-type: none"> <li>• Blood pressure, heart rate, respiratory rate, SpO2, neurologic status assessment</li> </ul> </li> </ul> </li> <li>○ Establish <a href="#">IV/IO Access</a>. If major trauma, establish 2 large-bore IVs.                 <ul style="list-style-type: none"> <li>▪ Do NOT delay transport to start IV</li> <li>▪ If SBP &lt; 90 mmHg (adult) administer <a href="#">Fluid Bolus – IV/IO</a> 20 mL/kg</li> </ul> </li> </ul> </li> <li>• <b>Head Injury or Suspected TBI</b> <ul style="list-style-type: none"> <li>○ <b>Disability:</b> Evaluate baseline neurological function                 <ul style="list-style-type: none"> <li>▪ Evaluate patient responsiveness: Glasgow Coma Scale, AVPU</li> <li>▪ Evaluate gross motor and sensory function in all extremities</li> <li>▪ Evaluate <a href="#">Blood Glucose</a> in patients with <a href="#">Altered Mental Status</a>; avoid hypoglycemia</li> <li>▪ If <a href="#">Suspected Stroke</a>, complete <a href="#">Stroke Scale</a></li> </ul> </li> <li>○ Manage head wounds/injuries</li> <li>○ <b>Adult (age 15 years and older):</b> <ul style="list-style-type: none"> <li>▪ Maintain SBP at 110 mmHg</li> <li>▪ May repeat initial fluid bolus to maintain SBP at 110 mmHg</li> </ul> </li> <li>○ <b>Pediatric (age &lt; 15 years):</b> <ul style="list-style-type: none"> <li>▪ May repeat fluid bolus up to 60 mL/kg to maintain age appropriate minimum SBP</li> </ul> </li> </ul> </li> </ul>

EMR	<ul style="list-style-type: none"> <li>• <b>Destination Determination</b> should be based on whether patient meets the trauma field triage guidelines. Scene time should be minimized to &lt; 10 minutes whenever possible             <ul style="list-style-type: none"> <li>○ Trauma field triage guidelines                 <ul style="list-style-type: none"> <li>▪ Patients meeting any one of the listed <b>RED</b> criteria should be transported to the highest-level trauma center (Level I) available within the geographic constraints of the regional trauma system.</li> <li>▪ Patients meeting any one of the <b>YELLOW CRITERIA WHO DO NOT MEET RED CRITERIA</b> should be preferentially transported to a trauma center (Level I or Level II), as available within the geographical constraints of the regional trauma system. (need not be the highest-level trauma center)</li> <li>▪ If over 30 minutes by ground to a Level I or Level II, any of the following are acceptable:                     <ul style="list-style-type: none"> <li>• Helicopter transport to Level I or Level II, for <b>RED</b> criteria only</li> <li>• Transport by ground to Level I or Level II <i>OR</i></li> <li>• Transport by ground to the highest-level trauma center within a 30-minute transport time</li> </ul> </li> </ul> </li> </ul> </li> </ul>
EMT	<p><b>Treatment And Interventions:</b></p> <ul style="list-style-type: none"> <li>• Provide <b>Oxygen</b> supplementation as needed to reach target SpO2 of greater than 93%             <ul style="list-style-type: none"> <li>○ If patient has underlying lung disease, <b>Oxygen</b> should be titrated to achieve SpO2 88-92%</li> </ul> </li> <li>• Appropriate monitoring equipment as dictated by patient assessment. These may include:             <ul style="list-style-type: none"> <li>○ Continuous <b>Pulse Oximetry</b></li> <li>○ Continuous <b>Cardiac Monitoring</b></li> <li>○ <b>12 Lead ECG</b></li> <li>○ <b>Waveform Capnography</b></li> </ul> </li> </ul>
AEMT	<ul style="list-style-type: none"> <li>• Critical patients should undergo continuous monitoring and documentation of pertinent vital signs, with readings recorded every 5 minutes or more frequently as the patient's condition dictates</li> <li>• Provide <b>Pain Management</b>, monitor and document pain scale in response to interventions</li> <li>• Reassess patient after every intervention</li> <li>• For <b>witnessed</b> traumatic arrest, start resuscitation on scene if patient cannot be transported to an emergency hospital within 15 minutes of initial assessment or arrest onset. Resuscitation may be terminated when:             <ul style="list-style-type: none"> <li>○ Pulses and other signs of life are absent following 15 minutes of resuscitation</li> <li>○ Patient develops asystole or a pulseless, wide complex rhythm less than 30 beats per minute</li> </ul> </li> </ul>
INT	<p><b>Patient Safety Considerations:</b></p> <ul style="list-style-type: none"> <li>• Routine use of lights and siren is not warranted</li> <li>• <b>CONTACT ONLINE MEDICAL CONTROL</b> when indicated in the guidelines or as needed for specific consultation</li> </ul>
PARA	

GLASGOW COMA SCALE				
RESPONSE	ADULT	CHILD	INFANT	VALUE
Eye Opening	Spontaneous	Spontaneous	Spontaneous	4
	To speech	To speech	To speech	3
	To pain	To pain	To pain	2
	None	None	None	1
Best Verbal Response	Oriented	Oriented, appropriate	Coos and babbles	5
	Confused	Confused	Irritable, cries	4
	Inappropriate words	Inappropriate words	Cries in response to pain	3
	Incomprehensible sounds	Incomprehensible words or nonspecific sounds	Moans in response to pain	2
	None	None	None	1
Best Motor Response	Obeys	Obeys commands	Moves spontaneously and purposely	6
	Localizes	Localizes painful stimulus	Withdraws in response to touch	5
	Withdraws	Withdraws in response to pain	Withdraws in response to pain	4
	Abnormal flexion	Flexion in response to pain	Decorticate posturing (abnormal flexion) in response to pain	3
	Extensor response	Extension in response to pain	Decerebrate posturing (abnormal extension) in response to pain	2
	None	None	None	1
	<b>TOTAL SCORE:</b>			

- **Pediatrics:** Use a weight-based assessment tool such as a length-based tape, to estimate patient's weight and guide medication therapy and properly sized equipment.

**NOTES**

RTS coded values	Respiratory Rate	Systolic Blood Pressure	Glasgow Coma Scale score
4	10–29 ("normal")	>89 ("good radial pulse")	13–15
3	>29 ("fast")	76–89 ("weak radial pulse")	9–12
2	6–9 ("slow")	50–75 ("femoral pulse")	6–8
1	1–5 ("gasp")	1–49 ("only carotid pulse")	4–5
0	0 ("no respiration")	0 ("no carotid pulse")	3

PEDIATRIC VITAL SIGNS				
Age	Pulse	Respiratory Rate	Systolic BP Lowest Normal	Lowest Normal MAP
Newborn	120-160	30-60	60	40
Up to 1 year	100-140	30-60	70	42
1-3 years	100-140	20-40	76	45
4-6 years	80-120	20-30	80	48
7-9 years	80-120	16-24	84	52
10-12 years	80-120	16-20	90	55
13-14 years	60-100	16-20	90	60

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<b>Primary Assessment</b>		
<b>X-Severe External Bleeding</b>	Assess and treat major bleeding	
<b>Level of Consciousness</b>	State findings - AVPU	
<b>Airway</b>	Is airway patent? Identify airway compromise or potential for this to develop	
<b>Breathing</b>	Is the patient breathing? Is breathing adequate?	Report rate, depth, work of breathing
<b>Circulation</b>	Is there a pulse? Assess central vs radial pulse Identify hypoperfusion	Report skin color, condition, temperature
<b>Priority of Transport</b>	State high or low priority patient	
<b>Rapid Trauma Assessment</b>		
<b>Inspect Head</b>	<b>LOOK</b> - Major Facial injuries, bruising, swelling, penetrations, pupils	<b>FEEL</b> - Sub Q emphysema
<b>Inspect Neck</b>	<b>LOOK</b> - Neck veins-flat or JVD? <b>LOOK</b> - Trachea- Midline or Deviation?	
<b>Inspect Chest</b>	<b>LOOK</b> - Asymmetry, contusions, penetrations, paradoxical motion <b>LISTEN</b> - <b>Breath sounds</b>	<b>FEEL:</b> Creptitation, Instability Present? Equal? Abnormal?
<b>Inspect Abdomen</b>	<b>LOOK</b> - Bruising, Evisceration, Distention	<b>FEEL</b> - tenderness, rigidity
<b>Inspect Pelvis</b>	<b>FEEL</b> - Tenderness, instability, creptitation	
<b>Lower/Upper extremities</b>	<b>LOOK</b> - Swelling, deformity	<b>FEEL</b> -Instability, Pulse, motor and sensory
<b>Posterior</b>	<b>LOOK</b> - Penetrations, deformity, presacral edema	

<b>EXAMINATION BY ASSESSING BODY SYSTEMS (CONSIDER DIFFERENTIAL DIAGNOSIS)</b>	
Cardiovascular	Cardiac tamponade, cardiac contusion
Pulmonary	Pneumothorax, tension pneumothorax, hemothorax
Neurological	Traumatic brain injury, increased intracranial pressure, head bleed, spinal cord injury
Musculoskeletal	Pelvic fracture, femur fracture, extremity fractures
Integumentary	DCAP BTLS
GI/GU	Ruptured spleen, ruptured liver, intraabdominal bleeding
Reproductive	Priapism, ruptured uterus, fetal distress
Psychological/Social	Depression, mood changes, difficulty concentrating, anxiety, irritability, sleep disturbances, fatigue, suicidal ideations, homicidal ideations

# BURNS

**INCLUSION Criteria:** Patients of all ages who suffer from thermal, electrical, or chemical burns

**EXCLUSION Criteria:** None

**OTHER PROTOCOLS TO CONSIDER:** [Airway Management](#), [Difficulty Breathing](#), [Hypotension or Shock](#), [Overdose or Toxic Exposure](#), [Syncope](#)

<b>EMR</b>	<p><b>Thermal Burns</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Universal Care – Trauma Management</a></li> <li>• Remove patient from heat source</li> <li>• Remove wet or restrictive non-adherent clothing and jewelry as able             <ul style="list-style-type: none"> <li>○ Minimize burn area contamination by applying clean, dry burn dressing or non-adherent dressing</li> </ul> </li> <li>• Keep patient warm and prevent heat loss</li> <li>• Assess depth of burn:             <ul style="list-style-type: none"> <li>○ <b>Superficial: <i>Not used when calculating total body surface area (TBSA)</i></b> <ul style="list-style-type: none"> <li>▪ Involves the epidermis only</li> <li>▪ Pink-to-red in color, without blistering</li> <li>▪ Dry and moderately painful</li> </ul> </li> <li>○ <b>Partial thickness:</b> <ul style="list-style-type: none"> <li>▪ Involves the superficial layer of the dermis</li> <li>▪ Blisters are common and may be intact or open</li> <li>▪ Blanch with pressure</li> <li>▪ Moderate to severe pain</li> </ul> </li> <li>○ <b>Full thickness:</b> <ul style="list-style-type: none"> <li>▪ Involves the epidermis and dermis skin layers and can extend into the subcutaneous tissue</li> <li>▪ Typically appear charred, leathery, stiff, and dry in appearance</li> <li>▪ Affected area does not blanch under pressure</li> <li>▪ Little to no pain is felt in this area</li> </ul> </li> </ul> </li> <li>• Assess extent of burn using Rule of Nines or using patient’s whole hand as 1% of body surface area (BSA)             <ul style="list-style-type: none"> <li>○ Only calculate partial and full thickness burns</li> </ul> </li> <li>• For suspected airway involvement, request ALS             <ul style="list-style-type: none"> <li>○ Administer <a href="#">Oxygen</a> 10-15 L/NRB for:                 <ul style="list-style-type: none"> <li>▪ Difficult or painful breathing</li> <li>▪ Stridor, wheezing, hoarse voice</li> <li>▪ Carbonaceous sputum</li> <li>▪ Singed nasal hair</li> </ul> </li> </ul> </li> <li>• Consider <a href="#">Airway Management</a></li> <li>• Initiate <a href="#">Pulse Oximetry</a> <ul style="list-style-type: none"> <li>○ If pulse oximetry is less than 93%, titrate <a href="#">Oxygen</a> to lowest level to maintain pulse oximetry at 93% or greater</li> <li>○ Do not withhold oxygen if patient is having difficulty breathing or if unable to assess an oxygen saturation</li> </ul> </li> <li>• If respirations ineffective, support ventilation with <a href="#">Bag Valve Mask (BVM) Ventilation</a></li> <li>• If burn occurred within the last 15 minutes and BSA &lt; 5%, cool superficial and partial thickness burns with room temperature water/saline for up to 5 minutes; do not open blisters             <ul style="list-style-type: none"> <li>○ Do not delay transport to cool burns</li> </ul> </li> <li>• If BSA &lt; 10%, may use with sterile saline soaked dressing or dry dressing</li> <li>• If BSA &gt; 10%, use dry sterile dressing             <ul style="list-style-type: none"> <li>○ If BSA &gt; 20%, place sterile burn sheet on stretcher before placing patient on cot for transport</li> <li>○ Cover patient with dry, sterile sheets and blanket to maintain body warmth</li> </ul> </li> <li>• If available, obtain carbon monoxide level</li> </ul>
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<b>EMR</b>	<p><b><u>Chemical Burns</u></b></p> <ul style="list-style-type: none"> <li>• Brush off as much of the offending agent as possible</li> <li>• Unless contraindicated, irrigate with copious water or saline; no water should be used with:             <ul style="list-style-type: none"> <li>○ Sulfuric acid</li> <li>○ Sodium metals</li> <li>○ Dry chemicals</li> </ul> </li> <li>• If available, obtain a Material Safety Data Sheet (MSDS) and transport with patient</li> </ul> <p><b><u>Electrical/Lightening Burns</u></b></p> <ul style="list-style-type: none"> <li>• Ensure scene safety; shut off or remove electrical source if safe to do so</li> <li>• Consider <b>Spinal Motion Restriction</b> if patient suffered a fall or loss of consciousness</li> <li>• Assess patient for both entrance and exit wounds             <ul style="list-style-type: none"> <li>○ Apply dry, sterile dressing to wounds; no cooling is necessary</li> </ul> </li> <li>• Assess circulation, motor function, and sensation of all extremities             <ul style="list-style-type: none"> <li>○ Suspect fractures or other extremity trauma either from significant muscle contraction and/or falls</li> </ul> </li> <li>• If patient is pulseless and not breathing, see <b>Cardiac Arrest</b></li> </ul> <p><b><u>Consider transport directly to a Burn Center for any of the following:</u></b></p> <ul style="list-style-type: none"> <li>• Partial thickness burns &gt; 10% TBSA</li> <li>• Burns that involve the face, hands, feet, genitalia, perineum, or major joints</li> <li>• Full thickness burns in any age group</li> <li>• Major electrical burns, including lightening injury</li> <li>• Major chemical burns</li> <li>• Inhalation injury, if stable for transport</li> <li>• Burn injury in patients with preexisting medical disorders that could complicate management, prolong recovery, or affect mortality</li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• Consider <b>Cardiac Monitoring</b> for electrical burns</li> <li>• Consider <b>Waveform Capnography</b></li> <li>• <b>IF AUTHORIZED:</b> acquire <b>12 Lead ECG</b> <ul style="list-style-type: none"> <li>▪ Electrical burns can cause cardiac arrhythmias</li> <li>▪ Anticipate cardiac problems</li> <li>▪ Transmit ECG to hospital</li> </ul> </li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• Establish <b>IV/IO Access</b> Lactated Ringers is the fluid of choice, if available             <ul style="list-style-type: none"> <li>▪ A large bore IV catheter should be inserted in a reliable peripheral vein</li> <li>▪ In a severely burned critical patient, the IV may be placed in a vein underlying burned skin if necessary</li> <li>▪ Establish <b>Intraosseous (IO) Access</b> if IV access is not immediately available and cannot be established</li> </ul> </li> <li>• For burns greater than 20% BSA, administer IV/IO fluid infusion per hour:             <ul style="list-style-type: none"> <li>▪ <b>Age &gt; 14 years:</b> 500 mL Lactated Ringers/hr</li> <li>▪ <b>6 – 13 years old:</b> 250 mL Lactated Ringers/hr</li> <li>▪ <b>Age ≤ 5 years old:</b> 125 mL Lactated Ringers/hr</li> </ul> </li> </ul>
<b>INT</b>	<ul style="list-style-type: none"> <li>• For suspected airway involvement or inhalation burns, airway management may be critical             <ul style="list-style-type: none"> <li>▪ <b>Endotracheal Intubation</b> is preferred over non-visualized airways                 <ul style="list-style-type: none"> <li>• These airways may be difficult and if patient condition permits, management is best performed in the hospital setting</li> </ul> </li> </ul> </li> <li>• Consider <b>Pain Management</b></li> </ul>

**PARA**

- If airway is compromised or at risk of imminent loss, **IF AUTHORIZED:** consider [Medication Assisted Airway Management \(MAAM\)](#)

**NOTES**

- Airway compromise such as stridor, change in voice, and painful swallowing may occur rapidly
- Consider transporting patients < 18 years old to the local children’s hospital

## The Rule of Nines

The diagram illustrates the Rule of Nines for estimating burn surface area in three groups: Adult, Child, and Infant. Each group is shown from both front and back views with percentages for different body regions.

Group	View	Head	Face	Arms	Torso	Legs	Genitals
Adult	Front	4.5%	18%	4.5%	18%	9%	1%
	Back	4.5%	18%	4.5%	18%	9%	9%
Child	Front	9%	18%	4.5%	18%	7%	1%
	Back	9%	18%	4.5%	18%	7%	7%
Infant	Front	18%	18%	9%	14%	14%	1%

Note: Each arm totals 9%

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Effective Date: 6/1/2024	Approved by: Steven Andrews, MD, EMT-P, FAEMS	

# HEMORRHAGE CONTROL

**INCLUSION Criteria:** Patients with external or suspected serious internal hemorrhage

**EXCLUSION Criteria:** Post-partum hemorrhage (see [Childbirth – Complications](#))

**OTHER GUIDELINES TO CONSIDER:** [Childbirth – Complications](#), [Epistaxis](#), [Hypotension or Shock](#), [Traumatic Injuries](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care – Trauma Management</a></li> <li>• Control external hemorrhage by applying direct pressure</li> <li>• <b>Extremity Wound:</b> evidence of severe, exsanguinating wound, and bleeding uncontrolled with direct pressure, apply <a href="#">Tourniquet – Intentional</a> <ul style="list-style-type: none"> <li>○ If bleeding uncontrolled with single tourniquet, apply a second tourniquet just proximal to the first tourniquet when possible</li> </ul> </li> <li>• <b>Inguinal or Axillary Wound:</b> evidence of severe, exsanguinating wound involving the axillary or inguinal area, and bleeding uncontrolled with direct pressure, apply <a href="#">Tourniquet – Junctional</a></li> <li>• Consider use of <a href="#">Hemostatic Agents</a> and/or <a href="#">Wound Packing</a> if unable to control hemorrhage with direct pressure</li> <li>• Consider <a href="#">Splinting</a> if indicated</li> <li>• <b>Internal Bleeding:</b> For suspicion of internal bleeding in the pelvis evidenced by hypotension/shock, consider applying a <a href="#">Pelvic Binder</a></li> <li>• <b>Epistaxis:</b> For active bleeding from nose, see <a href="#">Epistaxis</a> guideline</li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• Consider <a href="#">Cardiac Monitoring</a></li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• Consider <a href="#">IV/IO Access</a></li> <li>• If hypotensive or with clinical signs of poor perfusion, administer <a href="#">Fluid Bolus – IV/IO</a></li> <li>• Consider <a href="#">Waveform Capnography</a></li> <li>• Consider <a href="#">Cardiac Monitoring</a> <ul style="list-style-type: none"> <li>○ <b>Pediatric:</b> monitor heart rate for changes; bradycardia signals deterioration</li> </ul> </li> </ul>
<b>INT</b>	<ul style="list-style-type: none"> <li>• For persistent hypotension or signs of shock not responsive to fluid resuscitation, see <a href="#">Hypotension or Shock</a></li> </ul>
<b>PARA</b>	<ul style="list-style-type: none"> <li>• <b>Traumatic hemorrhage</b> – in patients &gt; 18 years old with significant hemorrhage, consider, if available:             <ul style="list-style-type: none"> <li>○ <a href="#">Tranexamic Acid (TXA)</a> <ul style="list-style-type: none"> <li>▪ <b>Adult:</b> &gt; 18 years old with major trauma and clinical evidence of marked blood loss, internal or external <b>AND</b> injury occurred &lt; 3 hours prior <b>AND</b> HR &gt; 110 or SBP &lt; 90 mmHg:                 <ul style="list-style-type: none"> <li>• <b>IV/IO:</b> 20 mg/kg mixed in 100 cc NS/LR/D5W and infused over <u>slowly</u> over 10 minutes; maximum initial dose 1 gram. <b>NEVER administer as an IV bolus</b></li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• <b>Hemorrhagic shock</b> <ul style="list-style-type: none"> <li>○ Every effort should be made to control blood loss. Blood products are the optimal resuscitation fluid. Since blood products are not available prehospital, the goal is to maintain adequate perfusion with IV fluids and vasopressors and provide rapid transport.</li> <li>○ Norepinephrine is the preferred vasopressor in suspected hemorrhagic shock refractory to fluid resuscitation</li> </ul> </li> </ul>

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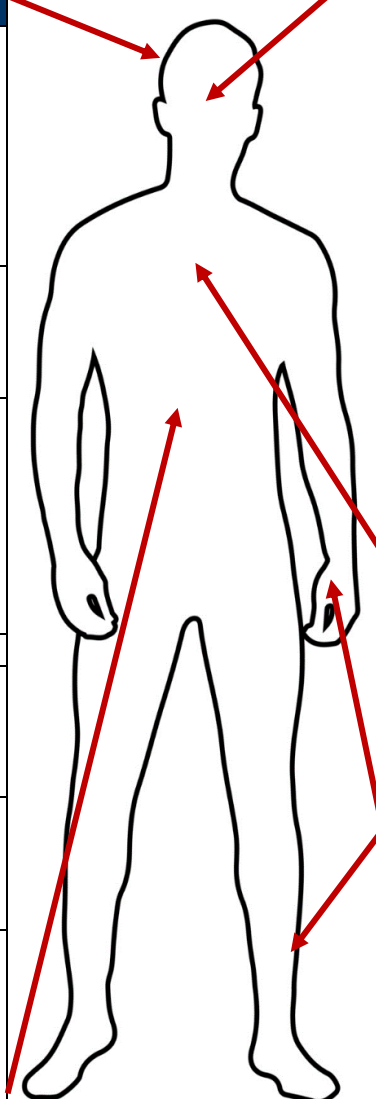
# TRAUMATIC INJURIES

**INCLUSION Criteria:** Patients with suspected traumatic injuries

**EXCLUSION Criteria:** Patients in traumatic [Cardiac Arrest](#)

**OTHER GUIDELINES TO CONSIDER:** [Airway Management](#), [Altered Mental Status](#), [Cardiac Arrest](#), [Difficulty Breathing](#), [Hemorrhage Control](#), [Hypotension or Shock](#), [Pain Management](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care – Trauma Management</a></li> <li>• <b>Perform Primary Survey</b> <ul style="list-style-type: none"> <li>○ <b>Circulation:</b> <ul style="list-style-type: none"> <li>▪ Control external hemorrhage                             <ul style="list-style-type: none"> <li>• <a href="#">Hemorrhage Control</a></li> <li>• See <a href="#">Hypotension or Shock</a></li> </ul> </li> </ul> </li> <li>○ <b>Airway:</b> <ul style="list-style-type: none"> <li>▪ Assess for patency and open the airway as indicated</li> <li>▪ Consider <a href="#">Spinal Motion Restriction</a></li> <li>▪ <a href="#">Airway Management</a></li> </ul> </li> <li>○ <b>Breathing:</b> <ul style="list-style-type: none"> <li>▪ Titrate <a href="#">Oxygen</a> to lowest level to maintain <a href="#">Pulse Oximetry</a> at 93% or greater</li> <li>▪ If respirations ineffective, support ventilation with <a href="#">Bag Valve Mask (BVM) Ventilation</a></li> <li>▪ Cover open chest wounds with occlusive dressing and secure on 3 sides</li> </ul> </li> <li>○ <b>Disability:</b> <ul style="list-style-type: none"> <li>▪ Evaluate baseline neurological function; ability to follow commands</li> <li>▪ Evaluate patient responsiveness: Glasgow Coma Scale, AVPU</li> </ul> </li> <li>○ <b>Expose:</b> <ul style="list-style-type: none"> <li>▪ Rapid Trauma Survey and evaluation of entire body, including the back</li> <li>▪ Keep patient warm; prevent hypothermia</li> </ul> </li> </ul> </li> <li>• <b>Perform Secondary Survey</b> <ul style="list-style-type: none"> <li>○ <a href="#">Splinting</a> of extremity injuries as indicated</li> <li>○ Follow specific injury management guidelines as detailed in diagram</li> </ul> </li> <li>• <a href="#">Taser –Conducted Electrical Weapon (CEW)</a> <ul style="list-style-type: none"> <li>○ Consider removal of the CEW at the request of Law Enforcement, provided removal from location of dart puncture zone is not contraindicated, see <a href="#">Taser –Conducted Electrical Weapon (CEW)</a></li> </ul> </li> <li>• Consider <a href="#">Destination Determination</a> for trauma</li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• Consider <a href="#">Cardiac Monitoring</a></li> <li>• Consider <a href="#">Waveform Capnography</a></li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• Consider <a href="#">IV/IO Access</a> <ul style="list-style-type: none"> <li>○ 2 large bore sites preferred if major trauma</li> </ul> </li> <li>• Administer <a href="#">Fluid Bolus – IV/IO</a> in cases of trauma with suspected significant hemorrhage and a systolic blood pressure (SBP) less than 90 mmHg (or below the age-appropriate lower limit of normal), or when signs or symptoms of shock are present; see <a href="#">Hypotension or Shock</a></li> </ul>
<b>INT</b>	<ul style="list-style-type: none"> <li>• For persistent hypotension or signs of shock not responding to fluid resuscitation, see <a href="#">Hypotension or Shock</a></li> </ul>
<b>PARA</b>	<ul style="list-style-type: none"> <li>• <b>Traumatic hemorrhage</b> – in patients &gt; 18 years old with major trauma and clinical evidence of marked blood loss, internal or external, <b>AND</b> injury occurred &lt; 3 hours prior <b>AND</b> HR &gt; 110 or SBP &lt; 90 mmHg consider, if available, <a href="#">Tranexamic Acid (TXA)</a></li> </ul>
<b>NOTES</b>	

EMR	EMT	AEMT	INT	PARA
			<b>EYE INJURIES</b>	
			<ul style="list-style-type: none"> <li>• <b>Chemical Splash/Burn</b> <ul style="list-style-type: none"> <li>○ Thoroughly and continuously irrigate affected eye(s) using copious amounts of saline instilled through IV tubing or any other means</li> <li>○ Start irrigation as soon as possible &amp; continue during transport</li> </ul> </li> </ul>	
			<ul style="list-style-type: none"> <li>○ Consider <b>Nitrous Oxide</b> for pain control if no evidence of penetrating injury</li> <li>○ Consider <b>Tetracaine</b> 1-2 drops in each affected eye for pain control if not an open globe injury</li> </ul>	
			<ul style="list-style-type: none"> <li>• <b>Penetrating Injury/Ruptured Globe</b> <ul style="list-style-type: none"> <li>○ Observe for signs of penetration: peaked pupil, excessive edema of conjunctiva, subconjunctival hemorrhage, blood in anterior chamber (hyphemia) or foreign body/impaled object</li> <li>○ Do NOT remove impaled objects</li> <li>○ Do NOT irrigate eye</li> <li>○ Avoid all pressure on injured eye</li> <li>○ May patch injured eye or both eyes based on patient tolerance</li> <li>○ Elevate head of bed 45</li> </ul> </li> </ul>	
			<ul style="list-style-type: none"> <li>• Administer anti-emetic medications per <b>Nausea or Vomiting</b> guideline, even if not nauseated</li> </ul>	
			<b>CHEST INJURIES</b>	
			<ul style="list-style-type: none"> <li>• Stabilize impaled foreign bodies</li> <li>• If evidence of open OR sucking chest wound, apply occlusive dressing or chest seal</li> </ul>	
			<ul style="list-style-type: none"> <li>• Initiate <b>Cardiac Monitoring</b></li> </ul>	
			<ul style="list-style-type: none"> <li>• If evidence of tension pneumothorax (↓ breath sounds (unilateral), hypotension, tachycardia, hypoxia, respiratory distress, JVD, tracheal deviation) perform <b>Needle Decompression</b></li> </ul>	
			<b>EXTREMITY INJURIES</b>	
			<ul style="list-style-type: none"> <li>• Control bleeding per <b>Hemorrhage Control</b>, or <b>Tourniquet-Intentional</b> if severe, uncontrolled bleeding</li> <li>• <b>Splinting</b> as indicated with consideration for realigning angulated fractures when appropriate and repeat assessment of distal neurovascular exam after splinting</li> <li>• Apply sterile dressing over open fractures</li> <li>• <b>Partial Amputation</b> <ul style="list-style-type: none"> <li>○ Splint partial amputated parts in anatomic position, if possible</li> <li>○ Apply moist sterile dressing over injury</li> </ul> </li> <li>• <b>Complete Amputation</b> <ul style="list-style-type: none"> <li>○ Cover stump with moist sterile dressing</li> <li>○ Cover amputated part with moist, sterile dressing and store in sealed, plastic bag on ice</li> </ul> </li> <li>• Transport amputated part with patient</li> </ul>	
<b>HEAD &amp; NECK INJURIES</b>				
<ul style="list-style-type: none"> <li>• <b>Spinal Motion Restriction</b> as indicated</li> <li>• Prevent further neurologic injury <ul style="list-style-type: none"> <li>○ Support oxygenation &amp; ventilation <ul style="list-style-type: none"> <li>▪ Avoid Hypoxemia <ul style="list-style-type: none"> <li>• Maintain SpO2 93% - 98%</li> </ul> </li> <li>▪ Avoid hyperventilation <ul style="list-style-type: none"> <li>• Maintain EtCO2 35 – 45 mmHg</li> </ul> </li> </ul> </li> <li>○ Nasal airways are contraindicated in patients with significant facial trauma</li> </ul> </li> </ul>				
<ul style="list-style-type: none"> <li>○ If unable to follow commands, prevent hypotension- <b>IV/IO Fluid Bolus</b> 20 mL/kg (all ages) to maintain SBP at: <ul style="list-style-type: none"> <li>▪ Age ≥ 15 years: 110 mmHg</li> <li>▪ Age &lt; 15 years: Age appropriate</li> </ul> </li> </ul>				
<ul style="list-style-type: none"> <li>○ Elevate head of bed 30° (head injury) while maintaining alignment of neck/torso unless hypotensive</li> <li>• If ↑ intracranial pressure (SBP &gt; 200 mmHg, bradycardia, abnormal respiratory pattern, unresponsive, and/or pupillary changes) <ul style="list-style-type: none"> <li>○ Provide BVM Ventilations <ul style="list-style-type: none"> <li>▪ Avoid hyperventilation</li> </ul> </li> <li>○ Maintain EtCO2 35-45 mmHg</li> </ul> </li> </ul>				
<ul style="list-style-type: none"> <li>○ Consider <b>Pain Management</b></li> </ul>				
<ul style="list-style-type: none"> <li>○ Consider <b>Sedation</b> or <b>Pain Management</b></li> <li>○ If unable to maintain SpO2 &gt; 90% with supplemental O2 and BVM Ventilations, consider <b>Medication Assisted Airway Management (MAAM)</b></li> </ul>				
<ul style="list-style-type: none"> <li>• <b>Avoid the “H-Bombs” of Traumatic Brain Injury</b> <ul style="list-style-type: none"> <li>○ Hypoxia</li> <li>○ Hypotension</li> <li>○ Hypoglycemia</li> <li>○ Hyperventilation</li> </ul> </li> </ul>				
<ul style="list-style-type: none"> <li>• <b>Basilar Skull Fracture</b> <ul style="list-style-type: none"> <li>○ Monitor for periorbital ecchymosis (Raccoon Eyes), bruising over the mastoid process (Battle Sign) and/or bloody or clear (CSF) drainage from nose and/or ears <ul style="list-style-type: none"> <li>▪ If CSF drainage present from nose or ear, apply a 4X4 to collect drainage. Do Not attempt to stop drainage and do NOT place anything into nose or ear.</li> </ul> </li> </ul> </li> </ul>				
<b>ABDOMINAL/PELVIC INJURIES</b>				
<ul style="list-style-type: none"> <li>• Stabilize impaled foreign bodies</li> <li>• Evisceration – cover with saline moistened gauze</li> <li>• <b>Pelvic Binder</b> as indicated for unstable pelvis and <b>Hypotension or Shock</b></li> </ul>				

<b>PROLONGED CRUSH INJURIES</b>				
<ul style="list-style-type: none"> <li>• Do NOT tourniquet extremity to prevent release of toxins</li> <li>• Support airway and breathing; crush injuries to the chest are a significant source of respiratory failure and death</li> <li>• Support oxygenation &amp; ventilation <ul style="list-style-type: none"> <li>○ <b>Oxygen</b> to maintain SpO2 93% - 98%</li> <li>○ <b>BVM Ventilations</b>, as needed to maintain EtCO2 35 – 45 mmHg</li> <li>○ Consider <b>Airway Management</b></li> </ul> </li> </ul>				
<ul style="list-style-type: none"> <li>• Initiate <b>Cardiac Monitoring</b></li> </ul>				
<ul style="list-style-type: none"> <li>• Initiate <b>IV/IO Access</b> whenever possible prior to extrication</li> <li>• <b>IV/IO Fluid Bolus</b> 0.9% NS at 1000 mL/hour for 2 hours; start during extrication or as soon as possible after extrication</li> </ul>				
<ul style="list-style-type: none"> <li>• Upon release of trapped extremity: <ul style="list-style-type: none"> <li>○ Monitor ECG for signs of hyperkalemia (peaked T-waves, widened QRS)</li> <li>○ If evidence of hyperkalemia, see <b>Hyperkalemia</b> guideline</li> </ul> </li> </ul>				

# CLINICAL PROCEDURES

## Airway

Airway Obstruction

Bag Valve Mask (BVM) Ventilation

Basic Airway Adjunct – OPA

Basic Airway Adjunct – NPA

Capnography (EtCO<sub>2</sub>)

CPAP – Non-Invasive Positive Pressure Ventilation

Cricothyrotomy – Surgical

Endotracheal Introducer (Bougie)

Endotracheal Intubation

Endotracheal Intubation During Cardiac Arrest

i-gel<sup>®</sup>

Orogastric (OG) Tube Insertion

Suctioning

Ventilator Management

## Assessment

Blood Glucose Monitoring

Mass Casualty Triage – S.A.L.T.

Pulse Oximetry

Restraints – Physical

Stroke Scale

## Cardiac

Cardiac Monitoring

12 Lead ECG

Defibrillation

Mechanical CPR Device – LUCAS

## Synchronized Cardioversion

Transcutaneous Cardiac Pacing (TCP)

Valsalva Maneuver

## Medication Administration

Medication Administration Cross Check (MACC)

Intramuscular (IM)

Intramuscular (IM) Site Reference

Intranasal (IN) via Mucosal Atomization Device

Intravenous (IV)

Nebulized Medications

## Trauma

Hemostatic Agents

Kendrick Traction Device

Needle Decompression

Pelvic Binder

Pericardiocentesis

Slighman Traction Splint

Spinal Motion Restriction

Splinting

TASER – Conducted Electrical Weapon (CEW)

Tourniquet – Intentional

Tourniquet – Junctional

Wound Packing

## Venous Access

Intraosseous (IO) Access

Intravenous (IV) Access

# AIRWAY

[Airway Obstruction](#)

[Bag Valve Mask \(BVM\) Ventilation](#)

[Basic Airway Adjunct – OPA](#)

[Basic Airway Adjunct – NPA](#)

[Capnography \(EtCO<sub>2</sub>\)](#)

[CPAP – Non-Invasive Positive Pressure Ventilation](#)

[Cricothyrotomy – Surgical](#)

[Endotracheal Introducer \(Bougie\)](#)

[Endotracheal Intubation](#)

[Endotracheal Intubation During Cardiac Arrest](#)

[i-gel<sup>®</sup>](#)

[Orogastric \(OG\) Tube Insertion](#)

[Suctioning](#)

[Ventilator Management](#)

# AIRWAY OBSTRUCTION

**INDICATIONS:** Evidence of acute airway obstruction in any aged patient; sudden onset of respiratory distress often without coughing; wheezing, gagging, or stridor due to foreign body obstruction of the upper airway.

**CONTRAINDICATIONS:** None

**OTHER GUIDELINE TO CONSIDER:** [Cricothyrotomy – Surgical](#)

<b>EMR</b>	<p><b>Pediatric &lt;8 Years Old: Responsive</b></p> <ul style="list-style-type: none"> <li>• Determine responsiveness and ability to speak and/or cry                             <ul style="list-style-type: none"> <li>○ <b>If unconscious:</b> <ul style="list-style-type: none"> <li>▪ Head tilt/chin lift</li> </ul> </li> <li>○ <b>Suspected c-spine injury:</b></li> <li>○ Modified jaw thrust</li> </ul> </li> <li>• Assess degree of airway impairment. Attempt to open mouth and visualize foreign body obstruction, and ONLY extract if directly visible.</li> <li>• <b>If conscious and able to speak and/or cry:</b> <ul style="list-style-type: none"> <li>○ Do not interfere with patient’s own attempts to clear airway by coughing or sneezing. If patient is breathing or resumes effective breathing, place patient in recovery position.</li> <li>○ Infant crying should be strong and effective.</li> </ul> </li> <li>• <b>If conscious and unable to speak and/or cry:</b> <ul style="list-style-type: none"> <li>○ <b>Infants under 1 year:</b> <ul style="list-style-type: none"> <li>▪ Perform five back blows followed by five chest thrusts.</li> <li>▪ <b>REPEAT IF NO DESIRED RESPONSE.</b></li> </ul> </li> <li>○ <b>Children over 1 year:</b> <ul style="list-style-type: none"> <li>▪ Perform five abdominal thrusts with patient standing.</li> <li>▪ <b>REPEAT IF NO DESIRED RESPONSE.</b></li> </ul> </li> </ul> </li> <li>• Continue with above steps until foreign body becomes expelled, or patient becomes unresponsive (see below).</li> <li>• Monitor for cardiac dysrhythmias and/or respiratory or <a href="#">Cardiac Arrest</a>.</li> </ul>
<b>EMT</b>	
<b>AEMT</b>	
<b>INT</b>	
<b>PARA</b>	
	<p><b>Adult and &gt; 8 Year Old: Responsive</b></p> <ul style="list-style-type: none"> <li>• Determine responsiveness and ability to speak and/or cry                             <ul style="list-style-type: none"> <li>○ <b>If unconscious:</b> <ul style="list-style-type: none"> <li>▪ Head tilt/chin lift</li> </ul> </li> <li>○ <b>Suspected c-spine injury:</b> <ul style="list-style-type: none"> <li>▪ Modified jaw thrust</li> </ul> </li> </ul> </li> <li>• Assess degree of airway impairment. Attempt to open mouth and visualize foreign body obstruction, and ONLY extract if directly visible.</li> <li>• <b>If conscious and able to speak and/or cry:</b> <ul style="list-style-type: none"> <li>○ Do not interfere with patient’s own attempts to clear airway by coughing or sneezing. If patient is breathing or resumes effective breathing, place patient in the recovery position.</li> </ul> </li> <li>• <b>If conscious and unable to speak and/or cry:</b> <ul style="list-style-type: none"> <li>○ Perform five abdominal thrusts with patient standing.</li> <li>○ <b>REPEAT IF NO DESIRED RESPONSE.</b></li> </ul> </li> <li>• <b>If visually pregnant or morbidly obese:</b> <ul style="list-style-type: none"> <li>○ Perform five chest thrusts.</li> <li>○ <b>REPEAT IF NO DESIRED RESPONSE.</b></li> </ul> </li> <li>• Continue with above steps until foreign body becomes expelled, or patient becomes unresponsive (see below).</li> <li>• Monitor for cardiac dysrhythmias and/or respiratory or <a href="#">Cardiac Arrest</a>.</li> </ul>



<b>EMR</b>	<p><b>Pediatric &lt;8 Years Old: Unresponsive</b></p> <ul style="list-style-type: none"> <li>• Start CPR</li> <li>• Perform tongue-jaw lift and attempt to ventilate.</li> <li>• Visualize airway with laryngoscope and attempt to clear obstruction using forceps and/or suction.</li> <li>• Open airway and attempt to ventilate.                             <ul style="list-style-type: none"> <li>○ If airway remains obstructed, reposition head and attempt ventilation</li> <li>○ <b>CONTINUED OBSTRUCTION:</b> <ul style="list-style-type: none"> <li>▪ Attempt forced ventilation with pediatric <a href="#">Bag Valve Mask (BVM) Ventilation</a></li> </ul> </li> <li>○ <b>CONTINUED OBSTRUCTION:</b> <ul style="list-style-type: none"> <li>▪ <b>PARAMEDIC LEVEL OR HIGHER:</b> Intubate and push foreign body into right mainstem bronchus, pull back ETT and ventilate left lung.</li> </ul> </li> <li>○ <b>CONTINUED OBSTRUCTION:</b> <ul style="list-style-type: none"> <li>▪ <b>PARAMEDIC LEVEL OR HIGHER:</b> Perform <a href="#">Cricothyrotomy – Surgical</a>, see guideline.</li> </ul> </li> </ul> </li> </ul> <p><b>Adult and &gt;8 Years Old: Unresponsive</b></p> <ul style="list-style-type: none"> <li>• Perform tongue-jaw lift and attempt to ventilate.</li> <li>• Visualize airway with laryngoscope and attempt to clear obstruction using forceps and/or suction.</li> <li>• Open airway and attempt to ventilate.                             <ul style="list-style-type: none"> <li>○ If airway remains obstructed, reposition head and attempt ventilation.</li> <li>○ <b>CONTINUED OBSTRUCTION:</b> <ul style="list-style-type: none"> <li>▪ Start CPR</li> </ul> </li> <li>○ <b>CONTINUED OBSTRUCTION:</b> <ul style="list-style-type: none"> <li>▪ Attempt forced ventilation with BVM</li> </ul> </li> <li>○ <b>CONTINUED OBSTRUCTION:</b> <ul style="list-style-type: none"> <li>▪ <b>PARAMEDIC LEVEL OR HIGHER:</b> Intubate and push foreign body into right mainstem bronchus, pull back ETT and ventilate left lung →</li> </ul> </li> <li>○ <b>CONTINUED OBSTRUCTION:</b> <ul style="list-style-type: none"> <li>▪ <b>PARAMEDIC LEVEL OR HIGHER:</b> Perform <a href="#">Cricothyrotomy – Surgical</a>, see guideline.</li> </ul> </li> </ul> </li> <li>• Rapid transport to closest, appropriate facility.</li> </ul>
<b>EMT</b>	
<b>AEMT</b>	
<b>INT</b>	
<b>PARA</b>	
<b>NOTES</b>	

# BAG VALVE MASK (BVM) VENTILATION

**INDICATIONS:** Inadequate ventilation, respiratory insufficiency or failure, hypercarbia, or hypoxia unresolved by passive oxygenation (non-rebreather, CPAP)

**CONTRAINDICATIONS:** Inability to adequately obtain a seal with mask

**OTHER GUIDELINES TO CONSIDER:** [Airway Management](#), [Difficulty Breathing](#), [Basic Airway Adjunct – OPA](#), [Basic Airway Adjunct – NPA](#), [Suctioning](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>Gather appropriately sized Bag Valve Mask (BVM) and mask</li> <li>Attach BVM to high-flow supplemental <a href="#">Oxygen</a></li> <li>If possible, elevate head of bed and place patient in sniffing position utilizing padding, if needed                             <ul style="list-style-type: none"> <li>Position ear in-line with sternal notch</li> <li>Patients face should be parallel to ceiling                                     <ul style="list-style-type: none"> <li><b>Pediatric (Infants):</b> Head shape and size may necessitate additional padding under shoulders</li> </ul> </li> </ul> </li> <li>Utilize <a href="#">Basic Airway Adjunct – OPA</a>, <a href="#">Basic Airway Adjunct – NPA</a>, as clinically indicated</li> <li>Achieve and maintain adequate face-mask seal                             <ul style="list-style-type: none"> <li><b>1 Person:</b> <ul style="list-style-type: none"> <li>E/C technique</li> </ul> </li> <li><b>2 Person:</b> <ul style="list-style-type: none"> <li>Bilateral E/C or Thenar techniques preferred</li> </ul> </li> <li>Ensure face is pulled into mask and prevent pressing mask into patients face                                     <ul style="list-style-type: none"> <li><b>If facial hair prevents adequate seal, consider a bead of lubricant around mask</b></li> </ul> </li> </ul> </li> </ul>									
<b>EMT</b>	<ul style="list-style-type: none"> <li>Ventilate until chest rise is seen (approximately 4-6mL/kg ideal body weight (IBW))</li> <li>Average adult tidal volume is 350-500mL</li> <li>Consider using a smaller volume BVM to reduce risk of excessive tidal volume</li> <li>Ensure patient is properly suctioned prior to ventilating</li> </ul>									
<b>AEMT</b>										
<b>INT</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center;">Ventilation Rates</th> </tr> <tr> <th style="width: 33%;">Adult</th> <th style="width: 33%;">Pediatrics</th> <th style="width: 33%;">Neonates</th> </tr> </thead> <tbody> <tr> <td> <p><b>Cardiac Arrest:</b> 6-8 breaths per minute</p> <p>Perfusion: Titrate to maintain SpO2 &gt; 93%</p> <p>Metabolic Acidosis (or DKA): Increase ventilation rate to match previous spontaneous rate and/or previous EtCO2</p> </td> <td> <p><b>Cardiac Arrest:</b> 12-20 breaths per minute</p> <p>Perfusion: Titrate to &gt;93% as appropriate</p> <p>Metabolic Acidosis (or DKA): Increase ventilation rate to match previous spontaneous rate and/or previous EtCO2</p> </td> <td> <p><b>Cardiac Arrest:</b> 3:1 compression to ventilation rate. 120 events/min (90 compressions interspersed with 30 ventilations)</p> <p><b>Bradycardia:</b> 40-60 breaths per minutes when performed without compressions</p> <p>Begin BVM ventilations within 60 seconds of birth when, after the initial steps of newborn care, the baby is still apneic, gasping, or has a heart rate less than 100 bpm.</p> </td> </tr> </tbody> </table>	Ventilation Rates			Adult	Pediatrics	Neonates	<p><b>Cardiac Arrest:</b> 6-8 breaths per minute</p> <p>Perfusion: Titrate to maintain SpO2 &gt; 93%</p> <p>Metabolic Acidosis (or DKA): Increase ventilation rate to match previous spontaneous rate and/or previous EtCO2</p>	<p><b>Cardiac Arrest:</b> 12-20 breaths per minute</p> <p>Perfusion: Titrate to &gt;93% as appropriate</p> <p>Metabolic Acidosis (or DKA): Increase ventilation rate to match previous spontaneous rate and/or previous EtCO2</p>	<p><b>Cardiac Arrest:</b> 3:1 compression to ventilation rate. 120 events/min (90 compressions interspersed with 30 ventilations)</p> <p><b>Bradycardia:</b> 40-60 breaths per minutes when performed without compressions</p> <p>Begin BVM ventilations within 60 seconds of birth when, after the initial steps of newborn care, the baby is still apneic, gasping, or has a heart rate less than 100 bpm.</p>
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<b>PARA</b>										
<b>NOTES</b>	<ul style="list-style-type: none"> <li>When placed on patients face, a properly sized mask will completely cover nares and mouth without gaps between mask and face. The Mask shouldn't cover sides of face as air may escape during ventilation.</li> <li>To obtain an effective mask seal, lift jaw into mask. Do not push mask into patients face. Pushing the mask into the face will cause tongue fall back into the oropharynx.</li> <li><a href="#">Basic Airway Adjuncts</a> should be utilized when clinically indicated to assist tongue fall back during ventilation.</li> <li>Avoid hyperventilation and hypoventilation and utilize above ventilation rates. Monitor respiratory effort and enhance inspiratory efforts with ventilation.                             <ul style="list-style-type: none"> <li>If patient has increased respiratory drive with poor quality, attempt to match patient's respiratory rate when possible</li> </ul> </li> <li>Only ventilate until chest rise is noted.</li> <li>BVM ventilation should be a two-rescuer skill, when available.</li> </ul>									

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# BASIC AIRWAY ADJUNCT – OPA

**INDICATIONS:** Unresponsive patients who are unable to maintain their own airway **AND** have no present gag reflex.

**CONTRAINDICATIONS:** Patients with an intact gag reflex or a foreign body airway obstruction (FBAO)

**OTHER GUIDELINES TO CONSIDER:** [Airway Management](#), [Altered Mental Status](#), [Bag Valve Mask \(BVM\) Ventilation](#), [Cardiac Arrest](#), [Suctioning](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• If possible, elevate head of bed and place patient in sniffing position utilizing padding, if needed                             <ul style="list-style-type: none"> <li>○ Position ear in-line with sternal notch</li> <li>○ Patients face should be parallel to ceiling                                     <ul style="list-style-type: none"> <li>▪ <b>Pediatric (Infants):</b> Head shape and size may necessitate additional padding under shoulders</li> </ul> </li> </ul> </li> <li>• Select an Oropharyngeal Airway (OPA) and measure from the corner of the mouth to the angle of jaw</li> <li>• Open patients mouth by use of crossed-finger/scissor technique</li> <li>• Insert OPA upside down and when at the back of mouth, rotate 180° while advancing until the flange is resting on patients front teeth</li> <li>• Additionally, OPA can be inserted sideways and rotated 90° as advanced to the back of the oropharynx.</li> </ul>
<b>EMT</b>	
<b>AEMT</b>	
<b>INT</b>	
<b>PARA</b>	
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• In addition to proper airway alignment, a head-tilt-chin-lift or jaw-thrust maneuver must be maintained while OPA is placed</li> </ul>



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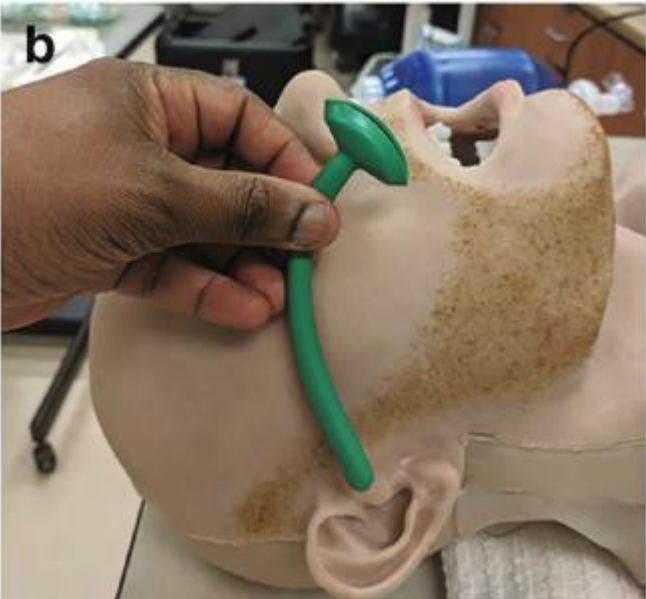
# BASIC AIRWAY ADJUNCT - NPA

**INDICATIONS:** Conscious, semiconscious, or unconscious patients with a compromised airway, or patients at risk for developing a compromised airway

**CONTRAINDICATIONS:** Patients with a known or suspected basilar skull fracture, or disruption of the midface, nasopharynx, or roof of mouth

**OTHER GUIDELINES TO CONSIDER:** [Airway Management](#), [Altered Mental Status](#), [Cardiac Arrest](#), [Suctioning](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• If possible, elevate head of bed and place patient in sniffing position utilizing padding, if needed                             <ul style="list-style-type: none"> <li>○ Position ear in-line with sternal notch</li> <li>○ Patients face should be parallel to ceiling                                     <ul style="list-style-type: none"> <li>▪ <b>Pediatric (Infants):</b> Head shape and size may necessitate additional padding under shoulders</li> </ul> </li> </ul> </li> <li>• Select a Nasopharyngeal Airway (NPA) and measure from the tip of the nose to the tip of the earlobe</li> <li>• Lubricate NPA with water-soluble lubricant</li> <li>• Insert NPA bevel towards septum, advancing posteriorly until flange is resting on flare of nostril                             <ul style="list-style-type: none"> <li>○ If resistance is met, rotate NPA side to side and continue advancement                                     <ul style="list-style-type: none"> <li>▪ If unable to advance, remove NPA and attempt re-insertion on other nostril</li> </ul> </li> </ul> </li> </ul>
<b>EMT</b>	
<b>AEMT</b>	
<b>INT</b>	
<b>PARA</b>	
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• In addition to proper airway alignment, a head-tilt-chin-lift or jaw-thrust maneuver must be maintained while NPA is placed</li> </ul>



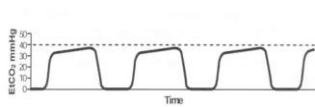

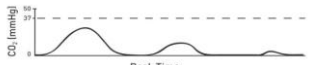
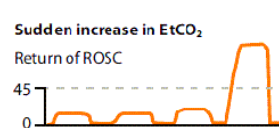

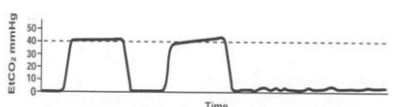
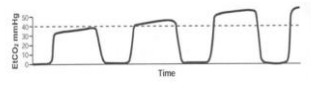
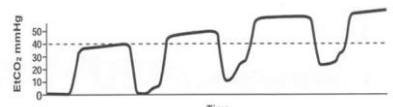
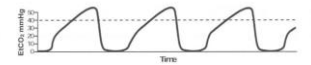
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# CAPNOGRAPHY (EtCO<sub>2</sub>)

**INDICATIONS:** Respiratory distress or difficulty breathing, decreased level of consciousness, advanced airway use, determination of adequate CPR/ROSC, monitoring during sedative/benzodiazepine/narcotic administration, need to monitor ventilatory status, or sepsis evaluation.

**CONTRAINDICATIONS:** None

**OTHER GUIDELINES TO CONSIDER:**

<b>EMR</b>	<p><b>Nasal EtCO<sub>2</sub>:</b></p> <ul style="list-style-type: none"> <li>Connect capnography tubing to cardiac monitor</li> <li>Place EtCO<sub>2</sub> nasal cannula monitor on patient</li> <li>Document initial reading and capture waveform image (when applicable)</li> <li>Monitor patient for changes</li> </ul>	
<b>EMT</b>	<p><b>Advanced Airway EtCO<sub>2</sub>:</b></p> <ul style="list-style-type: none"> <li>Connect capnography tubing to cardiac monitor and advanced airway or BVM with inline connector</li> <li>Document initial reading and waveform:                             <ul style="list-style-type: none"> <li>Before placement of advanced airway, whenever possible</li> <li>After placement of advanced airway</li> <li>After patient transfer or movement (i.e., floor to stretcher, stretcher to ambulance, stretcher to bed)</li> <li>After a change in patient clinical condition</li> </ul> </li> <li>If EtCO<sub>2</sub> level is zero (0) or absent after placement of an advanced airway, immediately reassess for evidence of airway displacement.                             <ul style="list-style-type: none"> <li>If confirmed, remove the airway, ventilate patient, and restart advanced airway process if <a href="#">Airway Management</a> is critical</li> </ul> </li> </ul>	
<b>AEMT</b>	<p><b>Capnography Waveform:</b></p> <ul style="list-style-type: none"> <li>Identify appropriate waveform to verify placement of advanced airway and monitor ventilatory status of patient</li> </ul>	
<b>INT</b>	<p><b>Normal Capnography</b></p> 	<p><b>CPR Assessment</b> -Maintain &gt;10 mmHg</p> 
<b>INT</b>	<p><b>Esophageal Intubation</b></p> 	<p><b>Sudden Increase in EtCO<sub>2</sub></b> -Return of ROSC</p> 
<b>INT</b>	<p><b>Decreasing EtCO<sub>2</sub></b> -à Perfusion, shock -Hyperventilation -ETT cuff leak</p> 	<p><b>Sudden Loss of Waveform</b> -Apnea -ETT disconnected, kinked, dislodged, or obstructed -Loss of perfusion -Cardiac arrest</p> 
<b>PARA</b>	<p><b>Increasing EtCO<sub>2</sub></b> -Hypoventilation -à quality of breathing</p> 	<p><b>Elevating Baseline</b> -Incomplete exhalation -May indicate asthma, COPD</p> 
<b>PARA</b>	<p><b>Loss of Alveolar Plateau "Shark Fin"</b> -Bronchospasm -Asthma -COPD</p> 	
<b>NOTES</b>	<ul style="list-style-type: none"> <li>Normal EtCO<sub>2</sub> range is 35-45 mmHg</li> <li>If using a ZOLL cardiac monitor, select "initialize" from menu as soon as possible when monitoring EtCO<sub>2</sub></li> <li>Emesis and secretions can alter the reliability of the sampling line, potentially clogging the cardiac monitor</li> <li>Loss of EtCO<sub>2</sub> detection or waveform indicates a potential airway problem and should be immediately investigated</li> </ul>	


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# CPAP – NON-INVASIVE POSITIVE PRESSURE VENTILATION

**INDICATIONS:** Clinical signs of moderate to severe respiratory distress not relieved by other interventions. If critical respiratory distress, may initiate CPAP at same time as other interventions. Patient must be able to maintain open airway, mask must correctly fit and secure, and MAP > 65mmHg.

**CONTRAINDICATIONS:** Respiratory arrest, pneumothorax, tracheostomy, uncontrolled vomiting or excessive secretions, facial deformity/trauma or problem preventing tight-fitting mask.

**OTHER GUIDELINES TO CONSIDER:** [Airway Management](#), [Difficulty Breathing](#)

<b>EMT</b>	<ul style="list-style-type: none"> <li>• Explain procedure to patient</li> <li>• Assemble device per manufacturers specifications. <b>Consider addition of a viral filter.</b> <ul style="list-style-type: none"> <li>○ Attach supplemental oxygen per manufacturers guidelines.</li> <li>○ Place capnography via cannula; consider adding a small bead of lube around the mask to create a seal.</li> </ul> </li> <li>• Instruct patient on use of device                             <ul style="list-style-type: none"> <li>○ Patient must be able to follow commands in order to be effective</li> </ul> </li> </ul>	
<b>AEMT</b>		
<b>INT</b>		
<b>PARA</b>		
<b>NOTES</b>		
	<ul style="list-style-type: none"> <li>• Place mask over patient’s mouth and nose                             <ul style="list-style-type: none"> <li>○ Instruct patient to slowly inhale through the nose and exhale through the mouth</li> </ul> </li> <li>• If patient is able to tolerate, secure the mask tightly in place with the head strap</li> <li>• Monitor patient’s response and air leaks, continually reassessing patient’s respiratory efforts                             <ul style="list-style-type: none"> <li>○ Titrate 5-10cm PEEP to achieve desired effect</li> <li>○ If patient is &lt;16 years of age, use 7.5cm PEEP</li> </ul> </li> <li>• Blood pressure, heart rate, and continuous monitoring of SpO2 and EtCO2 should be documented before administration, within 5 minutes of administration, and throughout patient care</li> <li>• If respiratory status worsens after initiating treatment:                             <ul style="list-style-type: none"> <li>○ Evaluate patient compliance and, if appropriate, offer verbal coaching and reassurance</li> </ul> </li> <li>• If patient unable to tolerate or if signs of clinical deterioration:                             <ul style="list-style-type: none"> <li>○ Remove mask and stop procedure</li> </ul> </li> </ul>	
	<ul style="list-style-type: none"> <li>• If CPAP is indicated, but patient anxiety is limiting CPAP use or patient is not able to tolerate, consider treating anxiety as outlined in <a href="#">Sedation</a> guideline to enhance tolerance of the therapy. Sedatives may decrease respiratory drive and precipitate worsening failure or arrest requiring prompt intubation. Sedatives, when needed, should be administered in small doses on an individualized basis.</li> </ul>	
	<ul style="list-style-type: none"> <li>• CPAP offers the ability to reduce patient work of breathing and improve respiratory gas exchange, while avoiding the risks and complications related to the placement of an ETT for acute exacerbations of asthma, COPD, CHF, and pneumonia.</li> <li>• Use caution in patients with a poor respiratory drive. If patient is not breathing adequately, begin positive pressure ventilations with a BVM.</li> <li>• A filter can be placed between the mask and PEEP valve without the use of a nebulizer as shown in the picture above. If used with a nebulizer, the medication will be filtered out.</li> </ul>	

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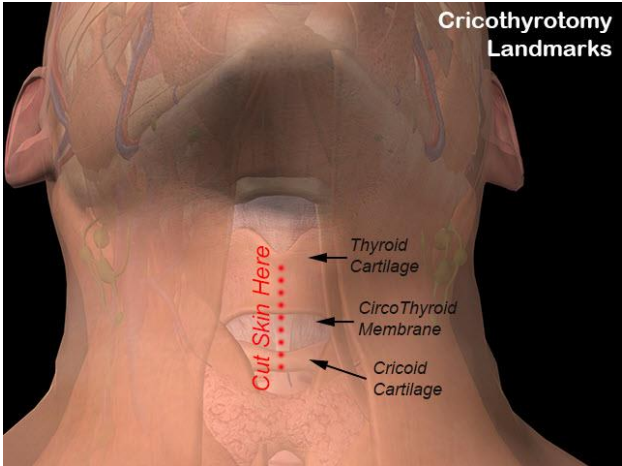
# CRICOTHYROTOMY - SURGICAL

**INDICATIONS:** Failed airway management when standard airway procedures cannot be performed or have failed in a patient that requires airway management, has an upper airway obstruction, or unable to adequately oxygenate and ventilate using less invasive methods (cannot intubate, cannot ventilate). If available, Needle cricothyrotomy preferred over surgical from 0 to 10 years old.

**CONTRAINDICATIONS:** Patients <1 years old, ability to oxygenate and ventilate using less invasive methods, inability to find anatomical landmarks, or suspected tracheal transection.

**OTHER GUIDELINE TO CONSIDER:** [Airway Management](#)

<b>PARA</b>	<ul style="list-style-type: none"> <li>• Place patient supine, in the sniffing position and extend the neck slightly</li> <li>• Position yourself on the same side of the patient as your dominant hand</li> <li>• Using your non-dominant hand, identify the cricothyroid membrane with your index finger while stabilizing the larynx between the thumb and middle finger.                         <ul style="list-style-type: none"> <li>○ Do not release the non-dominant hand from the neck until procedure is complete</li> <li>○ Cricothyroid membrane is below the thyroid cartilage and above the cricoid cartilage</li> </ul> </li> <li>• Clean area with alcohol prep</li> <li>• Using a scalpel, make a 1.5 – 2 inch incision in the midline of the neck, extending from the lower edge of the thyroid cartilage to the middle of the cricoid cartilage                         <ul style="list-style-type: none"> <li>○ Make the depth of the incision sufficient to extend through the skin and fatty tissue underneath to expose the cricoid cartilage</li> </ul> </li> <li>• Using the same scalpel, make a horizontal, plunging cut through the cricothyroid membrane, into the trachea                         <ul style="list-style-type: none"> <li>○ Cut laterally in one direction</li> <li>○ Turn blade 180° and cut in the opposite direction</li> </ul> </li> <li>• If needed, remove scalpel and use forefinger to perform blunt dissection to expand the incision</li> <li>• Insert an appropriately sized <a href="#">Endotracheal Introducer (Bougie)</a> for the age of the patient and size of the endotracheal tube through the incision, guiding it inferiorly into the trachea until resistance is met</li> <li>• Advance cuffed ETT over the <a href="#">Endotracheal Introducer (Bougie)</a> until the balloon is no longer visible and inflate cuff.                         <ul style="list-style-type: none"> <li>○ <b>Adult:</b> 6.0 mm or smaller</li> <li>○ <b>Pediatric:</b> use an appropriate size tube for hole in cricothyroid membrane</li> </ul> </li> <li>• Remove <a href="#">Endotracheal Introducer (Bougie)</a> and attach BVM to ETT</li> <li>• Begin gentle BVM ventilations, and confirm placement with <a href="#">Waveform Capnography</a></li> <li>• Visually inspect chest rise and confirm bilateral breath sounds and absent gastric sounds</li> <li>• Monitor patient for bilateral symmetric chest rise and no visible neck or soft-tissue distortion is noted</li> <li>• Secure ETT in place</li> <li>• Continuously monitor for changes in respiratory status during transport and after any patient movement or transfers</li> <li>• Monitor for complications (i.e., hemorrhage, dislodgement, expanding hematoma to neck). Subcutaneous emphysema may occur with inadequate seal</li> </ul>
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• In pediatrics, the thyroid and cricoid cartilages are higher in the neck and there is less room between the thyroid and cricoid cartilage. The cricothyroid membrane is smaller in proportion to an adult. If all equipment for a needle cricothyroidotomy is available, it is preferred over surgical cricothyrotomy up to ages 10-12.</li> <li>• Needle cricothyrotomy is the only option if &lt; 1 year old.</li> <li>• In pediatrics, the hyoid bone is often the most prominent palpable structure in the neck. The hyoid is higher than the thyroid cartilage. Once you palpate the hyoid bone cartilage and cricoid cartilage, if you are unable to identify the structures, and surgical cricothyroidotomy cannot be performed.</li> </ul>



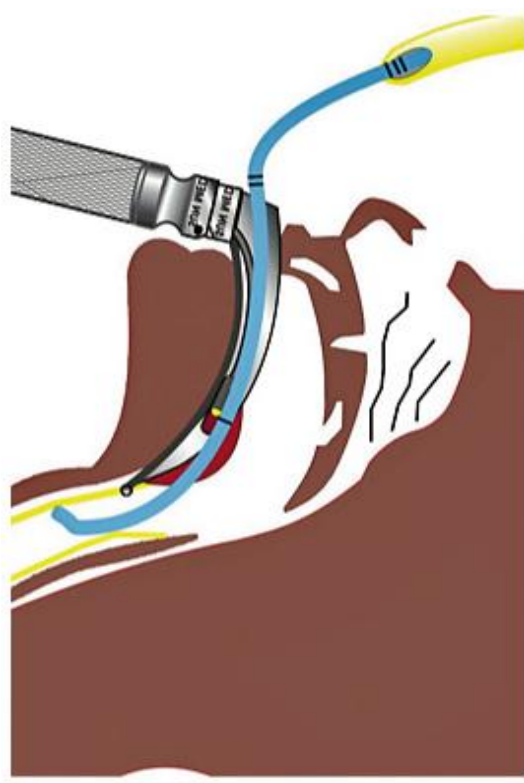
Initiated: 2/26/2024	Last Review/Revision Date:	Next Review Date: 6/1/2025
Effective Date: 6/1/2024	Approved by: Steven Andrews, MD, EMT-P, FAEMS	

# ENDOTRACHEAL INTRODUCER (BOUGIE)

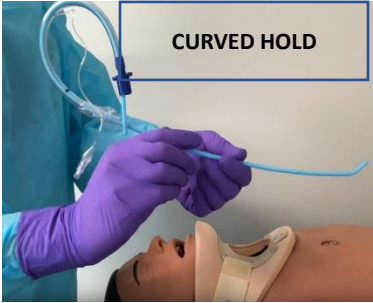
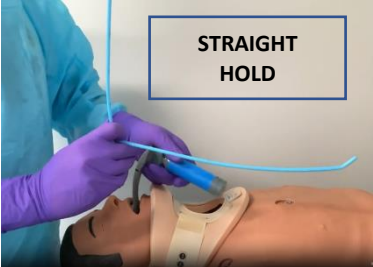

**INDICATIONS:** Facilitates routine endotracheal intubation as a first-pass device, patients where visualization of the glottic opening is difficult or inadequate despite external laryngeal manipulation and optimal positioning, glottis anterior and difficult to reach, glottic edema or other potential obstruction which prohibits the ETT passing through the vocal cords; any difficult airway (spinal immobilization, displaced larynx, distorted airway); adjunct for [Cricothyrotomy – Surgical](#)

**CONTRAINDICATIONS:** Use caution when inserting in any patient with known or suspected airway trauma

**OTHER GUIDELINES TO CONSIDER:** [Airway Obstruction](#), [Airway Management](#), [Cricothyrotomy – Surgical](#), [Endotracheal Intubation](#), [Medication Assisted Airway Management \(MAAM\)](#)

INT	<p><b>Standard Two-Person Technique:</b></p> <ul style="list-style-type: none"> <li>• Identify the epiglottis. To optimize view of vocal cords, bimanual laryngoscopy should be used in place of cricoid pressure or BURP.</li> <li>• Once an optimal view of the vocal cords is obtained, pass the bougie through the cords             <ul style="list-style-type: none"> <li>○ Advance the bougie into the trachea with tip pointing anteriorly and under the epiglottis.</li> <li>○ While advancing bougie, be sure to maintain the tip in the midline with an anterior orientation (do not allow rotation to either side)</li> <li>○ Tracheal rings may be felt when bougie tip remains pointed upright</li> </ul> </li> <li>• Advance bougie slowly until it lodges in the proximal bronchi. Use caution not to advance with too much force, as tracheobronchial trauma can occur</li> <li>• Confirm placement of the ETT introducer. Two tactile sensations suggest correct placement in the trachea:             <ul style="list-style-type: none"> <li>○ <b>Vibrations or “clicks”:</b> are felt as the tip of the bougie is advanced over the tracheal rings. The angled tip of the bougie <b>MUST</b> be oriented anteriorly for contact with rings</li> <li>○ <b>Resistance to further insertion (hard stop):</b> is experienced as the bougie advances to between 24 and 40cm from the teeth. The distal tip becomes lodged in smaller airways and cannot advance</li> </ul> </li> <li>• <b>If the bougie does not stop advancing, or has been inserted past 40cm, this suggests esophageal placement</b></li> <li>• Once the bougie is in the trachea, advance the distal end of the lubricated ETT over the free end of the bougie and into the trachea, while maintaining placement of laryngoscope             <ul style="list-style-type: none"> <li>○ Advance the ETT using a Seldinger-like technique                 <ul style="list-style-type: none"> <li>▪ This generally requires an assistant to place the ETT on the proximal end of the introducer. Advance the ETT over the introducer and into the trachea while maintaining placement of laryngoscope</li> <li>▪ If the tube cannot be advanced through the cords, rotate ETT 90° counterclockwise</li> </ul> </li> </ul> </li> <li>• Visualize the tube passing through the cords.             <ul style="list-style-type: none"> <li>○ If resistance is felt rotate the tube 90° clockwise (180° clockwise if tube was rotated counterclockwise to pass through vocal cords).</li> <li>○ Stop advancing once the cuff is past the cords</li> </ul> </li> <li>• Hold the tube firmly and withdraw the bougie</li> <li>• Confirm placement and then remove the laryngoscope</li> <li>• Attach EtCO<sub>2</sub> and ventilate with a BVM. Confirm tube placement with <a href="#">Waveform Capnography</a>. Additionally confirm by assessing for bilateral chest rise and bilateral lung sounds.</li> </ul>	
PARA		



<b>INT</b>	<p><b>One-Person Technique:</b></p> <ul style="list-style-type: none"> <li>• Preload the ETT with the bougie             <ul style="list-style-type: none"> <li>○ <b>Curved Hold:</b> <ul style="list-style-type: none"> <li>▪ Preload the lubricated endotracheal tube over the bougie so that the bougie projects approximately 10 cm from the distal end of the endotracheal tube</li> <li>▪ Form a loop with the endotracheal tube and proximal bougie and grasp it with the right hand</li> </ul> </li> <li>○ <b>Straight Hold:</b> <ul style="list-style-type: none"> <li>▪ Preload the lubricated endotracheal tube on the bougie so that the bougie projects approximately 6 to 10 cm from the distal end of the endotracheal tube and grasp it with the right hand</li> </ul> </li> </ul> </li> <li>• Insert the laryngoscope into the patient's mouth and attempt to visualize the glottis</li> <li>• Grasp the bougie loaded with the endotracheal tube in the right hand</li> <li>• Insert the distal end of the bougie through the vocal cords and into the trachea</li> <li>• Remove the laryngoscope</li> <li>• Advance the endotracheal tube over the bougie and into the trachea</li> <li>• Securely hold the endotracheal tube and withdraw the bougie</li> <li>• Confirm tube placement as noted above</li> <li>• Secure the endotracheal tube</li> <li>• Begin ventilation of the patient</li> </ul>	 
<b>PARA</b>	<p><b>Bougie Aided: <u>Cricothyrotomy – Surgical:</u></b></p> <ul style="list-style-type: none"> <li>• After the cricothyroid membrane is incised, advance the bougie caudally down trachea</li> <li>• Confirm trachea placement with palpable “vibrations or clicks” and resistance-hard stop</li> <li>• Advance a lubricated ETT over the bougie and advance slowly into trachea</li> </ul>	
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• The bougie is a 50- to 70-cm flexible stylet with the distal tip bent at a 30-degree angle. The bend allows the person intubating to direct the tip anteriorly under the epiglottis and through the vocal cords, which may not be visible.</li> <li>• <b>Endotracheal Introducer (Bougie) sizes:</b> <ul style="list-style-type: none"> <li>○ <b>Adult:</b> 15 French (external diameter 5 mm)                     <ul style="list-style-type: none"> <li>▪ <b>ETT size:</b> ≥ 6.0</li> </ul> </li> <li>○ <b>Pediatric:</b> 10 French (external diameter approximately 3.3 mm)                     <ul style="list-style-type: none"> <li>▪ <b>ETT size:</b> ≥ 4.0 and can accommodate an ETT as small as size 4.0.</li> </ul> </li> <li>○ <b>Neonatal:</b> 5 French (external diameter approximately 1.7 mm)                     <ul style="list-style-type: none"> <li>▪ <b>ETT ≥ size:</b> 2.5</li> </ul> </li> </ul> </li> <li>• Lubricant may be applied to the bougie if the ETT is a tight fit. Lubrication allows the ETT to pass over the bougie more easily. If the fit is not tight, lubricant is not recommended, as it can make the bougie difficult to grasp and control.</li> <li>• The bougie is difficult to use with hyper-angulated video laryngoscope blades because the bend required for the introducer to reach the larynx inhibits its advancement into the trachea.</li> <li>• Complications from bougie use, while rare, involve mechanical trauma to airway structures. Excessive force while advancing the bougie or the ETT might damage the larynx, trachea, or branches of the airway.</li> </ul>	

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# ENDOTRACHEAL INTUBATION

**INDICATIONS:** Unresponsive patients who are unable to maintain their own airway and have no gag reflex, foreign body airway obstruction with inability to ventilate by other means, or patients with an intact gag reflex with respiratory failure or inadequate oxygenation or ventilation not correctable by other interventions ([Medication Assisted Airway Management \(MAAM\)](#))

**CONTRAINDICATIONS:** Supraglottic airway secured with adequate ventilation and oxygenation

**OTHER GUIDELINES TO CONSIDER:** [Airway Obstruction](#), [Medication Assisted Airway Management \(MAAM\)](#)

## Resuscitate Before You Intubate!

### Preintubation Goals:

HR < SBP

SpO<sub>2</sub> > 93% whenever possible following preoxygenation for 3 minutes

**Plan:**

- Assess the patient’s airway whenever feasible, looking for traits associated with potential difficulty.
  - Is the patient hemodynamically stable, or is there a high risk for post intubation arrest?

**Position:**

- Position the patient with their external auditory meatus (ear) on the same horizontal plane as their sternal notch
  - Face should be parallel to ceiling, base of neck should be slightly flexed, ramp or pad under the upper back or shoulders as needed to achieve proper airway alignment

### 8 yo in Sniffing Position



**Preoxygenate:**

- Preoxygenate the patient to increase oxygen reserve saturation >93% when possible, to decrease chance of desaturation
- Administer apneic oxygenation throughout entire procedure via nasal cannula at 15 LPM.

**Prepare:**

- Have appropriate equipment prepared at the patient side
- Use video laryngoscopy, if available
- **IF AUTHORIZED:** Consider [Medication Assisted Airway Management \(MAAM\)](#) if appropriate for patient condition
- **If using a stylet:**
  - Lubricate stylet with water soluble lubricant
  - Insert stylet into ETT
  - Bend the tube/stylet to desired shape
    - Optimal shape for intubation with direct laryngoscopy is “straight-to-the-cuff” with a “hockey stick” bend at the cuff no more than 35°

INT

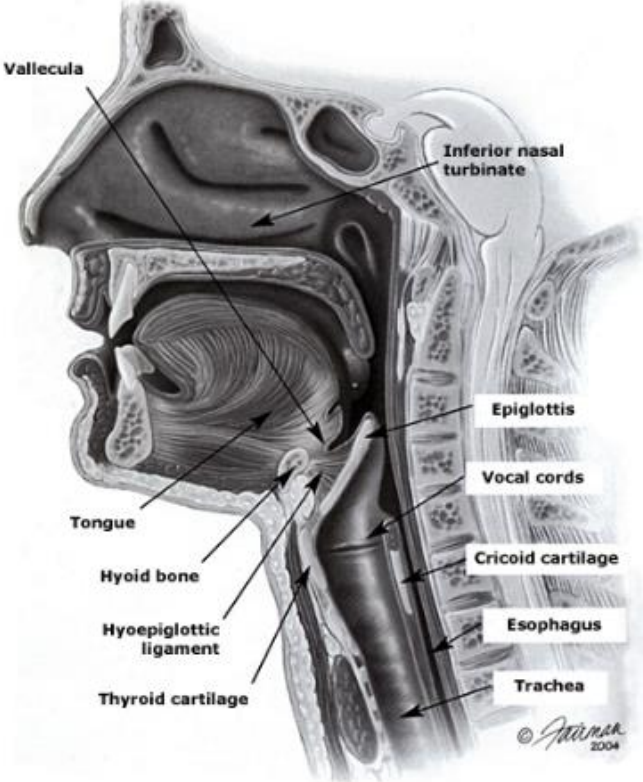
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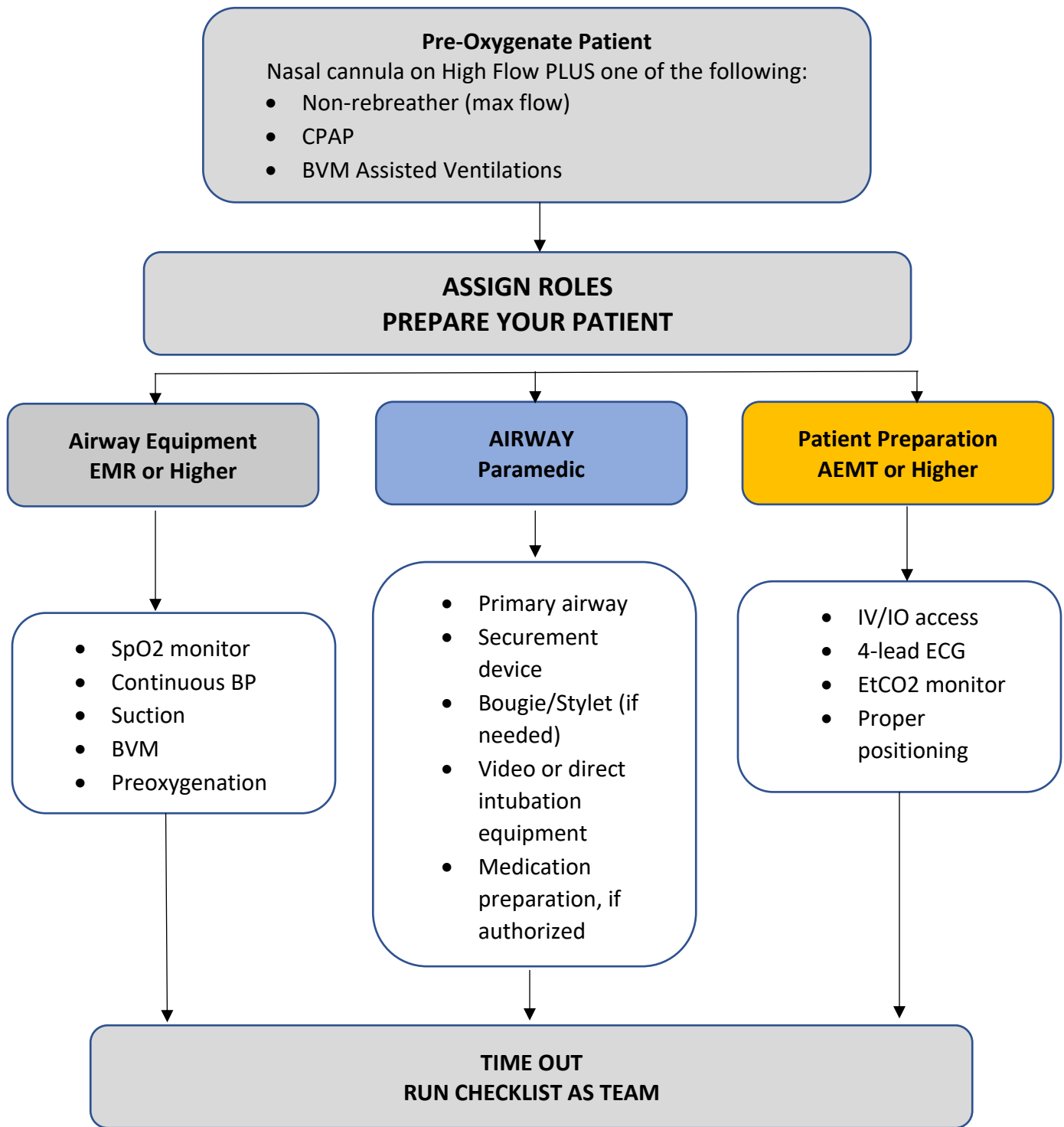
- Prepare (cont.):**
- Mnemonic for tracheal intubation preparation: **STOP MAID**
    - **S:** Suction – SALAD technique
    - **T:** Tools for intubation – (laryngoscope blades, handles, bougie or stylet, and other preferred devices)
    - **O:** Oxygen source for preoxygenation and ongoing ventilation
    - **P:** Positioning – ramp the patient to achieve alignment of the patient’s ear to the level of the sternal notch
  
    - **M:** Monitors (ECG, SpO2, NIBP, EtCO2)
    - **A:** Airway (BVM, airway devices (OPA, i-gel, ETTs, syringes, stylets))
    - **I:** Intravenous or **Intraosseous (IO) Access**
    - **D:** Drugs

- Procedure:**
- Open the mouth, using scissor technique if opening one handed
  - Suction the patient’s airway using Suction Assisted Laryngoscopy and Airway Decontamination (SALAD) technique
  - Following oral decontamination, insert the laryngoscope blade **slowly** until the epiglottis is visualized
    - **Curved blade (Mac):**
      - Advance blade into the vallecula
    - **Straight blade (Miller):**
      - Advance the blade just under the epiglottis
    - **Hyperangulated blade:**
      - Insert midline; view the cords by placing the blade tip at the base of the tongue in or near the vallecula. Apply forward pressure on the hyoepiglottic ligament to expose larynx
  - Maintain suction during insertion of the blade, keeping suction catheter tip in front of laryngoscope blade
  - Apply gentle lifting force, forward and upward, without rotating blade backward. Minimize contact with teeth.
  - To optimize cord view, bimanual laryngoscopy should be used in place of cricoid pressure or BURP

PARA



<b>INT</b>	<p><b>Procedure (cont.):</b></p> <ul style="list-style-type: none"> <li>• ETT is inserted from the right side of patients mouth to maximize view and provide control of the position of the tip of the ETT</li> <li>• Place the tracheal tube or bougie through the vocal cords             <ul style="list-style-type: none"> <li>○ <b>If using ETT with stylet:</b> <ul style="list-style-type: none"> <li>▪ Once an optimal view is obtained, pass tube through the right, and below the line-of-sight to the cords</li> <li>▪ If resistance is felt at glottic opening, rotate tube 90° counterclockwise</li> <li>▪ <b>The tube must be visualized passing through the cords. Advance tube until the cuff is seen passing through cords</b></li> <li>▪ If resistance is felt after passing through the cords, rotate the tube 90° clockwise</li> <li>▪ Once the tube is in place, hold tube firmly and remove stylet</li> </ul> </li> <li>○ <b>If using an <a href="#">Endotracheal Introducer (Bougie)</a></b> <ul style="list-style-type: none"> <li>▪ Once an optimal view is obtained, pass the bougie through the cords.</li> <li>▪ Advance the bougie <i>slowly</i> until it lodges in the proximal bronchi. If bougie does not stop advancing, this is suggestive of esophageal placement</li> <li>▪ Advance the lubricated ETT over the bougie without removing the laryngoscope.                             <ul style="list-style-type: none"> <li>• If the tube cannot advance through the cords, rotate 90° counterclockwise</li> </ul> </li> <li>▪ Visualize the ETT passing through the cords                             <ul style="list-style-type: none"> <li>• If resistance is felt, rotate ETT 90° clockwise (180° clockwise if tube was rotated counterclockwise to pass through vocal cords).</li> </ul> </li> <li>▪ Stop advancing once cuff is through cords</li> <li>▪ Hold the ETT firmly and remove the bougie.</li> <li>▪ Confirm placement, then remove laryngoscope</li> </ul> </li> </ul> </li> </ul>
<b>PARA</b>	<ul style="list-style-type: none"> <li>• <b>Note depth of ETT at teeth:</b> <ul style="list-style-type: none"> <li>○ Typical depth: ETT size x 3 (i.e., 7.0mm ETT should have a total depth of 21mm at teeth)</li> </ul> </li> <li>• Inflate the ETT with 5-10mL of air</li> <li>• Attach <a href="#">Waveform Capnography</a> and perform <a href="#">Bag Valve Mask (BVM) Ventilation</a></li> <li>• Confirm ETT placement with EtCO2 and bilateral lung sounds with equal chest rise and fall</li> <li>• If airway was contaminated prior to or during intubation, perform <a href="#">Suctioning</a> as needed</li> <li>• Secure tube with a commercial securing device</li> <li>• Consider <a href="#">Orogastric (OG) Tube Insertion</a> with 14 Fr or 16 Fr OG tube</li> <li>• After two unsuccessful <a href="#">Endotracheal Intubation</a> attempts, insert <a href="#">i-gel®</a> (or other supraglottic airway) or begin <a href="#">Bag Valve Mask (BVM) Ventilation</a></li> <li>• Ensure patient is reoxygenated and vital signs reevaluated between attempts</li> <li>• Consider modifying approach with each subsequent attempt             <ul style="list-style-type: none"> <li>○ Position</li> <li>○ New provider</li> <li>○ Equipment</li> </ul> </li> </ul>
<b>NOTES</b>	<p><b>Bimanual Laryngoscopy:</b></p> <ul style="list-style-type: none"> <li>• During intubation, an assistant places their hand on the patient’s thyroid cartilage</li> <li>• The person intubating guides the assistant's hand with their right hand to achieve the best laryngeal view. Have the assistant maintain pressure and direction once view is achieved             <ul style="list-style-type: none"> <li>○ The assistant maintains pressure on the thyroid cartilage in the same direction and with same force as guided by the person intubating</li> </ul> </li> </ul> <div style="text-align: right;">  </div>



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# i-gel®

**INDICATIONS:** [Cardiac Arrest](#) from any cause; respiratory arrest; unconscious patient with inadequate respirations and no gag reflex

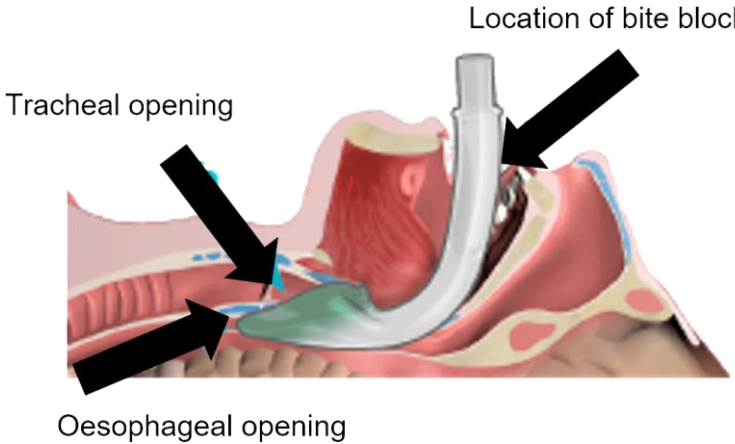
**CONTRAINDICATIONS:** Gag reflex, trismus, limited mouth opening, obstructing airway abscess or mass

**OTHER GUIDELINES TO CONSIDER:** [Airway Management](#), [Altered Mental Status](#), [Basic Airway Adjuncts](#), [Cardiac Arrest](#), [Suctioning](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>Select the appropriate size i-gel® based on patient weight/size:</li> </ul>																																																														
<b>EMT</b>	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th colspan="6">i-gel Size Chart</th> </tr> <tr> <th>i-gel Size</th> <th>NG Suction Size</th> <th>Patient Size</th> <th>Pt Weight Kilos</th> <th>Pt. Weight Pounds</th> <th colspan="2">Broselow</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>NA</td> <td>Neonate</td> <td>2-5 kg</td> <td>4-11 lbs</td> <td colspan="2">GRAY</td> </tr> <tr> <td>1.5</td> <td>10 Fr.</td> <td>Infant</td> <td>5-12 kg</td> <td>11-25 lbs</td> <td>PINK</td> <td>RED</td> </tr> <tr> <td>2</td> <td>10 Fr.</td> <td>Small Child</td> <td>10-25 kg</td> <td>22-55 lbs</td> <td>YELLOW</td> <td>WHITE</td> </tr> <tr> <td>2.5</td> <td>10 Fr.</td> <td>Large Child</td> <td>25-35 kg</td> <td>55-77 lbs</td> <td colspan="2">ORANGE</td> </tr> <tr> <td>3</td> <td>12 Fr.</td> <td>Small Adult</td> <td>30-60 kg</td> <td>65-130 lbs</td> <td colspan="2">GREEN</td> </tr> <tr> <td>4</td> <td>12 Fr.</td> <td>Medium Adult</td> <td>50-90 kg</td> <td>110-200 lbs</td> <td colspan="2"></td> </tr> <tr> <td>5</td> <td>12 Fr.</td> <td>Large Adult</td> <td>90+ kg</td> <td>200+ lbs</td> <td colspan="2"></td> </tr> </tbody> </table>	i-gel Size Chart						i-gel Size	NG Suction Size	Patient Size	Pt Weight Kilos	Pt. Weight Pounds	Broselow		1	NA	Neonate	2-5 kg	4-11 lbs	GRAY		1.5	10 Fr.	Infant	5-12 kg	11-25 lbs	PINK	RED	2	10 Fr.	Small Child	10-25 kg	22-55 lbs	YELLOW	WHITE	2.5	10 Fr.	Large Child	25-35 kg	55-77 lbs	ORANGE		3	12 Fr.	Small Adult	30-60 kg	65-130 lbs	GREEN		4	12 Fr.	Medium Adult	50-90 kg	110-200 lbs			5	12 Fr.	Large Adult	90+ kg	200+ lbs		
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<b>AEMT</b>	<ul style="list-style-type: none"> <li>Place head in sniffing position unless head/neck movement is contraindicated</li> <li>Remove dentures or removable plates from the mouth before attempting insertion</li> <li>Suction the airway prior to insertion</li> <li>Remove the i-gel® from the protective cradle or pack</li> <li>Lubricate the back, sides, and front of the cuff with a thin layer of water-based lubricant. Do not obstruct distal opening.</li> <li>Open the mouth; press down on the chin or perform a jaw thrust</li> <li>Insert the device downwards and backwards along the hard palate with a continuous but gentle push until definitive resistance is felt; the incisors should be resting on the integral bite block</li> <li>Attach ETCO2 (if available) to i-gel®</li> <li>Attach BVM to i-gel®</li> <li>Attempt to ventilate patient and CONFIRM placement of i-gel®:                             <ul style="list-style-type: none"> <li>Auscultation of bilateral breath sounds</li> <li>ETCO2 verified by <a href="#">Waveform Capnography</a></li> <li>Little gastric air channel leak; excessive leak means device is incompletely inserted</li> </ul> </li> </ul>																																																														
<b>INT</b>		<ul style="list-style-type: none"> <li>Ventilate the patient at the appropriate rate for patient size and/or condition</li> <li>Connect supplemental <a href="#">Oxygen</a> and titrate delivery to lowest level to maintain pulse oximetry greater than 93%</li> <li>Secure the i-gel® with head strap.                             <ul style="list-style-type: none"> <li>If no head strap available, the i-gel® should be taped from maxilla to maxilla. Ensure there is sufficient tension to hold the i-gel® in place.</li> </ul> </li> </ul>																																																													
<b>PARA</b>	<ul style="list-style-type: none"> <li>If required, an adequately lubricated and appropriately sized suction catheter may be passed down the gastric channel. Do not insert suction catheter through gastric channel if:                             <ul style="list-style-type: none"> <li>An excessive air leak through the gastric channel</li> <li>Esophageal varices</li> </ul> </li> </ul>																																																														





<b>NOTES</b>	<ul style="list-style-type: none"> <li>• If teeth are not properly aligned remove the i-gel® and reinsert with one size smaller</li> <li>• Be mindful that the seal can take up to 90 -120 seconds to seal; the cuff needs to warm up in order to seal to be effective. Initially a 'leak' may be present. Continue to ventilate the patient until the seal is confirmed.</li> <li>• No gastric channel is present on i-gel® size 1.0. If <b>Suctioning</b> is needed, suction the oropharynx using a hard or soft-tip suction catheter along the side of the i-gel®.</li> </ul> <div style="text-align: center; margin-top: 20px;">  </div>
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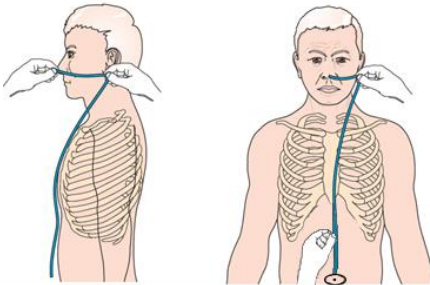
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# OROGASTRIC (OG) TUBE INSERTION

**INDICATIONS:** Patients with an advanced airway in place (endotracheal tube, i-gel, etc.).

**CONTRAINDICATIONS:** Patients without an advanced airway in place, known esophageal varices, ingestion of caustic substances

**OTHER GUIDELINES TO CONSIDER:** [Airway Management](#), [i-gel®](#)

<b>EMIR</b>	<ul style="list-style-type: none"> <li>• Determine maximum insertion depth                             <ul style="list-style-type: none"> <li>▪ Measure the length of the orogastric (OG) tube from the tip of the nose to the earlobe to the midpoint between the xiphoid process and the umbilicus</li> <li>▪ Use tape to mark the insertion depth on the tube</li> </ul> </li> <li>• Lubricate OG tube with water-based lubricant prior to insertion</li> <li>• Insertion using i-gel                             <ul style="list-style-type: none"> <li>▪ Insert lubricated tube through the gastric port of the i-gel</li> <li>▪ Continue to advance OG tube gently until the appropriate distance (max insertion depth) is reached</li> </ul> </li> </ul>																																																															
<b>EMT</b>																																																																
<b>AEMT</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="7" style="background-color: #334d5d; color: white;">i-gel Size Chart</th> </tr> <tr> <th style="background-color: #334d5d; color: white;">i-gel Size</th> <th style="background-color: #334d5d; color: white;">NG Suction Size</th> <th style="background-color: #334d5d; color: white;">Patient Size</th> <th style="background-color: #334d5d; color: white;">Pt Weight Kilos</th> <th style="background-color: #334d5d; color: white;">Pt. Weight Pounds</th> <th colspan="2" style="background-color: #334d5d; color: white;">Broselow</th> </tr> </thead> <tbody> <tr> <td style="background-color: #334d5d; color: white;">1</td> <td style="background-color: #334d5d; color: white;">NA</td> <td style="background-color: #334d5d; color: white;">Neonate</td> <td style="background-color: #334d5d; color: white;">2-5 kg</td> <td style="background-color: #334d5d; color: white;">4-11 lbs</td> <td colspan="2" style="background-color: #cccccc; text-align: center;">GRAY</td> </tr> <tr> <td style="background-color: #334d5d; color: white;">1.5</td> <td style="background-color: #334d5d; color: white;">10 Fr.</td> <td style="background-color: #334d5d; color: white;">Infant</td> <td style="background-color: #334d5d; color: white;">5-12 kg</td> <td style="background-color: #334d5d; color: white;">11-25 lbs</td> <td style="background-color: #ffcccc; text-align: center;">PINK</td> <td style="background-color: #ffcccc; text-align: center;">RED</td> </tr> <tr> <td style="background-color: #334d5d; color: white;">2</td> <td style="background-color: #334d5d; color: white;">10 Fr.</td> <td style="background-color: #334d5d; color: white;">Small Child</td> <td style="background-color: #334d5d; color: white;">10-25 kg</td> <td style="background-color: #334d5d; color: white;">22-55 lbs</td> <td style="background-color: #ffffcc; text-align: center;">YELLOW</td> <td style="background-color: #ffffcc; text-align: center;">WHITE</td> </tr> <tr> <td style="background-color: #334d5d; color: white;">2.5</td> <td style="background-color: #334d5d; color: white;">10 Fr.</td> <td style="background-color: #334d5d; color: white;">Large Child</td> <td style="background-color: #334d5d; color: white;">25-35 kg</td> <td style="background-color: #334d5d; color: white;">55-77 lbs</td> <td colspan="2" style="background-color: #ffcc00; text-align: center;">ORANGE</td> </tr> <tr> <td style="background-color: #334d5d; color: white;">3</td> <td style="background-color: #334d5d; color: white;">12 Fr.</td> <td style="background-color: #334d5d; color: white;">Small Adult</td> <td style="background-color: #334d5d; color: white;">30-60 kg</td> <td style="background-color: #334d5d; color: white;">65-130 lbs</td> <td colspan="2" style="background-color: #00ff00; text-align: center;">GREEN</td> </tr> <tr> <td style="background-color: #334d5d; color: white;">4</td> <td style="background-color: #334d5d; color: white;">12 Fr.</td> <td style="background-color: #334d5d; color: white;">Medium Adult</td> <td style="background-color: #334d5d; color: white;">50-90 kg</td> <td style="background-color: #334d5d; color: white;">110-200 lbs</td> <td colspan="2"></td> </tr> <tr> <td style="background-color: #334d5d; color: white;">5</td> <td style="background-color: #334d5d; color: white;">12 Fr.</td> <td style="background-color: #334d5d; color: white;">Large Adult</td> <td style="background-color: #334d5d; color: white;">90+ kg</td> <td style="background-color: #334d5d; color: white;">200+ lbs</td> <td colspan="2"></td> </tr> </tbody> </table>	i-gel Size Chart							i-gel Size	NG Suction Size	Patient Size	Pt Weight Kilos	Pt. Weight Pounds	Broselow		1	NA	Neonate	2-5 kg	4-11 lbs	GRAY		1.5	10 Fr.	Infant	5-12 kg	11-25 lbs	PINK	RED	2	10 Fr.	Small Child	10-25 kg	22-55 lbs	YELLOW	WHITE	2.5	10 Fr.	Large Child	25-35 kg	55-77 lbs	ORANGE		3	12 Fr.	Small Adult	30-60 kg	65-130 lbs	GREEN		4	12 Fr.	Medium Adult	50-90 kg	110-200 lbs			5	12 Fr.	Large Adult	90+ kg	200+ lbs		
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<b>INT</b>	<ul style="list-style-type: none"> <li>• Insertion with endotracheal tube:                             <ul style="list-style-type: none"> <li>▪ Pass a lubricated 14 Fr. or 16 Fr. orogastric tube lateral to the endotracheal tube</li> <li>▪ Direct the advancement of the OG through the esophagus</li> <li>▪ Advance the tube until one of the following occurs:                                     <ul style="list-style-type: none"> <li>○ The maximum insertion depth has been reached</li> <li>○ Gastric contents appear in the gastric tube</li> <li>○ Relief of gastric distention is obvious</li> </ul> </li> </ul> </li> </ul>																																																															
<b>PARA</b>	<ul style="list-style-type: none"> <li>• Confirm placement of the OG by injecting 20 mL of air and auscultating for gurgling/bubbling of air over the stomach                             <ul style="list-style-type: none"> <li>▪ If confirmation is doubtful, remove the tube and repeat the insertion</li> </ul> </li> <li>• Secure the OG tube</li> <li>• Connect the OG to low continuous suction (50-100 mmHg) or if available, low intermittent suction</li> </ul>																																																															

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# SUCTIONING

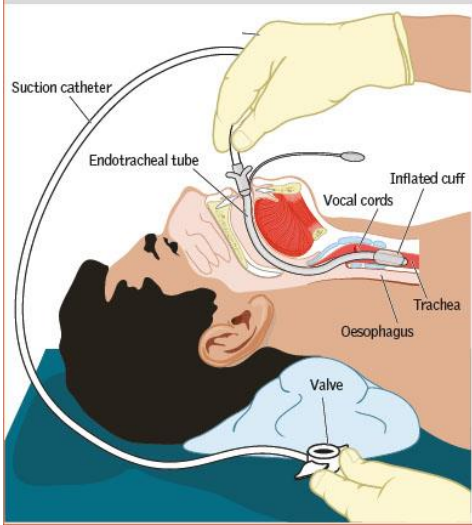
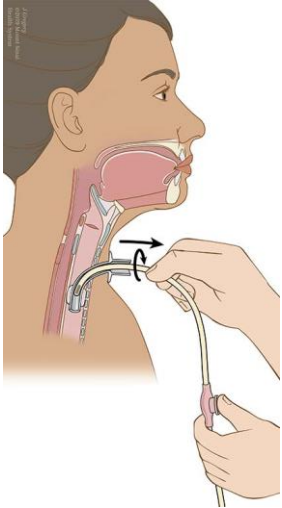
**INDICATIONS:** Any patient who cannot properly protect their airway, or is unable to control their secretions

**CONTRAINDICATIONS:** None

**OTHER GUIDELINES/PROCEDURES TO CONSIDER:** [Airway Management](#), [Cardiac Arrest](#), [Medication Assisted Airway Management \(MAAM\)](#), [Endotracheal Intubation](#), [Nausea or Vomiting](#), [Neonatal Resuscitation](#), [Overdose or Toxic Exposure](#)

EMR

- Elevate the patient's torso 30° if possible
- Select appropriate suction device
- Set mechanical suction device to appropriate pressure setting:
  - **Neonates:** 60-80 mmHg
  - **Infants:** 80-100 mmHg
  - **Children:** 100-120 mmHg
  - **Adults:** 120-150 mmHg
- Preoxygenate the patient
- Explain the procedure to the patient if they are conscious
- Suction the patient for brief periods (5-15 seconds depending on age) while monitoring breathing and oxygenation
  - **Oropharynx:**
    - Insert the catheter through the mouth, along the side of the mouth toward the trachea without the finger hole covered (no suction applied)
    - Advance the catheter 3 to 4 inches to reach the pharynx
    - Once inserted, cover the finger hole with a gloved finger to remove any secretions, blood, or other substances
    - Suction should be applied as catheter is being withdrawn
  - **Nasopharynx:**
    - Insert the catheter through one of the nares, along the floor of the nasal cavity toward the trachea.
    - Roll the catheter between your fingers to help advance it. Advance the catheter approximately 5 to 6 inches to reach the pharynx.
    - Once inserted, cover the finger hole with a gloved finger to remove any secretions, blood, or other substances
    - Suction should be applied as catheter is being withdrawn
    - Provide supplemental oxygen during intervals between suctioning.
- Do not insert catheter beyond the point of feeling resistance.
- Maximum suction time unless longer time is required to achieve airway patency:
  - **Adults:** 15 seconds
  - **Pediatrics:** 10 seconds
  - **Infants:** 5 seconds
- Once airway is clear, consider insertion of [Basic Airway Adjuncts](#), and provide [Oxygen](#) with a rate and device appropriate for the patient condition
- If patient is unconscious and/or not breathing, and is without a gag reflex, perform deep oral suctioning using a rigid suction catheter and a laryngoscope or tongue depressor for Suction Assisted Laryngoscopy and Airway Decontamination (SALAD). Suction until the airway is patent
- Reassess airway and maintain airway positioning
  - 30° torso elevation with ear to sternal notch alignment
  - If supine, face parallel to ceiling with ear to sternal notch alignment
- Continuously monitor vital signs and [Pulse Oximetry](#) observing for improvement or decompensation
- Consider [Suctioning](#) patient frequently as needed to minimize potential for aspiration
- SALAD technique should be performed for any unresponsive patients without a gag reflex prior to intubation.
  - **Rigid Tip:**
    - Place the suction catheter in the mouth and hypopharynx to decontaminate the airway before insertion of the laryngoscope
    - Place laryngoscope into the airway while suction catheter is deliberately advanced into the opening of the esophagus to provide continuous decontamination
    - Suction catheter is maneuvered behind the laryngoscope handle and lodged into the left corner of the mouth to allow traditional ETT placement from the right corner of the mouth

<b>EMT</b>	<p><b>Suctioning: Endotracheal Tube and Stoma</b></p> <ul style="list-style-type: none"> <li>• Preoxygenate patient</li> <li>• Measure appropriate suction catheter using the distance from the point of entry (ETT or stoma) to the suprasternal notch</li> <li>• Anticipate coughing: deep suctioning often causes patients to cough forcefully</li> <li>• Insert suction catheter to appropriate depth:             <ul style="list-style-type: none"> <li>○ Place gloved finger on thumb port to apply suction, and withdraw <b><i>slowly</i></b></li> <li>○ Provider discretion must be used regarding depth of suctioning</li> </ul> </li> <li>• Utilize supplemental oxygen and/or ventilations between suctioning attempts</li> <li>• Reassess airway and patient response. Continuously monitor vital signs and SpO2 observing for improvement or decompensation.</li> </ul>
<b>AEMT</b>	<div style="display: flex; justify-content: space-around;">   </div>
<b>INT</b>	<ul style="list-style-type: none"> <li>• If unable to obtain airway patency despite prolonged suctioning, consider:             <ul style="list-style-type: none"> <li>○ <b><u>Endotracheal Intubation</u></b></li> </ul> </li> </ul>
<b>PARA</b>	<ul style="list-style-type: none"> <li>• If unable to obtain airway patency despite suctioning and endotracheal intubation attempt unsuccessful, consider:             <ul style="list-style-type: none"> <li>○ <b><u>Cricothyrotomy – Surgical</u></b></li> </ul> </li> </ul>
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• Infants are typically obligate nasal breathers until about two to six months of age, suctioning of nasal secretions to remove airway obstruction in these patients can rapidly improve respiratory status.</li> </ul>

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# VENTILATOR MANAGEMENT

**ONLY IF AUTHORIZED BY OFFICE OF MEDICAL DIRECTION**

**INDICATIONS:** Transportation of a patient who requires chronic mechanical ventilation with a patent endotracheal tube or tracheostomy tube who has a ventilator that is not portable and requires mechanical ventilation throughout interfacility transport; patients who fail to adequately ventilate spontaneously after successful placement of an endotracheal tube by EMS

**CONTRAINDICATIONS:** Tension pneumothorax, [Cardiac Arrest](#)

**OTHER GUIDELINES TO CONSIDER:** [Airway Management](#)

**Abbreviations commonly used in this guideline include:**

- PIP** Peak Inspiratory Pressure cmH2O
- MAP** Mean Airway Pressure cmH2O
- PEEP** Positive End Expiratory Pressure cmH2O
- pPlat** Plateau Pressure
- Vte** Exhaled Tidal Volume Milliliters
- VE** Minute Volume
- Vt** Tidal Volume

**PATIENT IS ALREADY ON A VENTILATOR:**

- Verify the following information prior to transport:
  - Patient’s current mechanical ventilator settings, including:
    - Mode
    - Tidal volume (Vt)
    - Rate
    - FIO2
    - PEEP
    - I/E ratio, plateau pressure, and Peak Inspiratory Pressure (PIP)
  - Current oxygen saturation
  - Current ETCO2 level
  - If ETCO2 not monitored, initiate [Waveform Capnography](#)
- Document the following information prior to transport:
  - Patient's history and current medications
  - Baseline breath sounds
  - ET tube size, location, depth; trach size
  - Current vital sign trends (BP, HR, SpO2, ETCO2); recent suctioning; suctioning needs
  - ETCO2 waveform
- Review the current ventilator settings available on the transport ventilator with the Physician and/or Respiratory Therapist/Nurse
- Reproduce the ventilator settings on the transport ventilator as best as possible. Review this information prior to removing the patient's ventilator and replacing with the transport ventilator
- All monitoring equipment should be placed on the patient by EMS PRIOR to switching patient to the transport ventilator.
- Ensure you have enough oxygen to transport to the destination
- After obtaining all baseline vital signs, transition the patient to the transport ventilator. It may take the patient a few minutes to adjust to the new ventilator. If needed, provide Bag Valve Mask (BVM) Ventilation for several minutes.
- Once the patient has successfully transitioned to the transport ventilator and is tolerating it well, proceed to transfer the patient to the EMS stretcher for transportation.
- Position patient with HOB elevated 30-45 degrees unless contraindicated
- Following the transfer of the patient to the stretcher, conduct a thorough assessment of oxygenation, ventilation, and the overall comfort of the patient. Evaluate the adequacy of oxygen levels, the effectiveness of mechanical ventilation, and ensure that the patient is comfortable and stable before proceeding with transport

**Paramedics may only adjust FIO2, rate, and volume in Assist Control (AC) mode per state scope of practice**

PARA

PARA

**ADVANCED AIRWAY (ENDOTRACHEAL TUBE or i-gel®) PLACED BY EMS, NOT NORMALLY ON A VENTILATOR:**

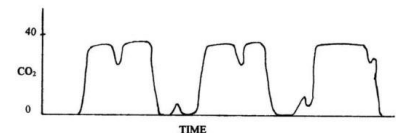
- Set ventilator to:
  - **Mode:**
    - Assist Control (AC)
  - **Tidal Volume (Vt):**
    - 6-8 ml/kg based on ideal body weight (IBW)
  - **Rate:**
    - 12-16/min to attain desired ventilation
    - May adjust rate to maintain ETCO<sub>2</sub> between 35-45 mmHg
  - **FiO<sub>2</sub>:**
    - Start at 100%
    - May adjust to maintain SpO<sub>2</sub> > 90%
    - Goal FiO<sub>2</sub> less than or equal to 60%
  - **PEEP:**
    - Start at 5 cm H<sub>2</sub>O
    - May adjust to maintain SpO<sub>2</sub> > 90% and FiO<sub>2</sub> less than or equal to 60%
  - Plateau Pressure goal less than 35 cm H<sub>2</sub>O

		Tidal Volume Vt									
Height		5' 0"	5' 2"	5' 4"	5' 6"	5' 8"	5' 10"	6' 0"	6' 2"	6' 4"	
6ml/kg Female		276	295	330	360	385	415	440	470	490	
6ml/kg Male		305	320	360	385	415	440	470	490	520	
7ml/kg Female		319	351	383	415	447	480	512	544	576	
7ml/kg Male		350	382	414	447	479	511	543	575	608	
8ml/kg Female		364	401	438	474	511	548	585	622	658	
8ml/kg Male		400	437	474	510	547	584	621	658	694	

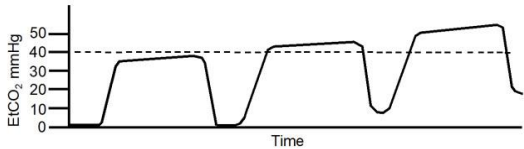
**GENERAL VENTILATOR MANAGEMENT:**

- All patients require continuous monitoring of the following throughout transport:
  - ECG
  - SpO<sub>2</sub>
  - ETCO<sub>2</sub>
- Reassesses ventilator settings, patient vital signs, and respiratory compliance every 5 minutes. Reassessment will be documented on patient care report
- If alarm on ventilator sounds, immediately check the patient. Reasons for alarms include:
  - **Low battery or insufficient power source:**
    - Alarm indicates when the ventilator's electrical supply is inadequate
    - This issue can be resolved by restoring the appropriate power supply
  - **Low-pressure alarm:**
    - Leak or disconnection
      - Reconnect or tighten connections
    - Check cuffed tube for leaks
    - Check Oxygen supply
  - **High pressure alarm:**
    - Ventilator uses too much pressure to deliver the tidal volume due to:
      - Breathing asynchronously or bucking the ventilator – consider [Sedation](#) Bronchospasms - see [Difficulty Breathing](#)
      - Coughing
      - Gagging
      - Biting on ET tube
        - Consider bite block
        - Consider [Sedation](#)
      - Secretions in airway that increase the resistance/pressure in airway - consider [Suctioning](#)
      - Kinks in ET tube or in the circuit (unkink tube)
      - Water in ventilator tubing (disconnect the tubing, empty water, reconnect tubing)
      - Improper ventilation settings
        - High or low tidal volumes
        - Excessive rate causing breath stacking and auto PEEP
      - Alveolar over distention
        - Disconnect the ventilator and allow for a prolonged exhalation
        - Provide BVM ventilations or reconnect the patient to the ventilator as necessary
      - Pneumothorax

Spontaneous respiratory efforts during mechanical ventilation:



<b>PARA</b>	<ul style="list-style-type: none"> <li>If unable to identify the cause of the ventilator alarm and/or patient’s condition deteriorates, disconnect from the ventilator and assist respirations with <b>Bag Valve Mask (BVM) Ventilation</b> <ul style="list-style-type: none"> <li>Consider <b>Sedation</b> if patient has continued anxiety</li> <li>If unable to provide adequate oxygenation/ventilation utilizing ventilator, remove the patient from the ventilator and begin <b>BVM Ventilation</b></li> <li>If during transport an equipment malfunction occurs, and/or the ventilator is not maintaining adequate respiratory compliance, the ventilator will be disconnected from the patient and the EMT-Paramedic will attach a BVM with supplemental O2 and begin <b>Bag Valve Mask (BVM) Ventilation</b></li> </ul> </li> <li>If acute respiratory deterioration occurs and obvious cause is not immediately determined, disconnect the patient from the ventilator and begin BVM Ventilations with a self-inflating resuscitation bag attached to 100% oxygen.</li> <li>Perform a rapid physical exam and check for “DOPE”             <ul style="list-style-type: none"> <li>Displacement of the airway (confirm tube placement with ETCO2)</li> <li>Obstruction of the airway or circuit (try to suction the airway)</li> <li>Assess lung sounds and provide <b>Suctioning</b> as needed</li> <li>Pneumothorax (monitor for stacked breaths and auto-peep)</li> <li>Equipment or O2 supply malfunction (attach a BVM and eliminate ventilator failure)</li> </ul> </li> <li>If ventilation does not improve, <b>CONTACT ONLINE MEDICAL CONTROL</b> for further recommendations</li> </ul> <p style="text-align: center;"><b>Paramedics may only adjust FIO2, rate, and volume in Assist Control (AC) mode per state scope of practice</b></p> <p>Upon arrival of the patient at the receiving facility the ED staff and /or RT will verify ventilator settings and assist with transfer of patient from the transport ventilator to the facility ventilator. The name of the RT/staff, ventilator settings, and printout of the ETCO2 waveform and patient assessment at the time of handoff at the receiving facility will be documented on the patient care report</p>
<b>NOTES</b>	<ul style="list-style-type: none"> <li>Anytime the patient is moved:             <ul style="list-style-type: none"> <li>Have someone maintain control of the ETT to avoid displacement</li> <li>Verify and document tube depth and placement with ETCO2</li> <li>Confirm breath sounds</li> </ul> </li> <li>Mechanical ventilation can cause the following: Monitor and assess the patient for:             <ul style="list-style-type: none"> <li>Pneumothorax</li> <li>Barotrauma (high plateau pressures)</li> <li>Hypoxemia</li> <li>Hyperventilation</li> <li>Hypoventilation</li> <li>Extubation of endotracheal or tracheostomy tube</li> </ul> </li> <li>Patients with obstructive lung disease such as asthma and COPD are more prone to:             <ul style="list-style-type: none"> <li><b>Breath stacking:</b> <ul style="list-style-type: none"> <li>Patient doesn’t have enough time to get air out of their lungs due to bronchial obstructions</li> <li>Over inflated lungs can develop a pneumothorax or barotrauma</li> <li>ETCO2 is usually elevated</li> <li>Treatment:                     <ul style="list-style-type: none"> <li>Disconnect the patient from the vent circuit and allow the air to escape</li> <li>Reconnect the circuit and consider decreasing the RR</li> <li>Consider <b>Sedation</b></li> </ul> </li> </ul> </li> <li><b>Breath Stacking:</b> Image below shows the ETCO2 waveform baseline increasing with each successive breath as well as the plateau waveform. This indicates incomplete exhalation.</li> <li><b>Auto Peep:</b> <ul style="list-style-type: none"> <li>Occurs from breath stacking and not allowing all the air to be exhaled</li> <li>Plateau pressures will be increased &gt; 30 cm H2O                     <ul style="list-style-type: none"> <li>Decrease respiratory rate</li> <li>Consider inline nebulizer treatment</li> </ul> </li> </ul> </li> </ul> </li> </ul>

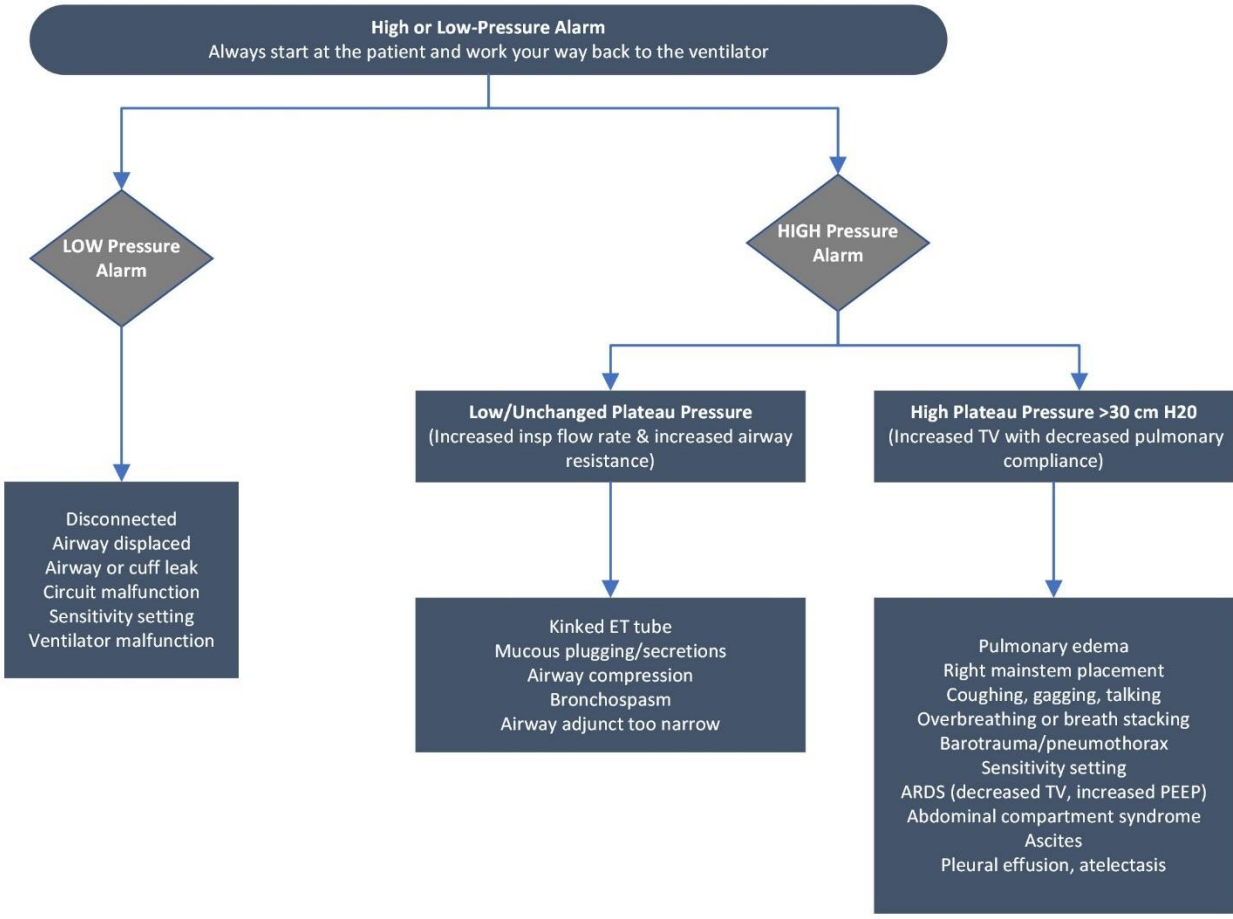


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# AURORA SOUTH WI EMS

## GENERAL VENTILATOR MANAGEMENT



# ASSESSMENT

[Blood Glucose Monitoring](#)

[Mass Casualty Triage – S.A.L.T.](#)

[Pulse Oximetry](#)

[Restraints – Physical](#)

[Stroke Scale](#)

# BLOOD GLUCOSE MONITORING

**INDICATIONS:** [Altered Mental Status](#), history of diabetes

**CONTRAINDICATIONS:** None

**OTHER GUIDELINE TO CONSIDER:** [Hypoglycemia or Hyperglycemia](#), [Altered Mental Status](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• Prepare glucose monitoring equipment prior to starting procedure:                             <ul style="list-style-type: none"> <li>○ Glucose monitor</li> <li>○ Test strip</li> <li>○ Alcohol swab</li> <li>○ Lancet</li> <li>○ Bandage</li> <li>○ Sharps container</li> </ul> </li> <li>• Prepare site for capillary blood access, ensuring site is warm prior to puncture</li> <li>• Disinfect puncture site with an alcohol swab, cleaning the area thoroughly</li> <li>• Insert test strip into glucose monitor, confirming the monitor is ready for a sample analysis</li> <li>• Remove the safety cap from the lancet, keeping fingers away from the needle end</li> <li>• Place lancet flush against the skin, activating the needle</li> <li>• Properly dispose sharps in an approved sharps container</li> <li>• Massage skin surrounding puncture site to produce a drop of blood, if necessary.                             <ul style="list-style-type: none"> <li>○ <b>NOTE:</b> patients on blood thinning medication may have minor bleeding after the puncture due to decreased coagulopathy. Apply slight direct pressure before bandaging</li> </ul> </li> <li>• Place the well of the test strip directly on top of the blood sample, at a 90-degree angle. The glucose monitor will wick the blood sample and alert when an adequate sample has been collected</li> <li>• Clean and bandage patient’s skin</li> <li>• Document blood glucose level as appropriate. Readings are measured by milligrams per deciliter (mg/dL)</li> </ul>
<b>EMT</b>	
<b>AEMT</b>	
<b>INT</b>	
<b>PARA</b>	
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• Typical blood glucose levels in adults ranges from 70mg/dL – 120mg/dL</li> <li>• Consider varying glucose values based on patient’s SAMPLE history (medical history, medications, recent food/drink intake)</li> </ul>

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# MASS CASUALTY TRIAGE – S.A.L.T.

**INDICATIONS:** For any incident where the number and/or severity of patients exceeds the capabilities of immediately available resources.

**CONTRAINDICATIONS:** None

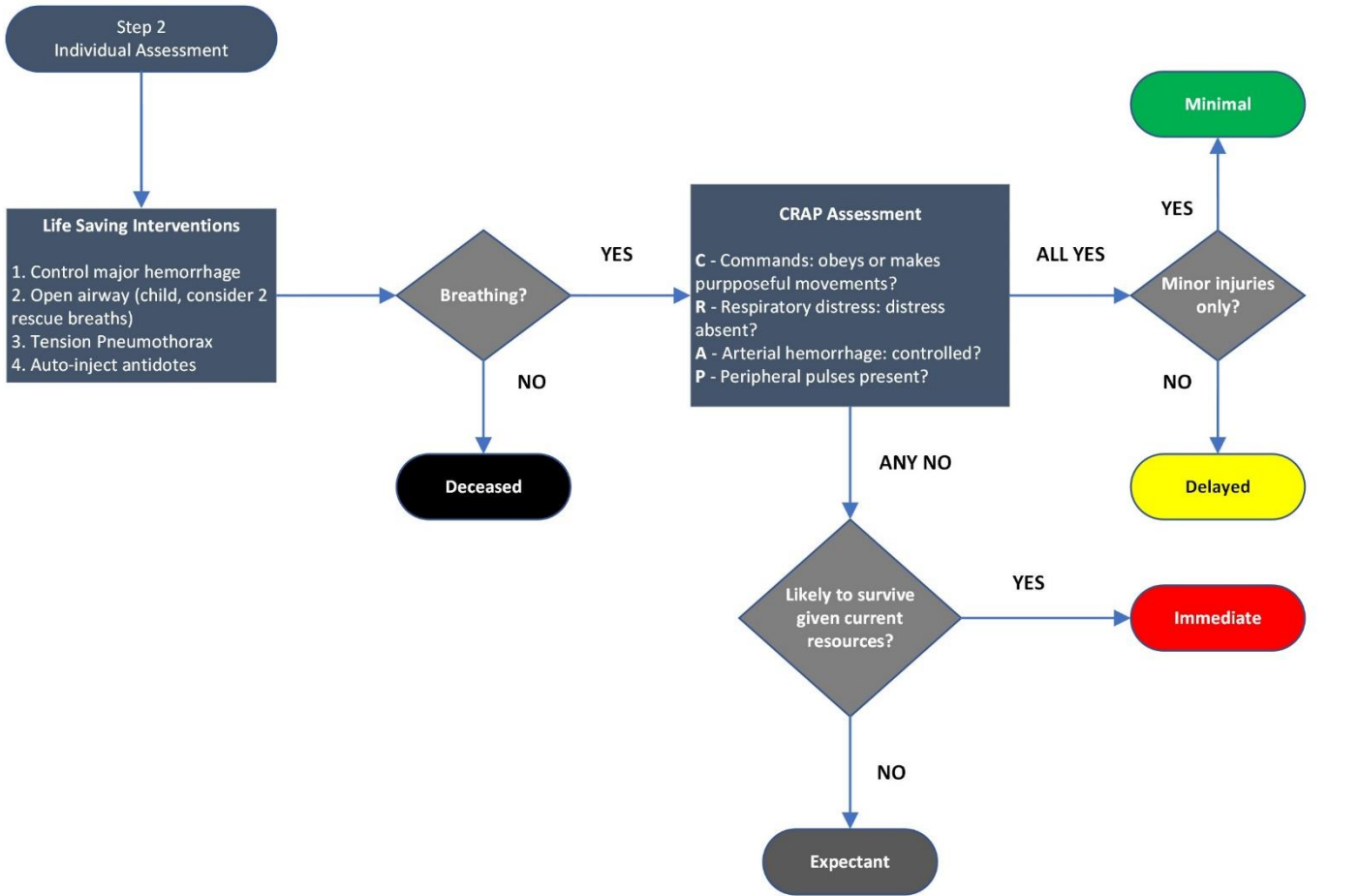
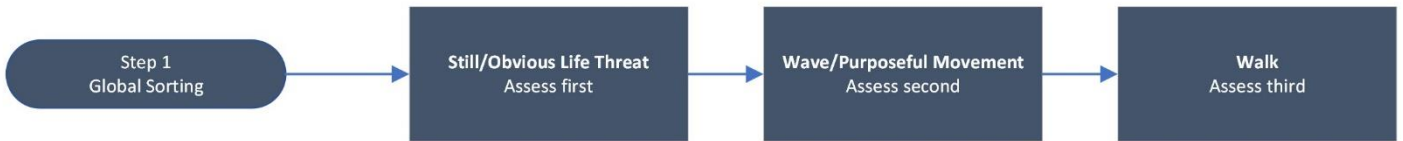
**OTHER GUIDELINE TO CONSIDER:** [Traumatic Injuries](#), [Hemorrhage Control](#), [Hypotension or Shock](#), [Overdose or Toxic Exposure](#), [Burns](#)

<b>EMR</b>	<p><b>Global Sorting:</b></p> <ul style="list-style-type: none"> <li>Patients who can walk should be asked to move to a designated area and should be assigned <b>LAST</b> priority for individual assessment</li> <li>Patients who remain should be asked to wave or be observed for purposeful movement, and should be assigned <b>SECOND</b> priority</li> <li>Patients observed still or with notable life threats should be assigned <b>FIRST</b> priority.</li> </ul>
<b>EMT</b>	<p><b>Assess and Life Saving Interventions:</b></p> <ul style="list-style-type: none"> <li>Control major hemorrhage using bleeding control devices or direct pressure that can be maintained by other patients or bystanders</li> <li>Open the airway through positioning or use of <a href="#">Basic Airway Adjunct – OPA</a>, <a href="#">Basic Airway Adjunct – NPA</a>. For apneic <b>pediatric</b> patients, consider giving rescue breaths</li> <li><b>INTERMEDIATE LEVEL OR HIGHER:</b> Consider <a href="#">Needle Decompression</a> <ul style="list-style-type: none"> <li><b>NOTE:</b> Lifesaving interventions should only be performed within the providers scope of practice and only if the equipment is immediately available</li> </ul> </li> </ul>
<b>AEMT</b>	<p><b>Treatment and/or Transport:</b></p> <ul style="list-style-type: none"> <li>Prioritize patients for treatment and/or transport based on the following categories:                             <ul style="list-style-type: none"> <li><b>GREEN</b> (minimal):                                     <ul style="list-style-type: none"> <li>Mild injuries that are self-limited if not treated and can tolerate delay in care without increased mortality</li> </ul> </li> <li><b>YELLOW</b> (delayed):                                     <ul style="list-style-type: none"> <li>Injuries that require treatment and evaluation at a hospital, but such care can be delayed while higher acuity patients are treated</li> </ul> </li> <li><b>RED</b> (immediate):                                     <ul style="list-style-type: none"> <li>Inability to follow commands, absent peripheral pulses, respiratory distress, or uncontrolled hemorrhage</li> </ul> </li> <li><b>GREY</b> (expectant):                                     <ul style="list-style-type: none"> <li>Injuries are likely not survivable given current available resources</li> </ul> </li> <li><b>BLACK</b> (deceased):                                     <ul style="list-style-type: none"> <li>Not breathing after lifesaving interventions have been attempted</li> </ul> </li> </ul> </li> <li>Treatment and/or transport should be provided for <b>RED</b> patients first, <b>YELLOW</b> patients second, <b>GREY</b> patients third, and <b>GREEN</b> patients last</li> <li>Efficient transport of patients may require mixing categories of patients and using alternate forms of transportation</li> </ul>
<b>INT</b>	
<b>PARA</b>	
<b>NOTES</b>	<ul style="list-style-type: none"> <li>S.A.L.T. – Sort, Assess, Lifesaving interventions, Treatment and/or Transport</li> </ul>

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# AURORA SOUTH WI EMS SALT MASS CASUALTY TRIAGE

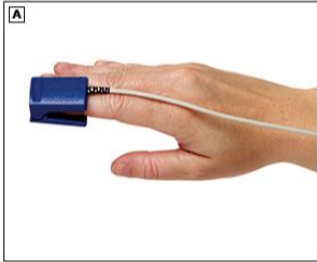

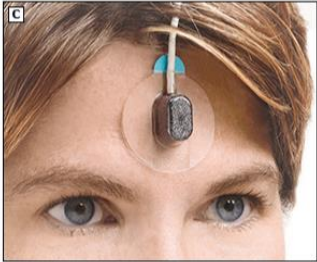







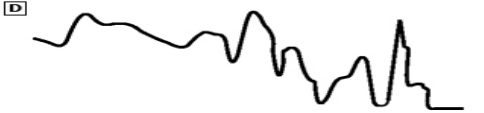


# PULSE OXIMETRY

**INDICATIONS:** Any patient in which vital signs are assessed and/or continuous monitoring of respiratory status is required

**CONTRAINDICATIONS:** None

**OTHER GUIDELINES TO CONSIDER:** [Airway Management](#), [Capnography](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>Place sensor on the appropriate site for data collection.                             <ul style="list-style-type: none"> <li>Adult: Finger, earlobe, toe, forehead</li> </ul> </li> <li>Place appropriately sized disposable sensor on the appropriate site for data collection:                             <ul style="list-style-type: none"> <li>Infant: Finger or toe</li> <li>Neonate: Around the foot</li> <li>Newborn: right palm or right wrist</li> </ul> </li> </ul>	  
<b>EMT</b>	<ul style="list-style-type: none"> <li>Allow device to register oxygen saturation level</li> <li>Verify reliable reading by observing monitor waveform and/or comparing manual pulse with rate on pulse oximetry                             <ul style="list-style-type: none"> <li>Factors that may reduce the reliability of pulse oximetry reading include:                                     <ul style="list-style-type: none"> <li>Poor peripheral circulation (hypovolemic, hypotension, hypothermia)</li> <li>Excessive pulse oximeter sensor motion</li> <li>Fingernail polish (remove with acetone if available)</li> <li>Carbon Monoxide: If suspected or known CO exposure, SpO2 should be considered unreliable administer High flow <a href="#">Oxygen</a></li> <li>Irregular heart rhythms (A-Fib, SVT, etc.)</li> <li>Jaundice</li> <li>Placement of blood pressure cuff on same extremity as pulse oximetry probe</li> </ul> </li> </ul> </li> </ul>	   
<b>AEMT</b>		
<b>INT</b>	<ul style="list-style-type: none"> <li>Titrate oxygen to maintain an SPO2 of 93-99%. A target level of 88-92% may be sufficient in a patient with an acute exacerbation of chronic obstructive pulmonary disease (COPD) who is chronically hypercapnic.</li> </ul>	
<b>PARA</b>	<p><b>Pulse oximeter waveform</b></p>  <p style="text-align: right;">Normal signal</p>  <p style="text-align: right;">Low perfusion</p>  <p style="text-align: right;">Noise artifact</p>  <p style="text-align: right;">Motion artifact</p>	
<b>NOTES</b>		

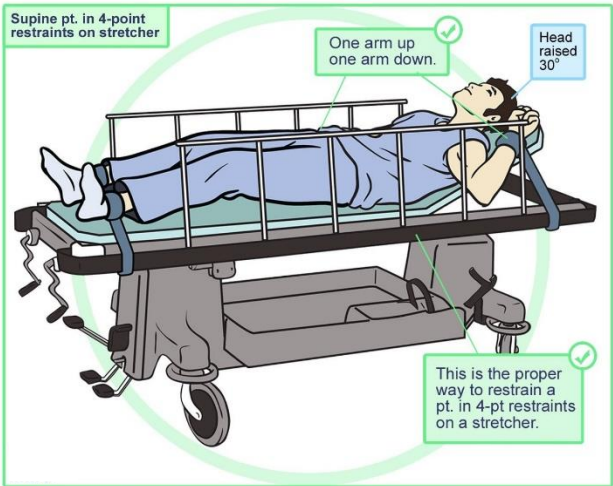
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# RESTRAINTS – PHYSICAL

**INDICATIONS:** Patients presenting in a manner that presents an imminent threat of harm to themselves or others AND no less invasive option is available and/or reasonable

**CONTRAINDICATIONS:** Patients who are not a threat to themselves or others, or who can be managed with less invasive interventions

**OTHER GUIDELINE TO CONSIDER:** [Altered Mental Status](#), [Behavioral or Psychiatric Emergencies](#), [Overdose or Toxic Exposure](#), [Restraints – Chemical](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• <a href="#">Universal Care</a></li> <li>• Approach patient in a calm, non-threatening manner, both physically and in your conversation</li> <li>• Minimize external stimulation</li> <li>• Utilize de-escalation techniques when needed</li> <li>• The least restrictive means of managing the patient should always be employed first</li> <li>• Reposition BEFORE you restrain! NEVER restrain a patient in the prone position.                         <ul style="list-style-type: none"> <li>○ Reposition the patient to ensure their airway and breathing are not restricted before proceeding</li> </ul> </li> <li>• Ensure that an adequate number of personnel are present to safely restrain the patient</li> <li>• Restrain the patient in a lateral or supine position                         <ul style="list-style-type: none"> <li>○ No devices such as a spine board, splint, or other restrictive objects should be placed on top of the patient</li> </ul> </li> <li>• <b>Soft Restraints:</b> Secure extremities in 2-point or 4-point restraints                         <ul style="list-style-type: none"> <li>○ Apply soft restraints around the ankles and attempt to restrain lower extremities first</li> <li>○ Next, apply soft restraints around the patient’s wrists and restrain the patient’s arms                                 <ul style="list-style-type: none"> <li>▪ Consider restraining one arm at the side and the other arm up near the head</li> <li>▪ Never apply a single restraint or 2-foot restraint only</li> </ul> </li> <li>○ Always use a quick release knot when using soft restraints</li> <li>○ Restraints should be secured to non-moving parts of the cot</li> <li>○ Elevate the head of the cot 30°</li> </ul> </li> <li>• <b>Leather Restraints:</b> Secure all 4 extremities unless ordered otherwise, placed in the order above</li> <li>• Assess neurovascular status upon application and every 15 minutes thereafter</li> <li>• Handcuffs and Zip-Strips can ONLY be used by Law Enforcement                         <ul style="list-style-type: none"> <li>○ Law Enforcement MUST remain with the patient during transport when these types of restraints are in place</li> </ul> </li> <li>• If patient is resisting the restraints or attempts to restrain the patient are unsuccessful, request a paramedic unit for possible <a href="#">Restraints – Chemical</a></li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>• While restrained, the patient must ALWAYS be under constant observation by EMS personnel, including:                         <ul style="list-style-type: none"> <li>○ Direct visualization of the patient</li> <li>○ Continuous <a href="#">Cardiac Monitoring</a>, <a href="#">Pulse Oximetry</a>, and <a href="#">Waveform Capnography</a>, when indicated</li> </ul> </li> <li>• Document the following on every incident involving the use of restraints:                         <ul style="list-style-type: none"> <li>○ Rationale for restraint use</li> <li>○ Type of restraint and location of application</li> <li>○ Time restraint was applied</li> <li>○ Neurovascular status of extremities before and after application</li> <li>○ Any change in restraint application or neurovascular rechecks</li> </ul> </li> </ul>
<b>AEMT</b>	
<b>INT</b>	
<b>PARA</b>	
<b>NOTES</b>	

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# STROKE SCALE







**INDICATIONS:** Patient has signs or symptoms consistent with possible stroke or a Transient Ischemic Attack (TIA)

**CONTRAINDICATIONS:** Patients with symptoms that are readily resolved with treatment of hypoglycemia; patients with symptoms secondary to traumatic injury

**OTHER GUIDELINE TO CONSIDER:** [Altered Mental Status](#), [Dizziness or Vertigo](#), [Hypoglycemia or Hyperglycemia](#), [Suspected Stroke](#), [Syncope](#)

- Assess for possible stroke using BE-FAST stroke screening tool

## B E F A S T

	BALANCE	EYES	FACE	ARM	SPEECH	TERRIBLE HEADACHE
EMR	B E F A S T					
EMT						
AEMT	Sudden loss of balance?	Loss of vision in one or both eyes?	Face looks uneven?	Arm or leg weak/hanging down?	Speech slurred? Trouble speaking or seem confused?	Thunder clap headache? Worst headache of your life?

LVO		
Large Vessel Occlusion Screening Criteria		
	ASSESEMENT	Positive if ANY:
INT	<b>S</b> <i>Speech Changes</i>	1) Ask patient to repeat the phrase: <i>"You can't teach an old dog new tricks"</i>
PARA	<b>N</b> <i>Neglect</i>	With patient's eyes closed: 1) Touch patient's RIGHT hand 2) Touch patient's LEFT hand 3) Touch patient's R & L hand at the same time
PARA	<b>O</b> <i>Ocular Deviation</i>	1) Ask patient to look to the right 2) Ask patient to look to the left
		<b>Positive if ANY:</b> Mute Speaking gibberish Trouble speaking or understanding Trouble following commands Patient can only feel touch on ONE side Obvious difficulty looking in one direction Both eyes deviate to one side & do not pass midline

<b>NOTES</b>	<p><b>How to perform a stroke exam:</b></p> <p><b>Balance:</b> Did the patient suddenly lose balance or coordination? Walk patient or have them try to sit up on their own</p> <p><b>Eyes:</b> Does the patient have sudden blurred or double vision, or loss of vision in one or both eyes? Check each eye for sight</p> <p><b>Face:</b> Does one side of the face droop? Have patient smile (face looks uneven suddenly)</p> <p><b>Arm:</b> Does one arm drift downward? Check drift and sensation in arms and legs (sudden weakness or numbness)</p> <p><b>Speech:</b> Are words slurred? Can the patient repeat a sentence correctly? Ask pt to say 'You can't teach an old dog new tricks' (note trouble speaking or understanding)</p> <p><b>Terrible Headache:</b> Does the patient have a headache? Ask patient about headache symptoms (sudden onset, worst headache of their life)</p>
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# CARDIAC

[Cardiac Monitoring](#)

[12 Lead ECG](#)

[Defibrillation](#)

[Mechanical CPR Device – LUCAS](#)

[Synchronized Cardioversion](#)

[Transcutaneous Cardiac Pacing \(TCP\)](#)

[Valsalva Maneuver](#)

# CARDIAC MONITORING

**INDICATIONS:** Anyone with signs and/or symptoms of a cardiac or pulmonary complaint, an altered mental status, abnormal vital signs, or routine monitoring at the discretion of the provider

**CONTRAINDICATIONS:** None

**OTHER GUIDELINE TO CONSIDER:** [12 Lead ECG](#)

<b>EMT</b>	<ul style="list-style-type: none"> <li>• Explain procedure to patient if possible</li> <li>• Attach electrodes to monitor leads</li> <li>• Loosen/remove clothing for electrode placement</li> <li>• Prepare skin to ensure adhesion of the electrodes and/or pads                             <ul style="list-style-type: none"> <li>○ Clip/shave excess hair</li> <li>○ Dry chest if necessary to remove lotion or moisture</li> </ul> </li> <li>• Attach all available leads (3-5 depending on manufacturer) as follows:                             <ul style="list-style-type: none"> <li>○ Right arm (RA): White</li> <li>○ Left arm (LA): Black</li> <li>○ Left leg (LL): Red</li> <li>○ Right leg (RL): Green</li> <li>○ Chest (V1): Brown                                     <ul style="list-style-type: none"> <li>▪ 4<sup>th</sup> intercostal space, right of sternum</li> </ul> </li> </ul> </li> <li>• Ensure ECG cable is not pulling on individual electrodes</li> <li>• Turn on cardiac Monitor</li> <li>• Acquire a six (6) inch copy of the ECG tracing to accompany the patient to the hospital</li> <li>• Document procedure</li> </ul>	
<b>AEMT</b>		
<b>INT</b>	<ul style="list-style-type: none"> <li>• Document interpretation of ECG rhythm</li> </ul>	
<b>PARA</b>		
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• Lead II is the standard lead used to monitor the patient's ECG</li> <li>• A 3, 4, 5 Lead ECG is not sufficient to rule out cardiac ischemia or injury, a 12-lead ECG must be performed</li> </ul>	

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# 12 LEAD ECG

**INDICATIONS:** Chest discomfort or any other symptoms of potential cardiac origin such as upper abdominal pain, dyspnea, nausea, diaphoresis, lightheadedness, or syncope; bradycardia, tachycardia, and ROSC; Stroke symptoms

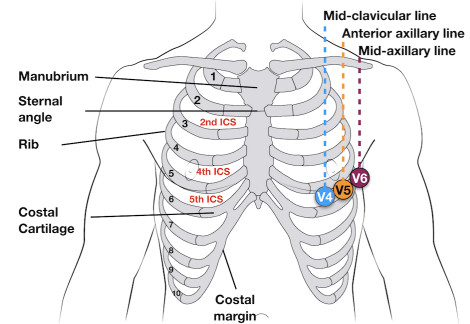
**CONTRAINDICATIONS:** None

**OTHER GUIDELINES TO CONSIDER:** [Bradycardia – Adult \(8 Years & Older\)](#), [Tachycardia](#), [Cardiac Arrest](#), [Suspected Stroke](#), [Dizziness or Vertigo](#), [Chest Pain/Acute Coronary Syndrome \(ACS\)](#)

## 12 Lead ECG:

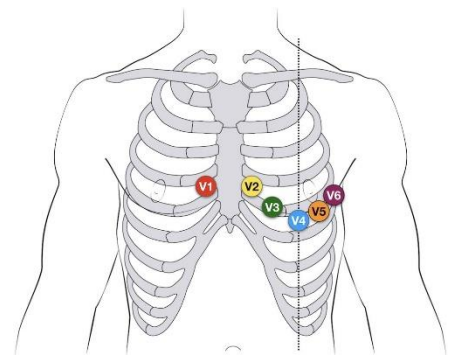
EMT

- Position patient in semi-recumbent position (preferred)
- Prepare cardiac monitor and connect additional leads to patient cable
- Label the ECG *prior* to obtaining the 12-lead to ensure information appears on the acquired tracing
- Expose enough of the patient’s chest to ensure proper electrode placement
  - Shave excess hair
  - Dry skin, removing perspiration with an alcohol prep
  - Apply chest leads and extremity leads using the landmarks below. Limb leads should be placed distal to the hip and shoulder joints whenever possible



AEMT

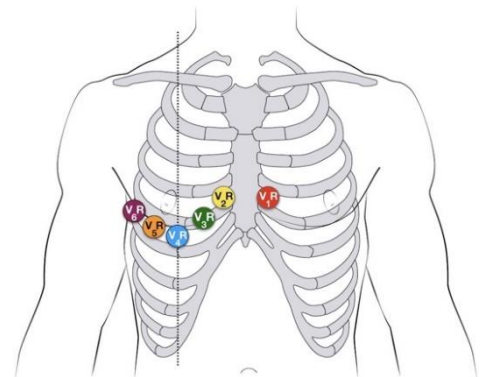
- **RA:** Right arm, past the shoulder joint
  - **LA:** Left arm, past the shoulder joint
  - **RL:** Right leg, past the hip joint
  - **LL:** Left leg, past the hip joint
  - **V1:** 4<sup>th</sup> intercostal space at the right sternal border
  - **V2:** 4<sup>th</sup> intercostal space at the left sternal border
  - **V3:** Midway between V2 and V4
  - **V4:** 5<sup>th</sup> intercostal space at the left midclavicular line
  - **V5:** Level with and midway between V4 and V6 at the left anterior axillary line
  - **V6:** Level with V4 at the left midaxillary line
- Instruct patient to remain still and refrain from speaking to minimize artifact
  - If patient condition permits, stop ambulance to reduce artifact
  - If patient has tremors of the hands, place patient’s hands under cheeks of buttocks
- Acquire 12-lead ECG
  - EMT and AEMT should print a copy if an ALS unit is responding
- Transmit 12-lead ECG to hospital if able and when appropriate to request ECG interpretation
- Repeat procedure as needed to identify trends or changes in condition



INT

## Right-Sided 12-Lead ECG: Use for suspected right ventricular infarct

- Move chest leads (V Leads) to right side of chest to mirror standard 12-lead ECG
  - **V1R:** 4<sup>th</sup> intercostal space at the LEFT sternal border
  - **V2R:** 4<sup>th</sup> intercostal space at the RIGHT sternal border
  - **V3R:** Midway between V2R and V4R
  - **V4R:** 5<sup>th</sup> intercostal space at the RIGHT midclavicular line
  - **V5R:** Level with and midway between V4R and V6R at the RIGHT anterior axillary line
  - **V6R:** Level with V4R at the left midaxillary line
- Acquire and label right-sided 12-lead ECG
- Notify hospital of right-sided 12-lead ECG when transmitting



PARA

<b>EMT</b>	<p><b>V4R 12-Lead ECG:</b> Use for suspected right ventricular infarct</p> <ul style="list-style-type: none"> <li>Move V4 lead to right side of chest to mirror standard 12-lead ECG                     <ul style="list-style-type: none"> <li><b>V4R:</b> 5<sup>th</sup> intercostal space at the <b>RIGHT</b> midclavicular line</li> </ul> </li> <li>Acquire and label right-sided V4R 12-lead ECG</li> <li>Notify hospital of V4R 12-lead ECG when transmitting</li> </ul>	
<b>AEMT</b>		
<b>INT</b>	<p><b>Posterior 12-Lead ECG:</b> Use for suspected posterior wall infarct (ST depression V1-V2)</p> <ul style="list-style-type: none"> <li>Move the following chest leads to the back:                     <ul style="list-style-type: none"> <li><b>V4:</b> Left posterior axillary line level with V4-V6 → Now <b>V7</b></li> <li><b>V5:</b> Tip of the left midscapula, in line with V7 → Now <b>V8</b></li> <li><b>V6:</b> Left paraspinal region, in line with V7 &amp; V8 → Now <b>V9</b></li> </ul> </li> <li>V1-V3 should remain unchanged from the standard 12-lead ECG placement</li> <li>Acquire and label posterior 12-lead ECG</li> <li>Notify hospital of posterior 12-lead ECG when transmitting</li> </ul>	
<b>PARA</b>		
<b>NOTES</b>	<ul style="list-style-type: none"> <li>A good baseline is needed to interpret the rhythm. If baseline is poor, repeat the ECG</li> <li>Performing serial ECG's is needed to identify any changes in waveform or patient condition</li> <li>ST Elevation in two or more contiguous leads:                     <ul style="list-style-type: none"> <li>II, III, aVF = Inferior wall STEMI (likely vessel right coronary artery or left circumflex)</li> <li>I, aVL, V5, V6 = Lateral wall STEMI (likely vessel left circumflex or left anterior descending branch)</li> <li>V1, V2 = Septal wall STEMI (likely vessel left anterior descending)</li> <li>V3, V4 = Anterior wall STEMI (likely vessel left anterior descending)</li> </ul> </li> </ul> <p><b>12-Lead ECG Facing Leads:</b></p>	

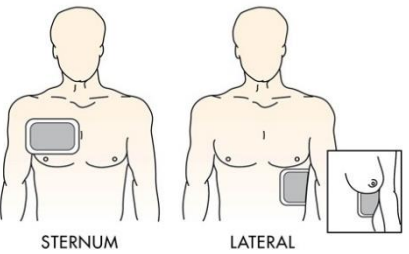
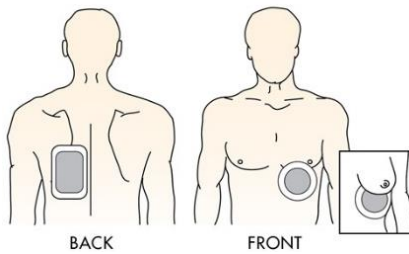
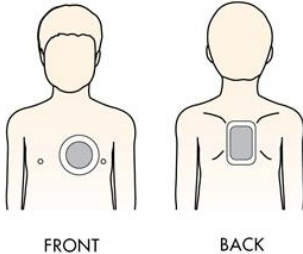
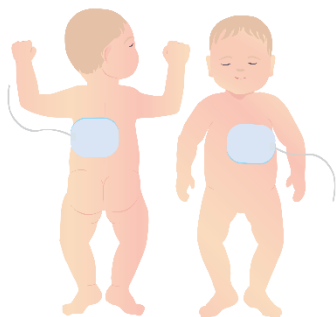
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# DEFIBRILLATION

**INDICATIONS:** Patients in ventricular fibrillation (VF) or pulseless ventricular tachycardia (pVT)

**CONTRAINDICATIONS:** Patient is awake; all other cardiac rhythms

**OTHER GUIDELINE TO CONSIDER:** [Cardiac Arrest](#)

		AUTOMATED – AED
EMR		<ul style="list-style-type: none"> <li>• If more than one rescuer is present, rescuer #1 should not stop compressions until the rhythm is analyzed.</li> <li>• Remove any medication patches on the chest, wipe off any residue.</li> <li>• If patient is wet and or lying in water, move patient out of standing water and wipe off excess moisture apply defibrillator pads per manufacturer recommendations. Use alternate placement when implanted devices occupy preferred pad positions.</li> <li>• Turn on the AED by lifting the lid and/or pressing the “ON” button.</li> <li>• Connect defibrillator cable if necessary.</li> <li>• Follow the voice prompts to complete the remaining steps.                             <ul style="list-style-type: none"> <li>○ Expose the patient’s chest and apply the pads to their bare skin. Use the diagram on each pad as a guide (Anterior-Lateral or Anterior-Posterior)</li> </ul> </li> <li>• Activate AED for analysis of rhythm if not done automatically</li> <li>• When advised by AED, stop compressions and clear the patient for rhythm analysis                             <ul style="list-style-type: none"> <li>○ Verbalize “CLEAR” and ensure yourself and everyone around is not in physical contact with the patient while the AED searches for a shockable rhythm.</li> </ul> </li> <li>• If “SHOCK ADVISED” by the AED:                             <ul style="list-style-type: none"> <li>○ Verbalize “CLEAR” and ensure yourself and everyone around is not in physical contact with the patient</li> <li>○ Clear the oxygen from the patient’s face</li> <li>○ Defibrillate by pressing the “SHOCK” button</li> <li>○ Immediately resume chest compressions and oxygen for 2 minutes until prompted by the AED to allow rhythm analysis</li> <li>○ Continue until ALS providers take over or patient improves</li> <li>○ Follow <a href="#">Cardiac Arrest</a> guideline</li> </ul> </li> <li>• If “NO SHOCK ADVISED” by the AED:                             <ul style="list-style-type: none"> <li>○ Immediately resume chest compressions for 2 minutes until prompted by the AED to allow rhythm analysis</li> <li>○ Continue until ALS providers take over or patient improves</li> <li>○ Follow <a href="#">Cardiac Arrest</a> guideline</li> </ul> </li> </ul>
EMT		
AEMT		<div style="display: flex; justify-content: space-around; text-align: center;"> <div style="width: 30%;"> <p style="color: #2980b9; font-weight: bold;">ADULT ANTERIOR/LATERAL</p>  <p>STERNUM      LATERAL</p> </div> <div style="width: 30%;"> <p style="color: #2980b9; font-weight: bold;">ADULT ANTERIOR/POSTERIOR</p>  <p>BACK      FRONT</p> </div> <div style="width: 30%;"> <p style="color: #2980b9; font-weight: bold;">PEDIATRIC ANTERIOR/POSTERIOR</p>  <p>FRONT      BACK</p> </div> </div> <div style="text-align: center; margin-top: 20px;">  </div>

MANUAL DEFIBRILLATION	
INT	<ul style="list-style-type: none"> <li>• Turn on the defibrillator/monitor.</li> <li>• Continue high-quality chest compressions while defibrillator pads are applied.</li> <li>• Expose the patient’s chest and apply pads to bare skin. (Anterior-Lateral or Anterior-Posterior)</li> <li>• Connect the pads to the defibrillator.</li> <li>• Verify pulse while compressions are being performed.</li> <li>• While assessing pulse, pause chest compressions for no longer than 10 seconds to check pulse and determine if rhythm is shockable.                             <ul style="list-style-type: none"> <li>○ <b>If VF or pVT is present:</b> <ul style="list-style-type: none"> <li>▪ Resume CPR</li> <li>▪ Charge the device to maximum joules while continuing CPR.                                     <ul style="list-style-type: none"> <li>• <b>Pediatric:</b> 2 J/kg initial shock; increase 2 J/kg for each subsequent shock (max of 10 J/kg or max energy setting)</li> </ul> </li> <li>▪ Once at desired joules, verbalize “CLEAR” and ensure yourself and everyone around is not in physical contact with the patient                                     <ul style="list-style-type: none"> <li>• Clear the oxygen from the patient’s face</li> </ul> </li> <li>▪ Pause chest compressions and defibrillate by pressing the “SHOCK” button                                     <ul style="list-style-type: none"> <li>• Compressor should hover over the chest and resume compressions and oxygen immediately after shock is delivered</li> </ul> </li> <li>▪ Continue until ALS providers take over or patient improves</li> <li>▪ Follow <a href="#">Cardiac Arrest</a> guideline</li> </ul> </li> <li>○ <b>If a non-shockable rhythm is present:</b> <ul style="list-style-type: none"> <li>▪ Immediately resume chest compressions for 2 minutes until prompted for a rhythm analysis</li> <li>▪ Continue until ALS providers take over or patient improves</li> <li>▪ Follow <a href="#">Cardiac Arrest</a> guideline</li> </ul> </li> </ul> </li> </ul>
PARA	
NOTES	<ul style="list-style-type: none"> <li>• The first few minutes of resuscitation should have manual high-quality compressions and defibrillation prioritized prior to placement of a mechanical CPR device. Placement of the device should be deferred until adequate personnel are available to avoid compromising high-quality compressions and early defibrillation.</li> </ul>

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# MECHANICAL CPR DEVICE – LUCAS

**INDICATIONS:** [Cardiac Arrest](#) when device is available and when adequate resources are available to deploy

**CONTRAINDICATIONS:** Patients that do not fit properly within the device due to size (may apply to late term pregnant patient)

**OTHER GUIDELINE TO CONSIDER:** [Cardiac Arrest](#)

<b>EMR</b>	<p><i>The first few minutes of resuscitation should have manual high-quality compressions and defibrillation prioritized prior to placement of the LUCAS device. Placement of the device should be deferred until adequate personnel are available to avoid compromising high-quality compressions and early defibrillation.</i></p> <p>Ensure that the center of the chest remains clear for proper LUCAS functioning. Defibrillation pads should be placed in the anterior/lateral position, NOT anterior/posterior, and away from the center of the chest.</p> <ul style="list-style-type: none"> <li>▪ <b>Step 1: Turn Device On</b> <ul style="list-style-type: none"> <li>○ Push ON/OFF for 1 second to power up</li> </ul> </li> <li>▪ <b>Step 2: Placement of back plate</b> <ul style="list-style-type: none"> <li>○ When everyone is ready, pause compressions (goal of &lt; 10 seconds)</li> <li>○ Place the back plate under the patient, directly below the arm pits by using one of the following:                             <ul style="list-style-type: none"> <li>▪ Lift the patient’s upper body using the shoulders or arms (preferred)</li> <li>▪ Roll the patient on their side</li> </ul> </li> <li>○ Support the patient’s head during any movement</li> <li>○ Resume manual CPR immediately</li> </ul> </li> <li>▪ <b>Step 3: Confirm proper positioning of back plate</b> <ul style="list-style-type: none"> <li>○ While CPR continues, adjust back plate as needed to ensure it is centered and directly below the arm pits</li> </ul> </li> <li>▪ <b>Step 4: Attach LUCAS to back plate</b> <ul style="list-style-type: none"> <li>○ Pull the release rings once to ensure the claw locks are open</li> <li>○ While manual compressions continue, attach one support leg (nearest you/opposite the compressor) to the back plate</li> <li>○ Move the other support leg through the arms of the responder doing manual CPR and attach the leg to the back plate while continuing compressions</li> <li>○ Pull up once to make sure that the parts are correctly attached</li> </ul> </li> <li>▪ <b>Step 5: Suction Cup Placement and Operation</b> <ul style="list-style-type: none"> <li>○ While manual compressions continue, place two fingers on the top of the suction cup and one finger on the Continuous or 30/2 button</li> <li>○ Have the compressor count down from three and stop compressions. As soon as their hands are clear of the chest, push the suction cup down onto the chest and press the start button. It is important to NOT press the start button until the suction cup is completely on the chest.</li> <li>○ Confirm the lower edge of the suction cup is at least two finger breaths above the end of the sternum.                             <ul style="list-style-type: none"> <li>▪ If adjustment is needed, push the ADJUST button and pull suction cup up, reposition LUCAS device, pull suction back down, and push ACTIVE button to restart.</li> </ul> </li> <li>○ Use a marker to draw a line along the lower edge of the suction cup once proper placement is confirmed</li> </ul> </li> <li>▪ <b>Step 6: Apply Stabilization Strap</b> <ul style="list-style-type: none"> <li>○ Carefully lift the patient’s head and put the cushion behind the patient’s neck. Position the cushion as near the patient’s shoulders as possible</li> <li>○ Connect the buckles on the support leg straps with the buckles on the neck strap. Make sure that the straps are not twisted</li> <li>○ Hold the LUCAS support legs stable and tighten the neck strap tightly</li> </ul> </li> <li>▪ <b>Step 7: Secure the Patient’s Arms</b> <ul style="list-style-type: none"> <li>○ Secure the arms with the Patient Straps; this makes it easier to move the patient</li> </ul> </li> </ul>
<b>EMT</b>	
<b>AEMT</b>	
<b>INT</b>	
<b>PARA</b>	
<b>NOTES</b>	<ul style="list-style-type: none"> <li>▪ PAUSE button should be used when analyzing the rhythm or when doing a pulse check</li> <li>▪ Defibrillation can and should be performed while the LUCAS device is running.</li> <li>▪ Warning: Patient too small                             <ul style="list-style-type: none"> <li>○ If the LUCAS device alerts with 3 fast signals when lowering the suction cup, and you cannot enter the ACTIVE mode, the patient is too small for the device. Begin manual compressions immediately.</li> </ul> </li> <li>▪ Warning: Patient too large                             <ul style="list-style-type: none"> <li>○ If you cannot lock the upper part of the LUCAS to the back plate without compressing the patient’s chest, the patient is too large for the device. Begin manual compressions immediately.</li> </ul> </li> </ul>

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# SYNCHRONIZED CARディオVERSION

**INDICATIONS:** Tachycardia associated with signs of poor perfusion, including chest pain, difficulty breathing, altered mental status, hypotension, or signs of pulmonary edema.

**CONTRAINDICATIONS:** Sinus tachycardia, cardiac arrest, or tachycardia with a noncardiac, treatable cause.

**OTHER GUIDELINES TO CONSIDER:** [Tachycardia](#), [Sedation](#)

<b>INT</b>	<ul style="list-style-type: none"> <li>• Apply standard ECG monitoring leads to patient</li> <li>• Ensure defibrillator is set to manual mode</li> <li>• Apply defibrillation electrodes to patient’s bare chest, avoiding placing over implanted devices:                             <ul style="list-style-type: none"> <li>○ Anterior/Posterior</li> <li>○ Anterolateral</li> </ul> </li> <li>• If time allows, consider <a href="#">Sedation-Procedural</a></li> <li>• Select “<b>SYNC</b>” on the cardiac monitor                             <ul style="list-style-type: none"> <li>○ Confirm synchronizing markers appear above each R wave of the QRS complex</li> </ul> </li> <li>• Select appropriate initial energy based on patient age (adult/pediatric):                             <ul style="list-style-type: none"> <li>○ <b>Adult:</b> 100 joules</li> <li>○ <b>Pediatric:</b> 1 joule/kg</li> </ul> </li> <li>• Press the “<b>CHARGE</b>” button and verbalize “<b>CLEAR</b>”, ensuring yourself and others around are not in physical contact with patient                             <ul style="list-style-type: none"> <li>○ Clear oxygen from patient’s face</li> </ul> </li> </ul>
<b>PARA</b>	<ul style="list-style-type: none"> <li>• Press and hold the “<b>SHOCK</b>” button until the shock has been delivered. <b>Note:</b> this may be delayed as it can take the cardiac monitor several cardiac cycles to synchronize</li> <li>• Evaluate rhythm, check pulse, and evaluate for hemodynamic changes. Repeat procedure if needed:                             <ul style="list-style-type: none"> <li>○ Confirm synchronizing markers appear above each R wave of the QRS complex.                                     <ul style="list-style-type: none"> <li>▪ If not present, reselect “<b>SYNC</b>” on the cardiac monitor</li> </ul> </li> </ul> </li> <li>• Select appropriate energy:                             <ul style="list-style-type: none"> <li>○ <b>Adult:</b> Increase 50 joules for each subsequent shock</li> <li>○ <b>Pediatric:</b> Increase 2 joules/kg for each subsequent shock</li> </ul> </li> <li>• Evaluate rhythm, check pulse, and evaluate for hemodynamic changes.</li> <li>• Prepare to perform CPR or defibrillation                             <ul style="list-style-type: none"> <li>○ If defibrillation is required at any time, ensure “<b>SYNC</b>” is turned off.</li> </ul> </li> </ul>
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• Consider and treat other causes of poor hemodynamics</li> <li>• If sinus rhythm occurs following cardioversion and dysrhythmia reoccurs quickly, or cardioversion is unsuccessful after several attempts, further attempts are unlikely to be successful without first correcting any underlying hypoxia, hypovolemia, electrolyte imbalances, or other reversible causes</li> <li>• Ensure cardiac monitor records event and ECG continuously throughout procedure</li> <li>• Remove medication patches from the chest, including residue</li> <li>• If patient is wet and/or lying in water, remove patient from water and excess moisture</li> <li>• Apply defibrillator electrodes per manufacturer recommendations. Use alternate placement when implanted devices occupy preferred electrode placement</li> </ul>

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# TRANSCUTANEOUS CARDIAC PACING (TCP)

**INDICATIONS:** Bradycardia associated with hemodynamic instability, evidence of end organ dysfunction, or hypotension not responsive to medical therapy

**CONTRAINDICATIONS:** Patients without a palpable pulse or with severe hypothermia (core temperature < 87°F)

**OTHER GUIDELINES TO CONSIDER:** Bradycardia

INT

- Explain procedure to patient, if able
- BP, HR, and continuous monitoring of SpO2, EtCO2, and ECG should be documented before and throughout the procedure.
- Apply standard ECG leads
- Apply defibrillation electrodes to the chest
  - Adult:** anterolateral or anterior/posterior placement
  - Pediatric:** anterior/posterior placement preferred

**ADULT ANTERIOR/LATERAL**

**ADULT ANTERIOR/POSTERIOR**

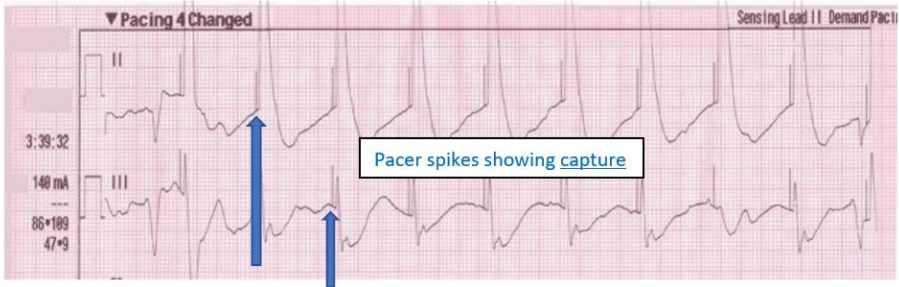
**PEDIATRIC ANTERIOR/POSTERIOR**

- Adjust ECG size for a clean, well-defined ECG signal. Lead II provides a well-defined QRS
- Verify proper R-wave detection. A symbol or marker presents with each R-wave when properly capturing. Adjust ECG size for a clean, well-defined R-wave
- Select **PACER** function on cardiac monitor
- Select **DEMAND** mode
- Set **PACER RATE** to HR 70/minute
  - Ensure pacer spikes are well-positioned in diastole, not on the T-wave or QRS complex

Pacing attempted: note pacing stimulus indicator (arrow) which is below threshold; no capture

PARA

- Set **PACER OUTPUT mA**
  - Initial pacer output:** set to 40 mA and verify pacer spikes on ECG
    - Increase pacer output by 20 mA every 3-5 seconds until 100% ventricular capture is observed
- Determine **CAPTURE**
  - Determination of capture must be assessed both electrically and mechanically to ensure appropriate circulatory support
    - Electrical Capture:**
      - Determined by presence of a widened QRS complex, loss of an underlying intrinsic rhythm, and the appearance of an extended or enlarged T-Wave
    - Mechanical Capture:**
      - Assessed by palpation of a peripheral pulse and evidence of increased perfusion. To avoid mistaking muscular response to pacing stimuli as an arterial pulse, use the following locations for palpating a pulse during pacing:
        - Femoral artery**
        - Right brachial or radial artery**

<b>INT</b>	<ul style="list-style-type: none"> <li>• Determine <b>Optimum Threshold</b> <ul style="list-style-type: none"> <li>○ The ideal pacer current is the lowest value that maintains capture; about 10% above threshold</li> <li>○ Once electrical and mechanical capture have been confirmed, increase pacer output mA by 10%</li> </ul> </li> <li>• BP, HR, and continuous monitoring of SpO<sub>2</sub>, EtCO<sub>2</sub>, and ECG should be documented immediately following procedure and every 5 minutes throughout patient care             <ul style="list-style-type: none"> <li>○ Monitor ECG and BP closely</li> </ul> </li> <li>• Consider <a href="#">Pain Management</a></li> </ul>
<b>PARA</b>	
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• Pace without delay for unstable Second-Degree Type II AV blocks or Third-Degree AV blocks</li> <li>• Patients with ROSC should rarely if ever be paced. Although these patients often have a bradycardic rhythm, initially after regaining pulses, the heart is often stunned and will not respond adequately to pacing. Pacing also makes it more difficult to discern if a patient goes back into cardiac arrest. Fluids, followed by push-dose epinephrine is the treatment of choice for patients with ROSC who are bradycardic and/or hypotensive</li> <li>• Mechanical capture cannot be present without electrical capture. To avoid false capture, confirm other sources in addition to the pulses that reflect perfusion:             <ul style="list-style-type: none"> <li>○ <a href="#">Pulse Oximetry</a> pleth waveform                 <ul style="list-style-type: none"> <li>▪ The pleth waveform should correlate to the paced rhythm when mechanical capture is present, and the HR noted by the SpO<sub>2</sub> monitor matches the rate of the paced rhythm</li> <li>▪ If the pleth waveform does not correlate, or reflects the rate of the pre-paced rhythm, mechanical capture is not present</li> </ul> </li> <li>○ <a href="#">Waveform Capnography</a> <ul style="list-style-type: none"> <li>▪ An increase in cardiac output resulting from mechanical capture may increase EtCO<sub>2</sub></li> </ul> </li> </ul> </li> </ul> <div style="text-align: center; margin-top: 10px;">  <p>The image shows a 12-lead ECG strip. At the top, it says 'Pacing 4 Changed' and 'Sensing Lead II Demand Pacing'. The time is 3:39:32. The rate is 140 mA, PR is 86, and QRS is 109. A callout box with the text 'Pacer spikes showing capture' has two blue arrows pointing to the pacer spikes on the ECG trace.</p> </div>

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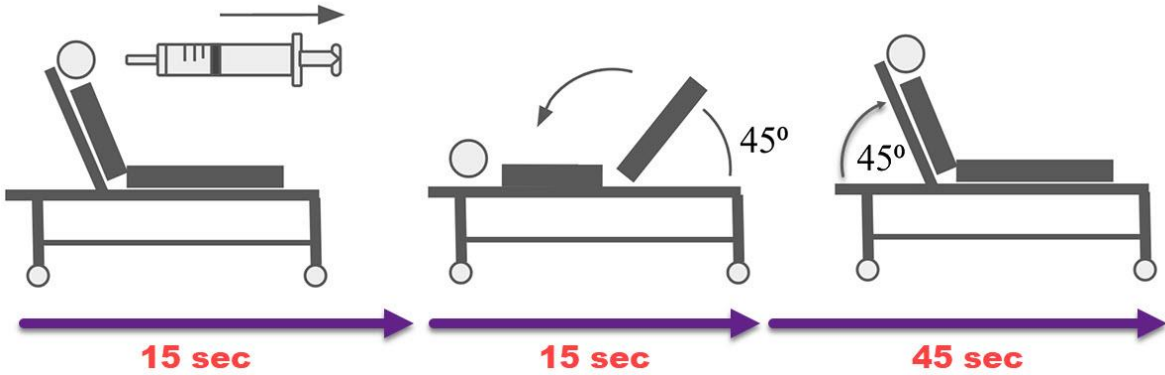


# VALSALVA MANEUVER

**INDICATIONS:** Patients with stable vital signs experiencing a regular, narrow complex OR regular, wide complex supraventricular tachycardia (SVT)

**CONTRAINDICATIONS:** Known ventricular tachycardia, patients with SVT and unstable or abnormal vital signs and/or altered mental status; physical limitations to lying flat or lifting legs

**OTHER GUIDELINES TO CONSIDER:** [Tachycardia](#), [Synchronized Cardioversion](#)

<b>INT</b>	<p><b>Modified Valsalva – Leg Lift Valsalva:</b> (preferred method for patient capable of following instructions)</p> <ul style="list-style-type: none"> <li>• Place patient in a semi-recumbent position</li> <li>• Provide the patient with an empty 10 mL syringe</li> <li>• Instruct the patient to blow into the end of the syringe for 15 seconds in an attempt to push the plunger out                             <ul style="list-style-type: none"> <li>○ Immediately recline the patient into the supine position and raise the patient’s legs to a 45° angle for 15 seconds</li> <li>○ Return the patient to a semi-recumbent position for 45 seconds</li> </ul> </li> </ul>
<b>PARA</b>	
<b>NOTES</b>	<p>The modified Valsalva maneuver more precisely describes this procedure and adds a passive leg raise. This is designed to stimulate vagal tone through a different mechanism (baroreflex activation). To remember the steps of the modified Valsalva maneuver just think of “SVT”:</p> <ul style="list-style-type: none"> <li>▪ <b>S</b> = Strain (just enough to make the plunger of a 10cc syringe move, equal to 40mmHg)</li> <li>▪ <b>V</b> = Venous return (supine with passive leg raise)</li> <li>▪ <b>T</b> = Time (15s during the first two stages)</li> </ul> <ul style="list-style-type: none"> <li>• The patient must be monitored during the procedure and the effort terminated immediately when the heart slows or if ectopic beats occur</li> <li>• EMT and AEMT must have rhythm identified as SVT by medical control, an EMT-Intermediate or Paramedic on scene prior to performing Valsalva</li> <li>• If the patient has physical limitations to lying flat or lifting legs, a standard Valsalva (strain) can be used</li> </ul>

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# MEDICATION ADMINISTRATION

[Medication Administration Cross Check \(MACC\)](#)

[Intramuscular \(IM\)](#)

[Intramuscular \(IM\) Site Reference](#)

[Intranasal \(IN\) via Mucosal Atomization Device](#)

[Intravenous \(IV\)](#)

[Nebulized Medications](#)

# MEDICATION ADMINISTRATION CROSS CHECK (MACC)

**INDICATIONS:** Prior to administration of any medication

**CONTRAINDICATIONS:** None

**OTHER GUIDELINES TO CONSIDER:** [Medication Profiles](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>Review patient allergies</li> <li>The Medication Administration Cross Check (MACC) must be completed prior to the administration of any medication.</li> <li>If a discrepancy, disagreement, or need for clarification is encountered at any step in the process, it <b>MUST</b> be resolved prior to continuing the MACC</li> <li>If there is an interruption or change in patient condition of any kind, <b>Provider 1</b> must re-initiate the process</li> <li><b>Provider 1</b> <ul style="list-style-type: none"> <li>Prepares and administers medication</li> </ul> </li> <li><b>Provider 2</b> <ul style="list-style-type: none"> <li>Verifies confirmations and authorizes administration of medication</li> </ul> </li> <li>Document names of providers completing Medication Administration Cross Check (MACC)</li> </ul>
<b>EMT</b>	<p>NEVER give the contents of a syringe that is not labeled or without visualizing the vial or ampule from which it was immediately drawn!</p>
<b>AEMT</b>	
<b>INT</b>	
<b>PARA</b>	
<b>NOTES</b>	

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# INTRAMUSCULAR (IM)

**INDICATIONS:** Any patient requiring administration of a medication through the muscle tissue

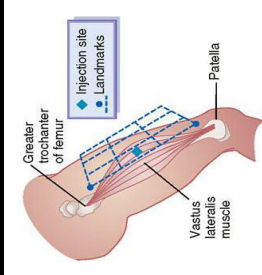
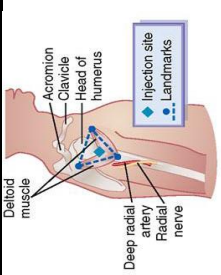
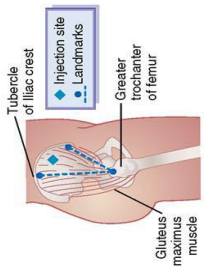
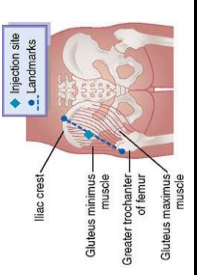
**CONTRAINDICATIONS:** Medications not compatible for IM injection, or apparent infection to the site of procedure

**OTHER GUIDELINES TO CONSIDER:** [Medication Profiles](#)

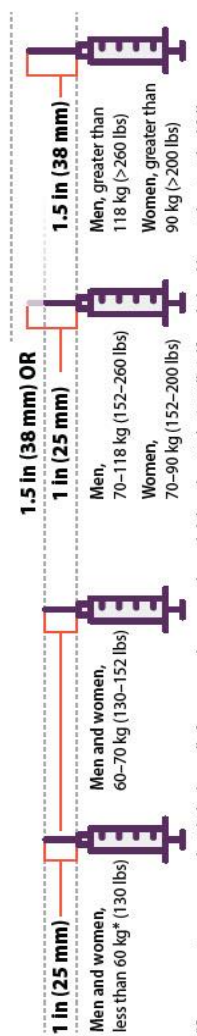
EMR	<ul style="list-style-type: none"> <li>• Review patient allergies</li> <li>• Confirm the dosage, type, and route of administration of medication</li> <li>• Prepare medication per <a href="#">Medication Profiles</a></li> <li>• Perform <a href="#">Medication Administration Cross Check (MACC)</a></li> <li>• Explain procedure to patient</li> <li>• Choose an injection site based on the patient’s muscle density, type/volume of medication, and patient preference                             <ul style="list-style-type: none"> <li>○ Vastus Lateralis &amp; Deltoid (excluding infants) are the preferred sites based on volume needed</li> <li>○ Ventrogluteal is the secondary site for all ages</li> <li>○ Dorsogluteal is the least preferred site                                     <ul style="list-style-type: none"> <li>▪ Contraindicated in pediatrics &lt; 3 years old</li> </ul> </li> </ul> </li> </ul>
EMT	
AEMT	
INT	
PARA	
NOTES	

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# INTRAMUSCULAR (IM) SITE REFERENCE

Muscle	Age	Landmarks	Injection Site Location	Max Volume	Considerations
<b>Vastus Lateralis</b>	Preferred site for infants & children < 3 years Suitable for all ages		Middle third of the thigh lateral to the midline	5 mL	Large muscle Easily accessible No major nerve or vessels nearby
<b>Deltoid</b>	Toddler Preschool Adolescents Adults <b>Contraindicated in infants</b>		The central and thickest portion of the deltoid muscle - above the level of the armpit and approximately 2-3 fingerbreadths (2") below the acromion process	0.5 - 2 mL	Small muscle mass can tolerate only a small volume Possible damage to radial & axillary nerves Faster absorption than gluteal sites Easily accessible Less painful than vastus lateralis
<b>Ventrogluteal</b>	Considered in children < 3 years		Just below the iliac crest on the side of the thigh	2.5 mL	Ideally, patient should lie on their side with their knees slightly bent No major nerves or vessels nearby Prominent bony landmarks Less painful than vastus lateralis Thin layer of subcutaneous tissue
<b>Dorsogluteal</b>	<b>Contraindicated in children &lt; 3 years</b>		Upper, outer quadrant of the buttock	4 mL	Well developed muscle in older children Depth of overlying subcutaneous tissue varies between patients Risk of damage to the sciatic nerve

Choose the Correct Needle & Syringe for the Patient, Medication, and Injection Site.



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# INTRANASAL (IN) VIA MUCOSAL ATOMIZATION DEVICE

**INDICATIONS:** When IV/IO/IM are less desirable; patient in need of narcotic pain management or sedation

**CONTRAINDICATIONS:** [Epistaxis](#), significant nasal congestion, volume > 0.5mL per nostril

**OTHER GUIDELINES TO CONSIDER:** [Medication Profiles](#)

EMT	<ul style="list-style-type: none"> <li>Review patient allergies</li> <li>Prepare medication per <a href="#">Medication Profile</a> using an appropriately sized syringe                             <ul style="list-style-type: none"> <li>1mL maximum per nostril</li> </ul> </li> <li>Perform <a href="#">Medication Administration Cross Check (MACC)</a></li> <li>Explain procedure to patient, if possible</li> <li>Attach the Mucosal Atomization Device (MAD) to syringe</li> <li>Hold patient's head stable while placing the MAD tip into nostril until snug</li> <li>Aim syringe upward, outward, and towards the lateral nasal wall</li> <li>Pushing briskly, administer half of the dose, up to 1mL maximum in each nostril                             <ul style="list-style-type: none"> <li>Pushing the plunger <i>slowly</i> will not atomize the medication, causing for potential to swallow medication</li> </ul> </li> <li>Dispose of contaminated equipment in an appropriate receptacle</li> <li>Evaluate the patient for response to medication</li> <li>Document procedure and patient response, including unusual or adverse reactions</li> </ul> <ul style="list-style-type: none"> <li><b>Medications permitted for IN administration:</b> <ul style="list-style-type: none"> <li><a href="#">Fentanyl</a></li> <li><a href="#">Ketamine</a></li> <li><a href="#">Midazolam</a></li> <li><a href="#">Naloxone</a></li> </ul> </li> </ul>	
AEMT		
INT		
PARA		
NOTES	<ul style="list-style-type: none"> <li>Not ideal for chemical restraint or seizure treatment due to variable absorption and unpredictable onset</li> </ul>	

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# INTRAVENOUS (IV) ADMINISTRATION

**INDICATIONS:** Medications approved for administration via [IV/IO Access](#)

**CONTRAINDICATIONS:** Medications not approved for administration via [IV/IO Access](#)

**OTHER GUIDELINES TO CONSIDER:** [Medication Profiles](#)

<b>AEMT</b>	<ul style="list-style-type: none"> <li>Review patient allergies</li> <li>Establish <a href="#">IV/IO Access</a> and ensure patency prior to <a href="#">Medication Administration</a></li> <li>Confirm the dosage, type, and route of administration of medication</li> <li>Prepare medication per <a href="#">Medication Profiles</a></li> <li>Perform <a href="#">Medication Administration Cross Check (MACC)</a></li> <li>Explain procedure to patient</li> <li>Clean luer lock or hub connection with alcohol and allow area to dry</li> </ul> <p><b>Administering via Saline Lock:</b></p> <ul style="list-style-type: none"> <li>Ensure the medication to be administered is compatible with any other medications the patient is receiving</li> <li>Clean luer lock with alcohol prep</li> <li>Attach hub of syringe to luer lock by twisting until tight</li> <li>Unclamp saline lock and administer medication as indicated, following appropriate rate of dosing, watching for extravasation</li> <li>Flush saline lock with 10cc of 0.9% NS following completion of <a href="#">Medication Administration</a></li> <li>If volume of medication is small (&lt; 2mL) and/or administration time is longer than 10 seconds, give small amounts of medication at a time, with intermittent flushing using 0.9% NS to clear medication out of extension set</li> </ul>
<b>INT</b>	<p><b>Administering via IV Tubing:</b></p> <ul style="list-style-type: none"> <li>Ensure the medication to be administered is compatible with the primary running IV solution and any other medications the patient is receiving</li> <li>Clean designated Y-type injection port with alcohol prep</li> <li>Attach syringe to most distal Y-type injection port on main 0.9% NS administration line</li> <li>Clamp tubing proximal to syringe</li> <li>Administer medication as indicated, following appropriate rate of dosing, watching for extravasation</li> <li>Unclamp tubing and allow 0.9% NS to run after administration, flushing the line</li> <li>If volume of medication is small (&lt; 2mL) and/or administration time is longer than 10 seconds, give small amounts of medication at a time, with intermittent flushing using 0.9% NS to clear medication out of extension set</li> </ul>
<b>PARA</b>	<p><b>Administering via IV Infusion:</b></p> <ul style="list-style-type: none"> <li>Ensure the medication to be administered is compatible with the primary running IV solution and any other medications the patient is receiving</li> <li>Clean designated Y-type injection port with alcohol prep</li> <li>Attach microdrip (60 gtt) tubing to medicated IV bag and prime tubing</li> <li>Attach distal end of microdrip (60 gtt) tubing to most distal Y-type injection port on main 0.9% NS administration line</li> <li>Ensure bag is placed at a higher elevation than saline bag</li> <li>Administer medication as indicated, following appropriate rate of dosing</li> </ul>
<b>NOTES</b>	<ul style="list-style-type: none"> <li>A <a href="#">Medication Administration Cross Check (MACC)</a> <b>must be performed</b> before any medication is administered</li> <li>Follow specific procedure for each medication as outlined in the <a href="#">Medication Profile</a> for each medication dose, route, length of administration, and indication</li> </ul>

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# NEBULIZED MEDICATIONS

**INDICATIONS:** Any patient requiring administration of a medication through nebulized inhalation

**CONTRAINDICATIONS:** Medications not compatible for inhalation

**OTHER GUIDELINES TO CONSIDER:** [Medication Profiles](#)

EMT	<ul style="list-style-type: none"> <li>Review patient allergies</li> <li>Confirm the dosage, type, and route of administration of medication</li> <li>Prepare medication per <a href="#">Medication Profiles</a></li> <li>Perform <a href="#">Medication Administration Cross Check (MACC)</a></li> <li>Explain procedure to patient, if able</li> <li>Assemble the nebulizer per manufacturer’s instructions</li> <li>Dispense medication into reservoir of nebulizer</li> <li>Attach to <a href="#">Oxygen</a> source and set flow rate to 8 LPM</li> <li>Coach the patient to inhale mist and hold in their lungs for as long as possible</li> <li>Consider <a href="#">Waveform Capnography</a></li> <li>Evaluate patient for response to medication</li> <li>Document procedure and patient response, including unusual or adverse reactions noted</li> </ul> <ul style="list-style-type: none"> <li>Medications that can be nebulized include:                             <ul style="list-style-type: none"> <li><a href="#">Albuterol</a></li> <li><a href="#">Fentanyl</a></li> </ul> </li> </ul>
AEMT	
INT	
PARA	
NOTES	<ul style="list-style-type: none"> <li>If monitoring EtCO<sub>2</sub>, consider use of inline EtCO<sub>2</sub> if able.                             <ul style="list-style-type: none"> <li>Attach inline EtCO<sub>2</sub> to mouthpiece of HHN.</li> </ul> </li> </ul>

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# TRAUMA

[Hemostatic Agents](#)

[Kendrick Traction Device](#)

[Needle Decompression](#)

[Pelvic Binder](#)

[Pericardiocentesis](#)

[Slishman Traction Splint](#)

[Spinal Motion Restriction](#)

[Splinting](#)

[TASER – Conducted Electrical Weapon \(CEW\)](#)

[Tourniquet – Intentional](#)

[Tourniquet – Junctional](#)

[Wound Packing](#)

# HEMOSTATIC AGENTS

**INCLUSION Criteria:** Traumatic injury to extremity or scalp causing massive hemorrhage in which direct pressure or tourniquet application is not effective (groin, armpit, scalp); less severe extremity wounds being converted from an initial tourniquet to wound dressing after re-evaluation

**EXCLUSION Criteria:** Wounds with bleeding that can be controlled by direct pressure or tourniquet application; noncompressible areas such as neck, chest, abdomen, back, inside the mouth, or head wounds with open skull fractures

**OTHER PROTOCOLS TO CONSIDER:** [Traumatic Injuries](#), [Wound Packing](#), [Tourniquet – Intentional](#), [Tranexamic Acid \(TXA\)](#)

<b>EMR</b>	<p>Hemostatic dressings are designed to control massive hemorrhage at the site of the vessel by physically sealing the wound, increasing the concentration of clotting factors at the wound site, or stimulating and accelerating the body’s natural clotting pathway</p> <ul style="list-style-type: none"> <li>Identify hemorrhage site on extremity or scalp and immediately place firm, direct pressure over wound while preparing the hemostatic agent</li> <li>Remove direct pressure and wipe away any excess blood.                             <ul style="list-style-type: none"> <li>Attempt to visualize location of bleeding vessel when possible.</li> </ul> </li> <li>Pack the wound with the hemostatic gauze, starting at base of wound with pressure as directly over bleeding vessel as possible                             <ul style="list-style-type: none"> <li>While maintaining as much constant pressure as possible over bleeding vessel, pack dressing into entire wound cavity</li> <li>The wound cavity should be as tightly packed as possible.</li> <li>If a large cavity is discovered, more than 1 dressing may be needed</li> </ul> </li> <li>After wound is fully packed to level of the skin, a rounded mound of gauze should be placed on top of the packed wound, and firm, direct pressure should be applied for a minimum of three (3) minutes</li> <li>If bleeding continues after 3 minutes, place additional gauze (does not have to be hemostatic gauze) on top of the wound and continue to apply firm, direct pressure</li> <li>When bleeding is controlled, the wound should be dressed with a pressure-type dressing, whenever possible</li> <li>Check for re-bleeding frequently during transport</li> <li>If a tourniquet is initially placed on an extremity wound but, after re-evaluation, is determined not to be necessary, it may be converted to a pressure dressing or <a href="#">Wound Packing</a> as per guideline</li> </ul>
<b>EMT</b>	
<b>AEMT</b>	
<b>INT</b>	
<b>PARA</b>	
<b>NOTES</b>	<ul style="list-style-type: none"> <li>Commercially available hemostatic dressings include Combat Gauze<sup>®</sup>, Celox Gauze<sup>®</sup>, or Quick Clot<sup>®</sup>.</li> </ul>

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# KENDRICK TRACTION DEVICE

**INDICATIONS:** Immobilization of suspected mid-shaft femur fractures;

**CONTRAINDICATIONS:** Significant injury or suspected fracture to the hip, knee, lower leg, ankle, or foot on the same side

**OTHER GUIDELINE TO CONSIDER:** [Pain Management](#), [Traumatic Injuries](#), [Splinting](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• Assess and document circulation, movement, and sensation (CMS) prior to placement of the splint</li> <li>• Monitor patient for development of hypovolemic shock due to internal hemorrhage associated with femur fracture</li> <li>• Maintain manual stabilization until the splinting process is complete</li> <li>• Gently straighten severely angulated fracture unless resistance is felt</li> <li>• <b>Step 1:</b> <ul style="list-style-type: none"> <li>▪ Apply the ankle hitch tightly around the leg, slightly above the ankle bone.</li> <li>▪ Tighten the stirrup by pulling the green tabbed strap until snug under the heel.</li> </ul> </li> <li>• <b>Step 2:</b> <ul style="list-style-type: none"> <li>▪ Apply the upper thigh system by sliding the male buckle under the leg, at the knee, and see-saw upward until positioned in the crotch area.</li> <li>▪ Engage the buckle. A click signals that the buckle is locked.</li> <li>▪ Cinch the strap until traction pole receptacle is positioned at the belt line or pelvic crest.</li> <li>▪ Assure that male genitals are clear of the strap.</li> </ul> </li> <li>• <b>Step 3:</b> <ul style="list-style-type: none"> <li>▪ Snap out traction pole and make sure that each joint of the pole is securely seated.</li> </ul> </li> <li>• <b>Step 4:</b> <ul style="list-style-type: none"> <li>▪ Place traction pole alongside the leg so that one section of the tubing (8”) extends beyond the bottom of the foot. Measure length against the non-injured leg.</li> <li>▪ Adjust pole length as required.</li> <li>▪ Insert pole and/or ends into traction pole receptacle.</li> </ul> </li> <li>• <b>Step 5:</b> <ul style="list-style-type: none"> <li>▪ Secure elastic strap around the knee.</li> </ul> </li> <li>• <b>Step 6:</b> <ul style="list-style-type: none"> <li>▪ Place yellow tab over dart end.</li> <li>▪ Apply traction by pulling red tab using patient comfort as your primary objective.</li> <li>▪ Traction may be applied by smoothly grasping strap on each side of the buckle and simultaneously feeding and pulling with equal pressure</li> </ul> </li> <li>• <b>Step 7:</b> <ul style="list-style-type: none"> <li>▪ Finish packaging by applying upper (thigh) and lower (ankle) elastic straps.</li> </ul> </li> </ul>	
<b>EMT</b>		
<b>AEMT</b>		
<b>INT</b>		
<b>PARA</b>		
<b>NOTES</b>		<ul style="list-style-type: none"> <li>• Circulation, movement, and sensation (CMS) must be thoroughly assessed and documented before and after splinting is complete</li> <li>• May be utilized only as a stabilization device, no traction, for a fractured humerus.</li> </ul>

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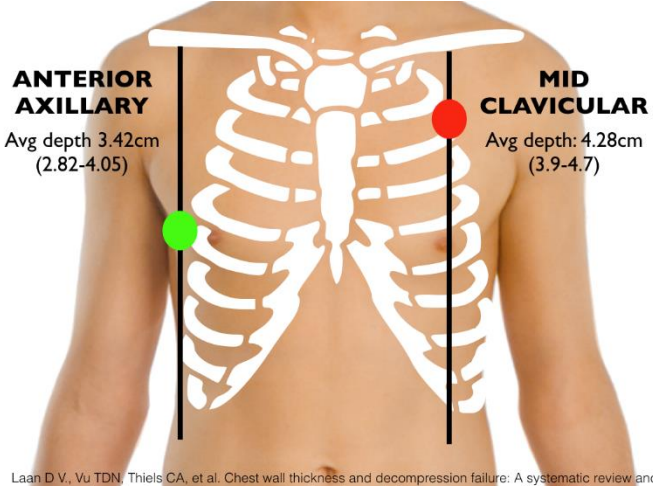
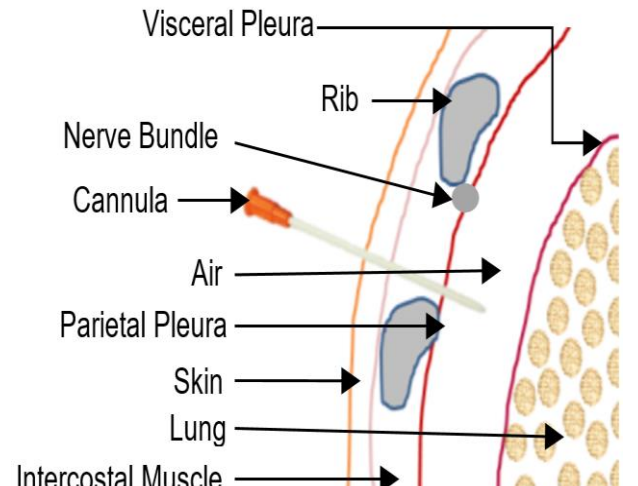
# NEEDLE DECOMPRESSION

**INDICATIONS:** Suspected tension pneumothorax; traumatic cardiac arrest with torso involvement

**CONTRAINDICATIONS:** None

**OTHER GUIDELINE TO CONSIDER:** [Cardiac Arrest](#), [Traumatic Injuries](#), [Difficulty Breathing](#)

<b>INT</b>	<ul style="list-style-type: none"> <li>• Gather equipment:                             <ul style="list-style-type: none"> <li>○ Commercial device or 10-gauge, 14-gauge, or 16-gauge over the needle catheter with 3-inch needle (preferred).</li> <li>○ Tape</li> <li>○ Sterile gauze pads</li> <li>○ Alcohol prep or antiseptic swabs</li> <li>○ Occlusive dressing</li> </ul> </li> <li>• Locate landmarks on the <u>SAME</u> side as the pneumothorax:                             <ul style="list-style-type: none"> <li>○ 2<sup>nd</sup> intercostal space in the mid-clavicular line <u>OR</u></li> <li>○ 5<sup>th</sup> intercostal space in the anterior-axillary line (preferred site for bariatric patients or patients with muscular chest wall)</li> </ul> </li> <li>• Cleanse site</li> </ul>
<b>PARA</b>	<ul style="list-style-type: none"> <li>• Firmly insert catheter immediately above the rib of the selected site. Advance the needle perpendicular to the skin with downward pressure until a loss of resistance is felt; it may be possible to hear a return of air</li> <li>• Advance the needle an additional 1/8 inch to ensure the catheter is inside the thoracic cavity</li> <li>• Hold the catheter in place with one hand while removing the needle and properly dispose of the sharps</li> <li>• Secure catheter; ensure catheter does not kink                             <ul style="list-style-type: none"> <li>○ If time and circumstances allow, use an occlusive dressing to cover the catheter and tape on three (3) sides to create a one-way valve</li> </ul> </li> <li>• Reassess lung sounds, pulses, and overall patient condition</li> <li>• Monitor for signs of expanding or worsening tension pneumothorax (tachycardia, hypotension, increased respiratory distress, jugular vein distention, tracheal deviation) as catheters frequently become clogged or dislodged</li> <li>• Never remove a catheter. Additional catheters can be placed lateral to the original insertion site if needed</li> </ul>

<b>NOTES</b>	 <p style="font-size: small; margin-top: 5px;">Laan D V, Vu TDN, Thiels CA, et al. Chest wall thickness and decompression failure: A systematic review and meta-analysis comparing anatomic locations in needle thoracostomy. Injury. 2015;14-16.</p>	
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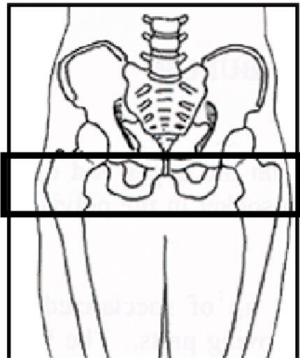

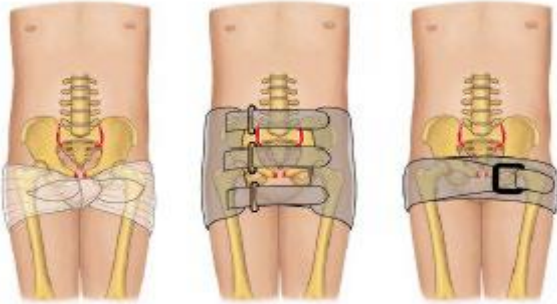
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# PELVIC BINDER

**INDICATIONS:** High velocity/force injuries: suspected unstable pelvic fracture on exam or hemodynamic instability, or other signs of shock with evidence of pelvic trauma. Mechanisms include motor vehicle collisions, pedestrians struck by vehicles, falls from great height, and crush injuries.

**CONTRAINDICATIONS:** Isolated hip fracture

**OTHER GUIDELINES TO CONSIDER:** [Hemorrhage Control](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>If patient is conscious, explain the procedure to the patient.</li> <li>Identify a second provider to assist with placement.</li> <li>Position one provider on each side of the patient at the level of the hips.</li> <li>Remove clothing or at a minimum remove any hard objects such as keys, phones, etc. from pockets. Pelvic binder should be placed over thin clothing or directly onto skin.</li> <li>Identify the bony prominences on the side of the hips called the greater trochanters.</li> <li>Starting under the patient’s knees, place sheet or binder under the patient.</li> <li>Lift the patient’s pelvis 1-2 cm to slide the sheet or binder under the patient with the center at the level of the greater trochanters. <b>DO NOT</b> logroll the patient.                             <ul style="list-style-type: none"> <li>Minimize patient movement by using multi-person lift if possible. Do NOT shimmy the device from side-to-side.</li> </ul> </li> <li>Tighten the device per manufacturer instruction OR with sheet binder, tighten by twisting and securing to maintain tension.</li> </ul>
<b>EMT</b>	
<b>AEMT</b>	
<b>INT</b>	
<b>PARA</b>	
<b>NOTES</b>	<div style="display: flex; justify-content: space-around; align-items: center;">   </div> <div style="display: flex; justify-content: center; margin-top: 20px;">  </div> <p>The pelvis is relatively immobile due to its connection to the lower back. Disruption of the pelvis requires a break in two locations and then tearing of the posterior ligaments at its connection to the lower back. Within the pelvis is a rich supply of veins as well as multiple arteries. When the pelvic ring is disrupted, there can be uncontrolled venous and sometimes arterial bleeding. This causes high mortality rates due to exsanguination. Along with bleeding, patients can experience injuries to their genitourinary tract, gastrointestinal system, and spinal nerves, as well as other significant traumatic injuries. The typical patient with a significant pelvic injury will present with the following signs and symptoms: complaints of pain in the lower back, upper legs, pelvis, and lower abdomen, crepitus, or instability of the pelvis on exam; however, this finding is rarely present. More often the patient will present with bruising or bleeding around the pelvis, leg length discrepancies, or amputation of a lower extremity on physical exam. Signs of hemodynamic instability can include altered mental status, tachycardia, or hypotension.</p>

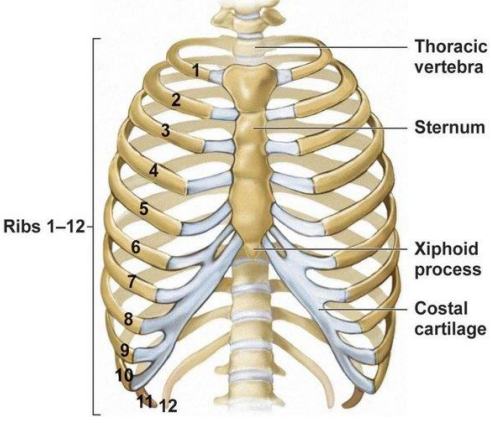
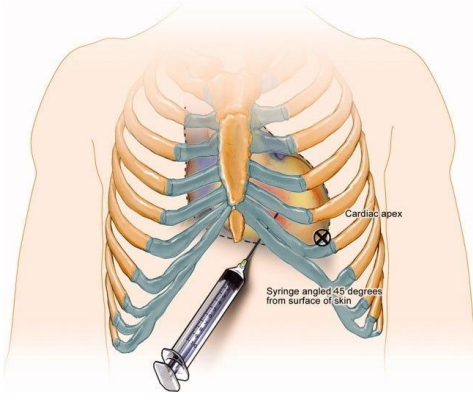
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# PERICARDIOCENTESIS

**INDICATIONS:** Traumatic cardiac arrest with suspected cardiac tamponade

**CONTRAINDICATIONS:** Patients with a pulse

**OTHER GUIDELINE TO CONSIDER:** [Cardiac Arrest](#), [Needle Decompression](#)

<b>PARA</b>	<ul style="list-style-type: none"> <li>• Patient should remain in the supine position</li> <li>• Ensure <a href="#">Cardiac Monitoring</a> is applied during procedure                         <ul style="list-style-type: none"> <li>○ Cardiac irritability may present if the myocardium is penetrated</li> </ul> </li> <li>• Gather equipment:                         <ul style="list-style-type: none"> <li>○ 18G spinal needle or intracardiac needle at least 5" in length (catheter-over-needle) connected to a 20-50mL syringe</li> </ul> </li> <li>• Locate the landmark for the sub-diaphragmatic approach:                         <ul style="list-style-type: none"> <li>○ The angle between the xiphoid process and the cartilage of the 7<sup>th</sup> rib to the left of the xiphoid</li> </ul> </li> <li>• Cleanse the area with an alcohol prep</li> <li>• Insert the needle perpendicular to the skin, maintaining a 90° angle to a depth of 1cm</li> <li>• After puncturing skin, position the needle to a 45° angle from the skin, directing it towards the inferior tip of the left scapula</li> <li>• Maintain gentle traction on the plunger of the syringe as the needle is advanced, creating a vacuum in the syringe barrel</li> <li>• Stop advancement of the needle when blood or fluid appears in the syringe</li> <li>• Aspirate all freely available blood until resistance is felt or pulses return                         <ul style="list-style-type: none"> <li>○ If multiple syringes of blood are removed, check positioning as penetration of the right ventricle may be likely</li> </ul> </li> <li>• If aspiration is successful, withdraw needle and leave catheter in place in case additional blood needs to be removed                         <ul style="list-style-type: none"> <li>○ Apply a 3-way stop-cock to luer lock hub of catheter</li> <li>○ Apply a stabilizing dressing around the catheter to prevent dislodgement</li> </ul> </li> <li>• If aspiration is unsuccessful, withdraw catheter and needle at same angle of insertion</li> <li>• Reassess patient for signs of improvement and return of pulses</li> <li>• Monitor patient for signs of expanding or worsening cardiac tamponade:                         <ul style="list-style-type: none"> <li>○ Tachycardia</li> <li>○ Hypotension</li> <li>○ Jugular Vein Distention (JVD)</li> <li>○ Decreasing EtCO<sub>2</sub></li> <li>○ Loss of pulses</li> </ul> </li> <li>• Reperform procedure as needed</li> </ul>	  
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• Myocardial Infarction (MI) may occur if a coronary artery becomes lacerated during procedure</li> <li>• Accumulation of blood in the pericardial sac can lead to cardiac tamponade, impeding the heart's ability to fill with blood, causing cardiac arrest</li> <li>• The most common cause of acute cardiac tamponade is a penetrating injury to the chest, piercing the heart</li> <li>• Cardiac tamponade should be suspected in patients with penetrating chest injuries causing cardiac arrest</li> </ul>	

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# SLISHMAN TRACTION SPLINT (STS)

**INDICATIONS:** Immobilization of suspected mid-shaft femur fractures; **For a protruding bone:** may use for stabilization only without traction

**CONTRAINDICATIONS:** STS: Injury to the knee or suspected hip injury      **STS GEN 2.0:** Injury to area of leg where traction is being applied

**OTHER GUIDELINE TO CONSIDER:** [Pain Management](#), [Traumatic Injuries](#), [Splinting](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>Assess and document circulation, movement, and sensation (CMS) prior to placement of the splint</li> <li>Monitor patient for development of hypovolemic shock due to internal hemorrhage associated with femur fracture</li> <li>Maintain manual stabilization until the splinting process is complete</li> <li>Gently straighten severely angulated fracture unless resistance is felt</li> <li>Wrap the ankle strap comfortably around the patient’s ankle                             <ul style="list-style-type: none"> <li>Ensure the Velcro® tab holding the receiver is positioned correctly so the molded piece does not contact the patient’s leg</li> </ul> </li> </ul>
<b>EMT</b>	<ul style="list-style-type: none"> <li>Apply the groin strap by sliding the male end of the strap under and around the patient’s thigh; attach it to the female end and cinch the strap snugly</li> <li>Open the distal clamp, extend the pole, and insert the pole into the receiver on the ankle strap</li> <li>Apply course traction by extending the poles manually until resistance is felt, then lock the clamp down</li> <li>Apply fine traction by opening the proximal clamp and pulling the cord that extends from the end of the pole until:                             <ul style="list-style-type: none"> <li>The first rescuer reports that mechanical traction equals manual traction</li> <li>The patient acknowledges pain relief</li> </ul> </li> <li>Lock down the proximal clamp and readjust traction as needed during transport</li> </ul>
<b>AEMT</b>	<p><b>NOTES:</b></p> <ul style="list-style-type: none"> <li>Circulation, movement, and sensation (CMS) must be thoroughly assessed and documented before and after splinting is complete</li> <li>The STS is designed to overcome many of the limitations of conventional traction splints:                             <ul style="list-style-type: none"> <li>The STS stays anatomically contained from the patient’s hip to ankle and thus does not extend outside of the backboard, stretcher, or stokes basket.</li> <li>Traction adjustments needed while enroute are made at the patient’s hip, not jammed against the door at the patient’s foot.</li> <li>The STS is not contraindicated in lower leg injury or amputation and its design allows the ankle strap to be alternately positioned proximal to the calf, allowing femur traction to still be applied, and leaves the lower leg accessible for other splinting or bandaging.</li> </ul> </li> <li>The STS can be used when a lower leg injury is suspected, but the “ankle” strap <b>MUST</b> be placed proximal to any other suspected fracture (ankle fracture=OK, proximal tibia fracture=NO).</li> <li>The STS works with both adult and pediatric patients</li> </ul>
<b>INT</b>	
<b>PARA</b>	
<b>NOTES</b>	



# HOW TO APPLY



Prior to application assess CMS (circulation, motor and sensory) function and pain level per local protocol.

## 1. Attach Ankle Strap

- Remove ankle strap and end cap from pole
- Unroll ankle strap and apply with end cap lateral and facing up to receive splint pole
- Secure with Velcro wrap



NOTE: May apply ankle strap above calf in cases of lower leg injury



## 2. Attach Groin Strap

- Rest female buckle on anterior thigh
- Wrap male buckle and strap behind thigh
- Snap male to female buckle and tighten



## 3. Apply Coarse Traction

- Extend distal pole after releasing thumb screw on black pole clamp. Insert distal pole into ankle strap end cap.
- After achieving desired length, tighten thumb screw



## 4. Apply Fine Traction

- Release thumb screw on red pole clamp
- Pull cord to apply desired traction
- Tighten thumb screw on red pole clamp and release cord



## 5. Reassess and Monitor

- Reassess CMS and pain level
- Adjust traction as needed to minimize pain, while maintaining perfusion
- For rotational stability, attach mid leg strap to splint and wrap (one or both legs) below knee
- Pad and monitor for pressure points



## PEDIATRIC APPLICATION

For patients under 110 cm (approx. 43 inches) in height and/or 3 years or less in age, lengthen the groin strap allowing the splint to rest more proximal to the hip.



**RESCUE ESSENTIALS**

[www.rescue-essentials.com](http://www.rescue-essentials.com)

Rev. 10\_14/2020



# Slishman Traction Splint - Compact (STS-C) INSTRUCTIONS FOR USE



1. For patients taller than 5ft (1.5m) pull middle tube from outer tube until spring button engages.



2. Apply neoprene outer tube strap firmly proximal to calf or patella.



3. Apply black groin strap, adjusting until snug around the upper thigh.



4. Gently pull cord for traction, until pain is relieved.



5. Lock cord in place by pulling down into V notch at top of inner tube.



6. Secure loose end of traction cord by wrapping once around both cleat wings.



7. Stabilize\* and pad the injured limb for comfort.



8. Monitor circulation, sensation, and motor function (CSM) closely and adjust as needed.



**Note:** For shorter patients or children, attach neoprene strap to ankle if needed for better fit.

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# SPINAL MOTION RESTRICTION

**INDICATIONS:** Need for spinal immobilization as determined by trauma assessment when possibility of cervical fracture is present or found.

**CONTRAINDICATIONS:** When risk of immobilization outweighs benefit, as determined by a clinical assessment

**OTHER GUIDELINE TO CONSIDER:** [Traumatic Injuries](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• Cervical spinal immobilization <b>INCLUSION CRITERIA:</b> <ul style="list-style-type: none"> <li>○ Blunt injury (with or without penetrating trauma) AND one or more of the following:                             <ul style="list-style-type: none"> <li>▪ Altered level of consciousness</li> <li>▪ GCS &lt;15</li> <li>▪ Clinical intoxication</li> <li>▪ Midline neck pain</li> <li>▪ Midline tenderness to c-spine palpation</li> <li>▪ Paraspinal muscle tenderness</li> <li>▪ Neurological deficits</li> <li>▪ Abnormal sensation</li> <li>▪ Distracting injury</li> <li>▪ Inability to communicate</li> <li>▪ Provider discretion based on MOI</li> </ul> </li> <li>○ Penetrating injury AND one or more of the following:                             <ul style="list-style-type: none"> <li>▪ Neurologic deficits</li> <li>▪ Unconsciousness or intoxication</li> <li>▪ High energy mechanism, such as MVC</li> </ul> </li> <li>○ If any of the above criteria are met, a c-collar should be applied</li> </ul> </li> <li>• Cervical spinal immobilization <b>EXCLUSION CRITERIA:</b> <ul style="list-style-type: none"> <li>○ GCS 15, can communicate effectively, and are cooperative</li> <li>○ No major mechanism for severe injury</li> <li>○ No history of a new or temporary neurologic deficit (weakness or numbness in extremities)</li> <li>○ No clinical evidence of intoxication or impairment</li> <li>○ No clinical evidence of distracting injuries, such as:                             <ul style="list-style-type: none"> <li>▪ Fractures</li> <li>▪ Burns</li> <li>▪ Crushing injuries</li> <li>▪ Severe or distracting pain</li> </ul> </li> <li>○ No midline back or neck pain/tenderness upon clinical assessment.                             <ul style="list-style-type: none"> <li>○ If the above criteria has been met, have patient move their head 45-degrees to either side of midline. If patient does not experience pain, c-spine immobilization can be excluded.</li> </ul> </li> </ul> </li> <li>• Application of Cervical Collar:             <ul style="list-style-type: none"> <li>○ Determine appropriate c-collar size using manufacturer recommendation</li> <li>○ Assess CMS in extremities</li> <li>○ A second provider should maintain in-line, manual stabilization of the patient’s head                     <ul style="list-style-type: none"> <li>▪ If any resistance is felt or complaints of worsening pain when adjusting the head to a neutral, mid-line position, stop and splint in position found or maintain manual stabilization throughout transport</li> <li>▪ If patient size or age prevents a c-collar from properly fitting, maintain manual stabilization throughout transport</li> </ul> </li> <li>○ If a backboard or scoop stretcher is not necessary, immediately assist patient to stretcher and lay supine on a padded stretcher for transport.</li> </ul> </li> <li>• Backboards and Scoop Stretchers:             <ul style="list-style-type: none"> <li>○ A backboard or scoop stretcher may be used as a patient movement adjunct</li> <li>○ The patient should be removed from the adjunct after patient movement, and lay supine on a padded stretcher for transport</li> </ul> </li> </ul>
<b>EMT</b>	
<b>AEMT</b>	
<b>INT</b>	
<b>PARA</b>	
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• Consider utilizing a scoop stretcher for patient movement, when available</li> <li>• Drowning victims have high risk of cervical and/or spinal injuries that may be difficult to recognize. Consider broad spinal immobilization for these patients.</li> </ul>

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Effective Date: 6/1/2024	Approved by: Steven Andrews, MD, EMT-P, FAEMS	

# SPLINTING

**INDICATIONS:** Immobilization of an extremity for transport due to traumatic injury OR to secure medically necessary devices such as an IV catheter

**CONTRAINDICATIONS:** Injuries that will be worsened by splinting; unable to adequately splint with available equipment

**OTHER GUIDELINES TO CONSIDER:** [Traumatic Injuries](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• Assess and document pulses, sensation, and motor function prior to placement of the splint                             <ul style="list-style-type: none"> <li>▪ Fracture/dislocation realignment is indicated if there are absent pulses/perfusion or if abnormal position makes care impractical. If possible, provide <a href="#">Pain Management</a> prior to realignment. Apply manual traction smoothly and steadily to realign fractures or dislocations to normal anatomic position prior to splinting.</li> <li>▪ If pulses do not return, apply splint and notify receiving hospital of pulseless extremity</li> </ul> </li> <li>• Remove all clothing from the extremity and all jewelry distal to the injury</li> <li>• Select an appropriate splint                             <ul style="list-style-type: none"> <li>▪ If a femur fracture is suspected without evidence of a pelvic fracture or instability, place a traction splint</li> </ul> </li> <li>• Immobilize the injury by applying the splint and securing both proximal and distal to the injured area:                             <ul style="list-style-type: none"> <li>▪ Long bone fractures: Immobilize beyond the joints above and below the injury</li> <li>▪ Joint fracture/dislocation: Immobilize the bones above and below the injured joint</li> <li>▪ For commercially available splints – follow manufacturer guidelines for appropriate application</li> </ul> </li> <li>• Reassess pulses, sensation, and motor function following placement of splint                             <ul style="list-style-type: none"> <li>▪ If any change in CMS after splint placement:                                     <ul style="list-style-type: none"> <li>○ Reposition splint and reassess; if no improvement in CMS, remove splint</li> </ul> </li> </ul> </li> </ul>
<b>EMT</b>	
<b>AEMT</b>	
<b>INT</b>	
<b>PARA</b>	
<b>NOTES</b>	

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# TASER – CONDUCTED ELECTRICAL WEAPON (CEW)

**INCLUSION Criteria:** Removal of CEW darts from a person at the request of law enforcement.

**EXCLUSION Criteria:** Dart puncture zone that include:

- Eyes, ears, nose, mouth, face, or neck
- Genitals
- Spine
- Hands, feet, or joints

**OTHER GUIDELINES TO CONSIDER:** [Restraints – Chemical](#), [Restraints – Physical](#), [Altered Mental Status](#), [Tachycardia](#)

<b>EMT</b>	<ul style="list-style-type: none"> <li>• After patient has been secured or restrained with assistance of law enforcement, the cartridge has been ejected from the weapon, and the wires have been cut, perform a rapid trauma assessment</li> <li>• Conduct a primary and secondary assessment. Assess patient for signs and symptoms of altered mental status, or excited delirium, manifested by a combination of agitation, reduced pain sensitivity, elevated temperature, persistent struggling, or hallucinations</li> <li>• Obtain vital signs; consider intoxication, psychosis, hypoxia, hypoglycemia, or overdose as cause for violent or combative behavior</li> <li>• Identify total number of cartridges used by law enforcement, and search for other darts if a secondary cartridge was used.</li> <li>• Evaluate the location of the puncture zones. High risk/sensitive zones will require transport to a medical facility for removal. Do not attempt to remove the darts if they puncture:                         <ul style="list-style-type: none"> <li>▪ Eyes, ears, nose, mouth, face, or neck</li> <li>▪ Genitals</li> <li>▪ Spine</li> <li>▪ Hands, feet, or joints</li> </ul> </li> <li>• If a dart removal tool is available (only provided with the discharged TASER 7 or TASER 10 cartridge):                         <ul style="list-style-type: none"> <li>▪ Stabilize the skin surrounding the CEW dart. Slide the safety clip notch between the dart and the patient, catching the dart between the body of the dart and the dart tip. Remove the dart with one, smooth, firm pull using the safety clip, upwards at a 90-degree angle, avoiding twisting or bending the dart</li> </ul> </li> <li>• If a dart removal tool is unavailable:                         <ul style="list-style-type: none"> <li>▪ Remove one barb at a time. Stabilize the skin surrounding the CEW dart. Firmly grasp the dart and with one, smooth, firm pull, upwards at a 90-degree angle, avoiding twisting or bending the dart</li> </ul> </li> <li>• Examine the tip of the barb to ensure it is fully intact. If any part of the barb remains in the patient, transport to a hospital for removal. The barb is considered a sharp, and EMS Personnel should use extra caution to prevent accidental needle stick</li> <li>• Place the darts in an appropriate container and return to law enforcement for evidence collection</li> <li>• Provide necessary wound care by disinfecting the affected area and bandage appropriately</li> <li>• Inform the patient and law enforcement of basic wound care and when to seek additional care. It is recommended the patient receive a tetanus vaccine if one has not been received within the last 10 years</li> </ul>
<b>AEMT</b>	
<b>INT</b>	
<b>PARA</b>	
<b>NOTES</b>	
<ul style="list-style-type: none"> <li>• Apply cardiac monitor and evaluate for dysrhythmias and if present, consider <a href="#">Tachycardia</a> guideline</li> </ul>	
<ul style="list-style-type: none"> <li>• Manage the condition that triggered the application of the conducted electrical weapon (CEW) with special attention to patients meeting criteria for excited delirium</li> <li>• Ensure patient is secured or restrained with assistance of law enforcement to protect the patient and staff</li> <li>• Perform a comprehensive trauma and medical assessment</li> </ul>	

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# TOURNIQUET - INTENTIONAL

**INDICATIONS:** Uncontrolled external hemorrhage involving an extremity not controlled by other means

**CONTRAINDICATIONS:** Hemorrhaging wounds to locations besides the extremities or bleeding controlled by other means

**OTHER GUIDELINES TO CONSIDER:** [Hemorrhage Control](#), [Wound Packing](#), [Pain Management](#), [Traumatic Injuries](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• Apply tourniquet to bare skin 2-3" proximal to the site of injury and pull the band as tightly as possible                             <ul style="list-style-type: none"> <li>▪ Do not cross joints or bony prominences with tourniquet</li> </ul> </li> <li>• Using the windlass, tighten the tourniquet until bleeding stops                             <ul style="list-style-type: none"> <li>▪ Secure the windlass, based on manufacturers recommendations, to prevent unwanted loosening of the device</li> <li>▪ Document time of application</li> <li>▪ Consider <a href="#">Pain Management</a></li> </ul> </li> <li>• If hemorrhage is not controlled by a single tourniquet:                             <ul style="list-style-type: none"> <li>▪ Apply a second tourniquet just proximal to the first tourniquet if possible                                     <ul style="list-style-type: none"> <li>○ Avoid placing over the wound</li> <li>○ Avoid overlap; make sure the windlass do not entangle</li> </ul> </li> <li>▪ Continue direct pressure with consideration for <a href="#">Wound Packing</a> if bleeding continues</li> </ul> </li> <li>• In a dynamic or tactical situation or an extremity with multiple wounds, apply tourniquet as high and tight as possible, over clothing if necessary. Bulky objects in pockets must be removed prior to application. If time allows and a high proximal tourniquet was placed, apply a second, intentional tourniquet, 2-3" above the most proximal injury. Loosen first tourniquet while monitoring the effectiveness of the second, intentional tourniquet.</li> <li>• Transitioning tourniquet to pressure dressing is allowed :                             <ul style="list-style-type: none"> <li>▪ Patient is no longer in shock AND,</li> <li>▪ Injured area is not an amputation AND,</li> <li>▪ Time of application is less than 2 hours, AND</li> <li>▪ Dressing applied to wound controls bleeding (pressure dressing, hemostatic agent, other)</li> </ul> </li> <li>• Tourniquet can be loosened but should be left in place; Loosen tourniquet pressure <u>slowly</u>. If bleeding restarts, tighten tourniquet to control bleeding</li> </ul>
<b>EMT</b>	
<b>AEMT</b>	
<b>INT</b>	
<b>PARA</b>	
<b>NOTES</b>	<ul style="list-style-type: none"> <li>• Notify receiving trauma center of tourniquet use, location of device, and the time placed</li> <li>• Remember: Direct pressure may be appropriate, but if it cannot be firmly and consistently applied, default to tourniquet application.</li> <li>• Tourniquet application is very painful and <a href="#">Pain Management</a> should be considered</li> <li>• May cause tissue damage or lead to ischemia of the extremity with prolonged use (&gt; 4 hours)</li> <li>• IV/IO's inserted distal to a tourniquet will not work</li> <li>• If using a BP cuff, ensure Velcro® overlaps and inflate the cuff enough to visibly see the cessation of bleeding</li> </ul>



# SOF® TOURNIQUET

Part#: 84-0009 | NSN: 6515-01-696-4522  
 US PATENT-8,303,620 and D649,642 and 7,776,064



## INSTRUCTIONS FOR USE

### To Apply the Tourniquet

**1**

**Slide Over Limb Above the Injury**

**2**

**Pull Tail Tight**

**3**

**Twist Handle Until Bleeding Stops**

**4**

**Optional: Temporarily Brace in Clip**

**5**

**Lock and Secure in Triangle**

**6**

**Note Time**

### Applying the Tourniquet if Unable to Slide Over Limb

Follow steps 1b-4b

**1b**

**Life Buckle**

**2b**

**Twist to Disconnect**

**3b**

**Go Around Limb**

**4b**

**Connect Buckle, Then Go to Step 2**

**SOF® Tourniquet**  
 For control of severe bleeding.

**SOF® Tourniquet Storage**  
 Store the tourniquet with the buckle connected and enough slack to slip the tourniquet loop over your limb.

**WARNING:**  
**FOR SINGLE USE ONLY**



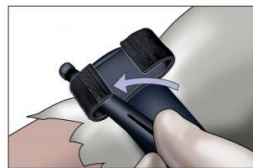
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1. Wrap the tourniquet around the bleeding arm or leg about 2 to 3 inches above the bleeding site (*be sure NOT to place the tourniquet onto a joint – go above the joint if necessary*)



2. Pull the free end of the tourniquet to make it as tight as possible and secure the free end
3. Twist or wind the windlass until bleeding stops



4. Secure the windlass to keep the tourniquet tight
5. Note the time the tourniquet was applied

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# TOURNIQUET - JUNCTIONAL

**INCLUSION Criteria:** Uncontrolled external hemorrhage involving axillary or inguinal bleeding, not controlled by other means.

**EXCLUSION Criteria:** Hemorrhaging wounds to locations other than axillary or inguinal locations.

**OTHER GUIDELINES TO CONSIDER:** [Hemorrhage Control](#), [Wound Packing](#), [Pain Management](#), [Traumatic Injuries](#)

<b>EMR</b>	<ul style="list-style-type: none"> <li>• If patient is conscious, explain procedure to patient.</li> <li>• Expose injury and assess source of bleeding. Clothing may need to be cut away to properly expose wound.</li> <li>• Apply direct pressure to source of bleeding.</li> </ul>
<b>EMT</b>	<p><b>Inguinal Application:</b></p> <ul style="list-style-type: none"> <li>• Remove hard objects such as keys, phones, etc. from pockets. Junctional tourniquet should be placed over thin clothing or directly onto the skin, if able.</li> <li>• Place patient in supine position.</li> <li>• Maintain direct pressure while preparing junctional tourniquet.</li> <li>• Pass belt behind thighs and slide upward, positioning junctional tourniquet over area to be compressed.                             <ul style="list-style-type: none"> <li>▪ Over femoral pulse distal to inguinal ligament, or;</li> <li>▪ Below midpoint of the imaginary line between the anterior superior iliac spine and pubic tubercle (if pulse is not palpable).</li> </ul> </li> <li>• Hold junctional tourniquet in place and connect belt by snapping buckle together.</li> <li>• Pull brown handles away from each other firmly, until buckle is secured, ensuring all slack is removed before junctional inflation (you will hear the tensioner click).</li> </ul>
<b>AEMT</b>	<ul style="list-style-type: none"> <li>• Fasten excess belt in place by pressing down on Velcro (you may hear a second click once the belt is secure).</li> <li>• Using the hand pump, inflate junctional tourniquet until hemorrhage stops and distal pulse is no longer present.                             <ul style="list-style-type: none"> <li>▪ When treating bilateral junctional injuries, use a second junctional tourniquet following above procedure.</li> <li>▪ Monitor patient for hemorrhage control and adjust junctional tourniquet as necessary.</li> </ul> </li> <li>• Document time junctional tourniquet was placed on the patient.</li> </ul>
<b>INT</b>	<p><b>Axillary Application:</b></p> <ul style="list-style-type: none"> <li>• Apply junctional tourniquet under arms, as high as possible.</li> <li>• Place D-ring on injured side, aligning it with side of neck.</li> <li>• Connect buckle and secure strap in place by pulling brown handles apart, until you hear a click.</li> <li>• Connect strap using large clip to D-ring on the front of junctional tourniquet.</li> <li>• Connect auxiliary strap to cord on back of junctional tourniquet, using the small clip, as close as possible to the patient's mid-line.                             <ul style="list-style-type: none"> <li>○ Tighten strap using brown handle, as tight as possible.</li> </ul> </li> <li>• Using the hand pump, inflate junctional tourniquet until hemorrhage stops.</li> <li>• Document time junctional tourniquet was placed on the patient.</li> </ul>
<b>PARA</b>	
<b>NOTES</b>	<p>Junctional tourniquets should be applied after proper wound packing. If a wound was not previously packed, use gauze of hemostatic dressing if targeting the junctional tourniquet directly over an open wound, prior to application.</p>


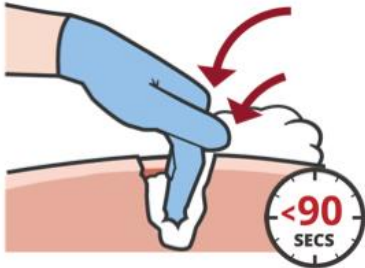
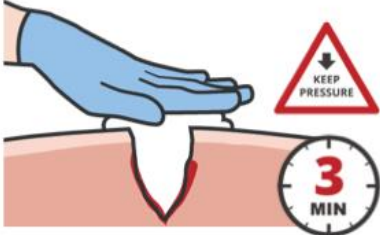

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# WOUND PACKING

**INDICATIONS:** Deep skin and soft tissue wounds with major bleeding not controlled by direct pressure or not amenable to tourniquet application

**CONTRAINDICATIONS:** Hemorrhaging wounds controlled by direct pressure, anterior chest and abdominal wounds, anterior neck wounds in which wound packing would compromise the airway

**OTHER GUIDELINES TO CONSIDER:** [Hemorrhage Control](#), [Tourniquet – Intentional](#), [Traumatic Injuries](#)

EMR	<ul style="list-style-type: none"> <li>Apply direct pressure to the wound</li> <li>Insert gloved finger(s) into the wound and apply firm pressure to visualized bleeding vessel to control bleeding</li> <li>Create a small ball at the beginning of the roll gauze, preferentially hemostatic impregnated, and press the gauze deep into the wound, occluding the bleeding vessel against bone or firm tissue</li> <li>While maintaining pressure on the leading edge of the gauze, feed more gauze into the wound, packing it tightly in place while continuing pressure on the bleeding vessel</li> <li>Continue packing the wound until the wound space is filled. Additional packing should be added to create a 2-inch mound above the skin.</li> </ul>
EMT	<ul style="list-style-type: none"> <li>Maintain manual direct pressure over the packed wound for a minimum of three (3) minutes</li> <li>Reassess and wrap the wound with a pressure dressing to maintain pressure for support</li> <li>If bleeding persists, apply more gauze, but DO NOT remove the wound packing</li> <li>Continue to monitor the wound and assess need for continued direct pressure throughout transport</li> </ul>
AEMT	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: left;"> <p><b>CMC</b> <b>TCCC</b></p> </div> <div style="text-align: right;">  </div> </div> <h2 style="margin: 10px 0;">WOUND PACKING</h2> <div style="display: flex; justify-content: space-around; align-items: center;">    </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 30%;"> <p><b>Identify exact source</b> of bleeding and <b>APPLY direct pressure UNTIL</b> gauze is placed</p> <p>Pack the wound <b>maintaining CONSTANT</b> direct pressure within <b>90 SECONDS</b> to be effective</p> <p>Fill and pack the wound tightly, ensuring gauze extends 1-2 inches above the skin</p> </div> <div style="width: 30%;"> <p><b>HOLD</b> direct pressure for at least <b>3 MINS</b> (<i>this is necessary, even with the active ingredient in hemostatic gauze</i>)</p> <p>When packing a large wound, more than one hemostatic gauze and/or <b>additional</b> gauze may be <b>needed</b></p> </div> <div style="width: 30%;"> <p>Carefully <b>observe</b> to determine if bleeding has been <b>controlled</b></p> <p>Once you are sure the bleeding has <b>stopped</b>, apply a pressure bandage</p> </div> </div>
INT	
PARA	
NOTES	<ul style="list-style-type: none"> <li>Remember: Direct pressure may be appropriate, but if it cannot be firmly and consistently applied, default to tourniquet application.</li> </ul>

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# VENOUS ACCESS

[Intraosseous \(IO\) Access](#)

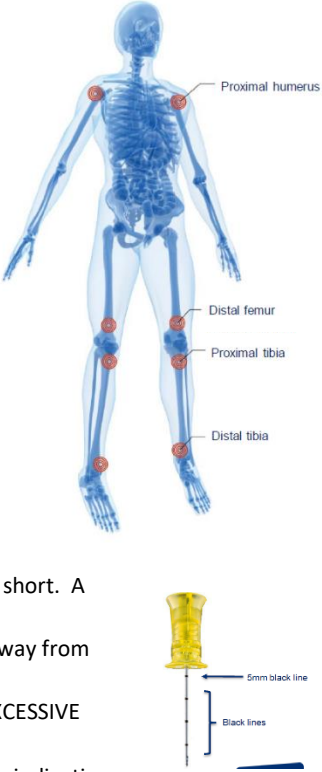
[Intravenous \(IV\) Access](#)

# INTRASOSEOUS (IO) ACCESS

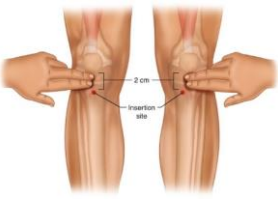

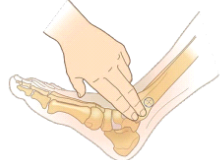

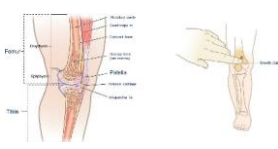
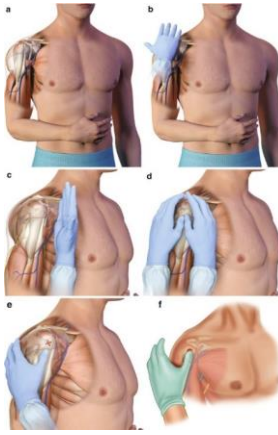

**INDICATIONS:** Patients in need of peripheral venous access where either intravenous access is unattainable or immediate access is imperative

**CONTRAINDICATIONS:** Fracture proximal to proposed IO site, infection at area of insertion, excessive tissue (severe obesity) and/or absence of adequate anatomical landmarks, previous IO placement or attempt at same site, past major orthopedic procedure at the site (e.g. prosthetic limb, joint replacement). Burns are NOT a contraindication

**OTHER GUIDELINES TO CONSIDER:** [Medication Profiles](#)

<b>AEMT</b>	<ul style="list-style-type: none"> <li>• Select the most appropriate insertion site:                             <ul style="list-style-type: none"> <li>○ Proximal humerus</li> <li>○ Proximal tibia</li> <li>○ Distal femur</li> <li>○ Distal tibia</li> </ul> </li> <li>• Select the appropriate needle based on manufacturer’s recommendations:                             <ul style="list-style-type: none"> <li>○ Clinical judgment should be used to determine appropriate needle set selection based on the patient weight, anatomy, and tissue depth overlying the insertion site</li> </ul> </li> <li>• Cleanse the site with alcohol prep pad</li> <li>• Prepare supplies</li> <li>• Prime administration set and extension set and purge air</li> <li>• Insert the IO needle per manufacturer’s recommendations:                             <ul style="list-style-type: none"> <li>○ <b>Powered Intraosseous Device (EZ-IO):</b> <ul style="list-style-type: none"> <li>▪ Push the EZ-IO Needle Set through the skin until the needle tip touches the bone. At least ONE black line (5 mm) must be visible outside the skin.                                     <ul style="list-style-type: none"> <li>• If the needle set tip does not reach the bone or at least one black line is NOT visible above the skin, the needle is too short. A longer needle set or alternate site should be chosen.</li> </ul> </li> <li>▪ Hold the IO needle and driver at a 90° angle to the bony surface; aim away from nearby joints or epiphyseal plate</li> <li>▪ Squeeze the trigger and apply gentle, steady pressure. <b>DO NOT USE EXCESSIVE FORCE.</b> Stop releasing the trigger when a loss of resistance is felt                                     <ul style="list-style-type: none"> <li>• <b>Pediatric:</b> Release trigger when sudden “give” or “pop” is felt, indicating entry into medullary space</li> <li>• <b>Adult:</b> Advance EZ-IO Needle Set approximately 1 cm after entry into medullary space</li> <li>• <b>Proximal humerus:</b> for most adults, catheter should be advanced until needle hub is flush against the skin</li> </ul> </li> </ul> </li> <li>○ <b>Manual Devices (Cook or Jamshidi)</b> <ul style="list-style-type: none"> <li>▪ Hold the intraosseous needle at a 90° angle to the Bony surface, aimed away from the nearby joint and epiphyseal plate</li> <li>▪ Provide pressure to push the needle tip through the skin until the tip of the needle touches the bone</li> <li>▪ Twist the needle handle with a rotating grinding motion applying controlled downward force until a pop or loss of resistance is felt</li> <li>▪ Do not advance the needle more than 1 cm after the loss of resistance is felt</li> </ul> </li> </ul> </li> <li>• Attach a 10 mL syringe filled with 10 mL normal saline                             <ul style="list-style-type: none"> <li>○ Gently flush 10 mL of normal saline to clear the lumen of the needle</li> <li>○ Aspiration is optional, not required</li> </ul> </li> <li>• <b>Confirmation of Placement</b> <ul style="list-style-type: none"> <li>○ The following findings indicate correct placement of the IO cannula:                                     <ul style="list-style-type: none"> <li>▪ The needle or catheter stands firmly on its own within the bone</li> <li>▪ Flushing of the needle or catheter occurs without evidence of infiltration</li> <li>▪ Bone marrow is aspirated from the needle or catheter. This does not always occur even with a properly placed IO needle/catheter</li> </ul> </li> </ul> </li> </ul>	
<b>INT</b>		

<b>AEMT</b>	<ul style="list-style-type: none"> <li>• Attach the IV tubing with fluids on a pressure bag</li> <li>• <b>Drug &amp; Fluid Administration</b> <ul style="list-style-type: none"> <li>○ Any IV drug or routine resuscitation fluid can be safely administered by the IO route</li> <li>○ Drug &amp; fluid dosing is the same as for IV administration                             <ul style="list-style-type: none"> <li>▪ For adenosine, lower extremity IO route may not be as effective</li> </ul> </li> <li>○ IV fluids for rapid volume expansion should be administered under pressure using a pressure bag to overcome the resistance of emissary veins that lead from the bone cavity to the general circulation.                             <ul style="list-style-type: none"> <li>▪ The IO site should be monitored frequently for infiltration during rapid fluid administration</li> </ul> </li> </ul> </li> </ul>
<b>INT</b>	<ul style="list-style-type: none"> <li>• Detection of Infiltration             <ul style="list-style-type: none"> <li>○ The following findings indicate infiltration:                 <ul style="list-style-type: none"> <li>▪ Swelling around insertion site</li> <li>▪ Swelling posterior to the site (posterior calf in patients with an IO placed in the proximal tibia)</li> </ul> </li> <li>○ If infiltration is noted, remove IO and replace in another site in a different extremity</li> </ul> </li> </ul>
<b>PARA</b>	<ul style="list-style-type: none"> <li>• In patients that are alert and aware of pain, consider the following prior to infusing fluid through the IO site:             <ul style="list-style-type: none"> <li>○ <a href="#">Lidocaine</a> <ul style="list-style-type: none"> <li>▪ <b>All ages:</b> <ul style="list-style-type: none"> <li>• <b>IO:</b> 1 mg/kg infused slowly, maximum dose 50 mg</li> <li>• As clinical situation permits, allow lidocaine to dwell in the IO site for up to 1 minute before flushing the insertion site with normal saline.</li> <li>• May repeat once if pain not controlled with initial dose</li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>NOTES</b>	<p><b><u>IO Site Considerations</u></b></p> <ul style="list-style-type: none"> <li>• <b>Distal Femur:</b> <ul style="list-style-type: none"> <li>○ Larger bone in pediatric patients and is a suggested site for cardiac arrest over proximal tibia</li> <li>○ Proper needle size is critical due to more tissue in the thigh</li> <li>○ Drilling/penetration may take longer as distal femur is a weight-bearing bone</li> </ul> </li> <li>• <b>Distal Tibia:</b> <ul style="list-style-type: none"> <li>○ Distal tibia is a weight bearing bone and may take longer and be more difficult to drill/penetrate</li> </ul> </li> <li>• <b>Proximal Humerus</b> <ul style="list-style-type: none"> <li>○ Humerus is a non-weight bearing bone that is thinner and easier to drill</li> <li>○ Humeral site is easier to dislodge when the arm is moved up or above the head                 <ul style="list-style-type: none"> <li>▪ Be sure to secure the arms when using the LUCAS</li> </ul> </li> </ul> </li> </ul>

Site	Age	Landmarks	Insertion Site Location	Notes
Proximal Tibia	Adult/Older Child		*Insert approx. 2-3 cm below the patella & approx. 2 cm medial to the tibial tuberosity along the flat aspect of the tibia	<i>Aim the needle set tip at a 90° angle to the bone for insertion</i>
	Neonate/Infant/Young Child		<b>*Tibial tuberosity CAN be palpated:</b> -Insert approx. 1 cm medial to the tibial tuberosity <b>*Tibial tuberosity CANNOT be palpated:</b> -Insert approx. 1-2 cm below the patella & approx. 1 cm medial along the flat surface of the tibia	<i>Aim the needle set tip at a 90° angle to the bone for insertion</i>
Distal Tibia	Adult/Older Child		*Insert approx. 3 cm proximal to the most prominent aspect of the medial malleolus  *Palpate the anterior & posterior borders of the tibia to ensure that your insertion site is on the flat center aspect of the bone	<i>Aim the needle set tip at a 90° angle to the bone for insertion</i>
	Neonate/Infant/Young Child		*Insert approx. 1-2 cm proximal to the most prominent aspect of the medial malleolus  *Palpate the anterior & posterior borders of the tibia to ensure that your insertion site is on the flat center aspect of the bone	<i>Aim the needle set tip at a 90° angle to the bone for insertion</i>
Distal Femur	Neonate/Infant Child/Adult		*Secure site with leg outstretched; ensure knee doesn't bend *Insert approx. 1-2 cm proximal to the superior border of the patella & approx. 1 cm medial to the mid-line  *Every effort should be taken to avoid the growth plates	<i>Aim the needle set tip at a 90° angle to the bone for insertion</i>  <i>Ensure leg remains immobilized</i>
Proximal Humerus	18 years or older  <i>*This site should only be used in patients who are skeletally mature</i>		*Internally rotate and adduct the arm using one of the following methods: 1) Place the hand over the abdomen with the arm tight to the body, or 2) place the arm tight against the body and rotate the hand so the palm is facing outward, thumb pointing down  *Palpate the surgical neck of the proximal humerus. The insertion site is on the anterolateral part of the arm, 1-2 cm above the surgical neck, in the most prominent aspect of the greater tubercle.	<i>*Insert needle set into the greater tubercle at an approximately 45-degree angle, as if aiming toward the opposite hip.</i>  

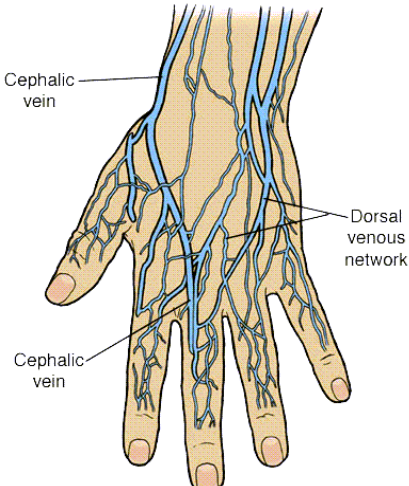
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# INTRAVENOUS (IV) ACCESS

**INDICATIONS:** Any patient requiring IV fluids and/or medications; if life threats require immediate access, consider [Intraosseous \(IO\) Access](#)

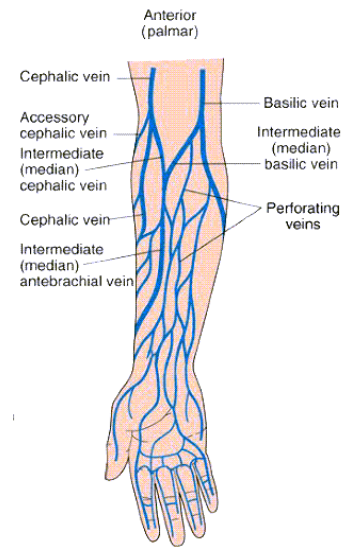
**CONTRAINDICATIONS:** Apparent infection to the site of procedure

**OTHER GUIDELINES TO CONSIDER:** [Medication Profiles](#), [Intraosseous \(IO\) Access](#)

<b>AEMT</b>	<ul style="list-style-type: none"> <li>• Select appropriate IV insertion site and size of catheter for access                             <ul style="list-style-type: none"> <li>○ Consider patient condition, treatment needs, and quality of vasculature. Contraindications for site access include:                                     <ul style="list-style-type: none"> <li>▪ Overlying cellulitis, lymphedema, or evidence of infection</li> <li>▪ Traumatic injury at or near location</li> <li>▪ Arteriovenous fistula (dialysis fistula), ports, or PICC line on same side</li> <li>▪ Patient request</li> </ul> </li> </ul> </li> </ul>	
<b>INT</b>	<ul style="list-style-type: none"> <li>• Assemble appropriate supplies                             <ul style="list-style-type: none"> <li>○ Macro drip tubing (10, 15, 20 gtt/s) should be used for all situations, except when medication infusion specifies smaller tubing</li> </ul> </li> <li>• Explain procedure to patient and obtain consent if appropriate</li> <li>• Insert IV catheter                             <ul style="list-style-type: none"> <li>○ Place the tourniquet around patient's arm, 4 to 8 inches above the insertion site</li> <li>○ Select vein based on structure, location, and medication to be administered</li> <li>○ Cleanse the selected site with alcohol prep</li> <li>○ Using your non dominant hand, stabilize the vein distally with thumb and fingers</li> <li>○ Insert the needle, bevel side up, at a low angle (10°-30°) next to or over the vein</li> <li>○ Advance the needle and catheter into the vein until a flash of blood is seen in the flash chamber                                     <ul style="list-style-type: none"> <li>▪ Continue to advance the catheter and needle another 1-2 mm to ensure the tip of the catheter is completely seated in the vein</li> </ul> </li> <li>○ Advance the catheter along the needle, into the vein until the hub meets the patient's skin</li> <li>○ Remove the needle wall occluding the vessel with direct pressure just proximal to the end of the catheter                                     <ul style="list-style-type: none"> <li>▪ Correctly dispose of the sharps in an approved receptacle, engaging any safety needle features, as per manufacturer recommendations</li> </ul> </li> <li>○ Remove the tourniquet</li> </ul> </li> </ul>	
<b>PARA</b>	<ul style="list-style-type: none"> <li>• Connect the primed IV tubing or a sterile cap and extension set to the catheter hub</li> <li>• Initiate IV infusion, or flush IV extension set and lock                             <ul style="list-style-type: none"> <li>○ Open the roller clamp and observe the flow of fluid into the drip chamber                                     <ul style="list-style-type: none"> <li>▪ Observe the insertion site for signs of infiltration or pain   <ul style="list-style-type: none"> <li>• If the IV catheter is correctly placed, venous blood will flow steadily from the catheter, and no swelling will occur at the puncture site</li> <li>• If swelling occurs and extravenous placement is suspected, remove the catheter, applying pressure at the puncture site to reduce hematoma formation</li> <li>• Place a dressing over the puncture site</li> </ul> </li> </ul> </li> <li>○ Set appropriate IV infusion rate                                     <ul style="list-style-type: none"> <li>▪ Administer IV infusions at TKO unless a different flow rate is indicated by the appropriate guideline</li> </ul> </li> </ul> </li> <li>• Secure IV Tubing                             <ul style="list-style-type: none"> <li>○ Cover the insertion site with a transparent dressing and secure the IV tubing to patient's extremity</li> <li>○ Ensure the IV catheter and tubing are securely taped or dressed to prevent accidental displacement</li> </ul> </li> <li>• Reassess IV drip rate, ensuring it is appropriate for patient condition</li> </ul>	

**AEMT**

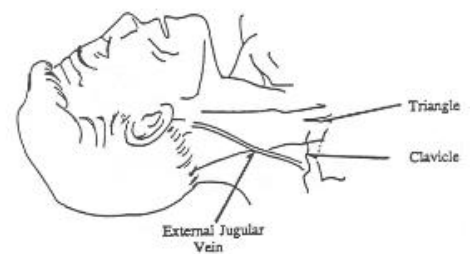
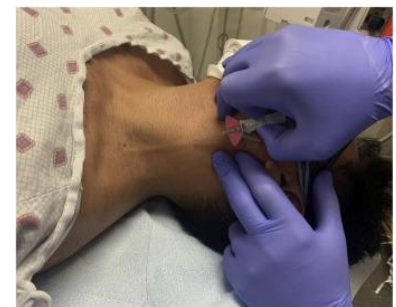
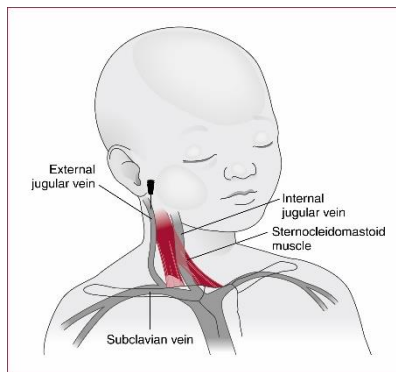
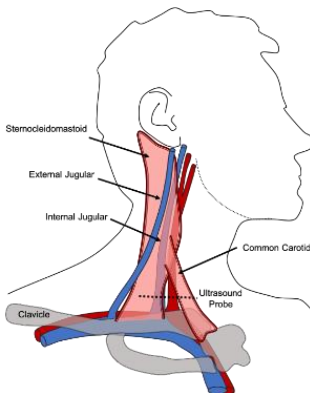
- **If the IV does not flow properly:**
  - Ensure that the tourniquet has been removed
  - **Slowly** withdraw the catheter slightly, as the tip may be occluded by a valve or vein wall
- Document procedure and results, including:
  - Location of insertion site
  - Catheter size
  - IV fluid type
  - Adverse or undesired effects
  - Response to treatment



**INT**

- **External Jugular Venous Access**
  - Consider in patients who are awake and alert, and with a life-threatening condition when no obvious peripheral site is noted
  - Not indicated in patients who are combative or uncooperative with positioning, or when anatomic landmarks are not visible
  - Procedure:
    - Position yourself at the head of the patient
    - Place the patient in a supine, head-down position to fill the jugular vein
    - Turn the patient's head to the opposite side (e.g. looking away from the proposed insertion site)
    - Clean the skin with approved agent
    - Align the catheter with the vein and the point of the needle aimed at the shoulder on the same side
    - Stabilize the vein with one finger above the clavicle to provide a tourniquet effect
    - Puncture the vein midway between the angle of the jaw and the clavicle
    - Obtain flash, and advance the catheter into the vein while stabilizing the needle
    - Confirm placement with saline flush (no infiltration or pain)
    - Attach tubing and secure the IV avoiding circumferential dressing or taping around the neck
  - If unsuccessful, place an occlusive dressing over site and monitor for signs or expanding hematoma

**PARA**



<b>NOTES</b>	<ul style="list-style-type: none"> <li>• In situations where urgent vascular access is required due to substantial morbidity or potential fatality, IV access attempts are limited to a maximum of 2 attempts             <ul style="list-style-type: none"> <li>○ If 2 IV access attempts are unsuccessful, move immediately to <a href="#">Intraosseous (IO) Access</a></li> <li>○ In cases of cardiac arrest or impending life-threatening emergencies, consider immediate <a href="#">Intraosseous (IO) Access</a> without attempting IV access</li> </ul> </li> <li>• Start a second IV line when appropriate:             <ul style="list-style-type: none"> <li>○ Major trauma</li> <li>○ Suspected major hemorrhage</li> <li>○ STEMI</li> <li>○ Burns</li> <li>○ Provider judgement deems appropriate</li> </ul> </li> <li>• If you cannot advance the catheter, it has either been advanced too far through the posterior wall of the vein, or the tip of the needle entered the vein, but the catheter did not.             <ul style="list-style-type: none"> <li>○ If you suspect posterior placement, withdraw the needle slightly until you see flash in the hub, then try advancing the catheter.</li> <li>○ If you suspect anterior catheter displacement, advance the needle slightly, then advance the catheter. You may need to abort the cannulation attempt if these problems arise and attempt a different site, proximal to the first if the same extremity is used</li> </ul> </li> <li>• Occasionally, the catheter cannot advance because it lies against a valve or tortuous portion of the vein. If suspected, attach a syringe filled with normal saline to the catheter. Gently infuse fluid through the catheter while <b><i>slowly</i></b> advancing forward.</li> <li>• Inadvertent arterial catheter placement usually causes a pulsatile flow of bright red blood. If this occurs, remove the catheter and apply continuous pressure at the puncture site for approximately 10 minutes.</li> </ul>
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# MEDICATIONS

<b>A</b>	<a href="#">Fluid Bolus – IV/IO (Intravenous/Intraosseous)</a>	<a href="#">Norepinephrine</a>
<a href="#">Acetaminophen (Tylenol)</a>	<b>G</b>	<b>O</b>
<a href="#">Adenosine</a>	<a href="#">Glucagon</a>	<a href="#">Ondansetron (Zofran)</a>
<a href="#">Advil (Ibuprofen)</a>	<a href="#">Glucose (Oral Gel)</a>	<a href="#">Oxygen</a>
<a href="#">Afrin (Oxymetazoline)</a>	<b>H</b>	<a href="#">Oxymetazoline (Afrin)</a>
<a href="#">Albuterol</a>	<a href="#">Hydromorphone (Dilaudid)</a>	<a href="#">Oxytocin (Pitocin)</a>
<a href="#">Amidate (Etomidate)</a>	<b>I</b>	<b>P</b>
<a href="#">Amiodarone</a>	<a href="#">Ibuprofen (Advil, Motrin)</a>	<a href="#">Phenergan (Promethazine)</a>
<a href="#">Aspirin</a>	<a href="#">Inapsine (Droperidol)</a>	<a href="#">Pitocin (Oxytocin)</a>
<a href="#">Ativan (Lorazepam)</a>	<a href="#">Isopropyl Alcohol</a>	<a href="#">Prochlorperazine (Compazine)</a>
<a href="#">Atropine</a>	<b>K</b>	<a href="#">Promethazine (Phenergan)</a>
<a href="#">Atrovent (Ipratropium Bromide)</a>	<a href="#">Ketamine</a>	<b>R</b>
<b>B</b>	<a href="#">Ketorolac (Toradol)</a>	<a href="#">Reglan (Metoclopramide)</a>
<a href="#">Benadryl (Diphenhydramine)</a>	<b>L</b>	<a href="#">Rocuronium</a>
<b>C</b>	<a href="#">Labetalol</a>	<b>S</b>
<a href="#">Calcium Chloride</a>	<a href="#">Lidocaine</a>	<a href="#">Sodium Bicarbonate</a>
<a href="#">Calcium Gluconate</a>	<a href="#">Lopressor (Metoprolol)</a>	<a href="#">Solu-medrol (Methylprednisolone)</a>
<a href="#">Compazine (Prochlorperazine)</a>	<a href="#">Lorazepam (Ativan)</a>	<a href="#">Succinylcholine</a>
<b>D</b>	<b>M</b>	<b>T</b>
<a href="#">Decadron (Dexamethasone)</a>	<a href="#">Magnesium Sulfate</a>	<a href="#">Tetracaine</a>
<a href="#">Dextrose (D5, D10, D20, D50)</a>	<a href="#">Methylprednisolone (Solu-medrol)</a>	<a href="#">Toradol (Ketorolac)</a>
<a href="#">Diazepam (Valium)</a>	<a href="#">Metoclopramide (Reglan)</a>	<a href="#">Tylenol (Acetaminophen)</a>
<a href="#">Dilaudid (Hydromorphone)</a>	<a href="#">Metoprolol (Lopressor)</a>	<a href="#">Tranexamic Acid (TXA)</a>
<a href="#">Diphenhydramine (Benadryl)</a>	<a href="#">Midazolam (Versed)</a>	<b>V</b>
<a href="#">Droperidol (Inapsine)</a>	<a href="#">Morphine</a>	<a href="#">Valium (Diazepam)</a>
<b>E</b>	<a href="#">Motrin (Ibuprofen)</a>	<a href="#">Vecuronium</a>
<a href="#">Epinephrine</a>	<b>N</b>	<a href="#">Versed (Midazolam)</a>
<a href="#">Etomidate (Amidate)</a>	<a href="#">Naloxone (Narcan)</a>	<b>Z</b>
<b>F</b>	<a href="#">Nitroglycerin</a>	<a href="#">Zofran (Ondansetron)</a>
<a href="#">Fentanyl</a>	<a href="#">Nitrous Oxide</a>	



# FLUID BOLUS – IV/IO (INTRAVENOUS/INTRAOSSEOUS)

- 0.9% Normal Saline (NS, Sodium Chloride)  
Normal saline is a sterile, nonpyrogenic solution used for fluid and electrolyte replenishment
- Lactated Ringers (LR, Ringer's Lactate)  
Lactated Ringers is a sterile, nonpyrogenic solution used for fluid and electrolyte replenishment

## Contraindications

- Lactated Ringers is incompatible with the following medications:
  - Decadron (Dexamethasone)
  - Diazepam
  - Fentanyl
  - Heparin
  - Hydrocortisone (Solu-cortef)
  - Ketamine
  - Lorazepam
  - Phenytoin
  - Propofol
  - Sodium Bicarbonate
- IV/IO access unattainable
- Pulmonary edema

## Indications & Dose

- If evidence of dehydration, hypovolemia, [Hypotension or Shock](#), hypoperfusion, pain associated with [Sickle Cell Pain](#), or [Fever or Suspected Sepsis](#):
  - **Adult:** 500 -1000 mL; may repeat as needed if no signs of pulmonary edema (total infusion 2000 mL)
  - **Peds:** 20 mL/kg; may repeat as needed (total infusion 60 mL/kg)
  - **Infant/Neonate:** 10 mL/kg; may repeat as needed (total infusion 60 mL/kg)
- Priming line for [IV/IO Access](#)
- Maintenance fluids/flush/medication administration
- Provider discretion

## Adverse Effects

- Pulmonary edema
- Infiltration (irritation, redness, swelling, warmth at injection site)

## Considerations

- pH of normal saline is 5.5; in general, don't administer more than 2L, may cause hyperchloremic acidosis
- pH of Lactated Ringers is 6.5; if more than 2L of fluid are needed for resuscitation, LR is preferred over NS
- Use caution in elderly patients and those with cardiovascular disease and congestive heart failure
- Assess lung sounds prior to each subsequent bolus and frequently during fluid bolus
- If severe dehydration from GI losses or third spacing of fluid (i.e., sepsis), additional fluid may be required

## Pharmacokinetics

- Onset: Immediate
- Duration: Dose dependent

## Pregnancy/Lactation

- Okay for use in pregnancy and breastfeeding

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# ACETAMINOPHEN

**Other Names:** Tylenol, APAP, Paracetamol

**Actions**

Acetaminophen is a pain medication and fever reducer. The analgesic effects are believed to be due to activation of descending serotonergic inhibitory pathways in the CNS. Antipyresis (fever reduction) is produced from inhibition of the hypothalamic heat-regulating center.

**Contraindications**

- Known hypersensitivity
- Inability to safely take an oral medication
- Known severe liver disease
- Patient who has ingested 4000 mg in past 24 hours

**Indications & Dose**

- **Pain Management: Mild to Moderate**
    - **Adult:**
      - **PO:** 500-650 mg every 4 hours as needed
    - OR
    - **PO:** 1 gm every 6 hours as needed; max dose 4000 mg/24 hours
  - **Pediatric:**
    - **PO:** 15 mg/kg every 4-6 hours as needed (max single dose 1000 mg)
- **Fever or Suspected Sepsis**
  - **Adult:**
    - **PO:** 500-650 mg every 4 hours as needed
  - OR
  - **PO:** 1 gm every 6 hours as needed; max dose 4000 mg/24 hours
- **Pediatric:**
  - **PO:** 15 mg/kg every 4 hours as needed (max single dose 1000 mg)

FEVER, PAIN MANAGEMENT, SEPSIS				ACETAMINOPHEN	
Age	Broselow	Kilos	Pounds	mg	160 mg/mL
Newborn	3kg 4kg 5 kg	3-5 kg	6 - 11 lbs	64	2 mL
6 mo	PINK	6-7 kg	13 - 15 lbs	96	3 mL
9 mo	RED	8-9 kg	16 - 20 lbs	128	4 mL
1 yr	PURPLE	10-11 kg	21 - 24 lbs	160	5 mL
2 yrs	YELLOW	12-14 kg	25 - 31 lbs	192	6 mL
4 yrs	WHITE	15-18 kg	32 - 40 lbs	256	8 mL
6 yrs	BLUE	19-23 kg	41 - 48 lbs	320	10 mL
8 yrs	ORANGE	24-29 kg	49 - 66 lbs	416	13 mL
10 yrs	GREEN	30-36 kg	67 - 80 lbs	480	15 mL
12 yrs		38.5 kg	84 lbs	576	18 mL
14 yrs		44 kg	97 lbs	650	20 mL
16 yrs		50 kg	110 lbs	750	23.5 mL
		55 kg	121 lbs	825	26 mL
		60 kg	132 lbs	900	28 mL
Max dose		67+ kg	147+ lbs	1000	31 mL

**Adverse Effects**

- GI upset
- Hepatotoxicity

**Considerations**

- Ask about other acetaminophen containing over the counter medications including cold/flu medications, headache medications, sleep aides, and prescription pain medications (such as Norco, hydrocodone)
- If patient has received less than an adequate dose within past 4 hours, administer additional medication to make up the proper dose

**Pharmacokinetics**

- Onset:
  - **PO:**
    - Pain: < 1 hour
    - Fever: 1 hour, max 2 hours
- Duration: 4-6 hours

**Pregnancy/Lactation**

- Okay for use in pregnancy and breastfeeding

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# ADENOSINE

**Other Names:** Adenocard

## Actions

Adenosine is an anti-dysrhythmic. Adenosine slows conduction time through the AV node, interrupting the re-entry pathways through the AV node, restoring normal sinus rhythm.

## Contraindications

- Known hypersensitivity to adenosine or any component of the formulation
- Second- or third-degree AV block
- Sick sinus syndrome
- Irregular, wide-complex tachycardia

## Indications & Dose

- **Tachycardia: Stable, symptomatic, regular, narrow-complex tachycardia** *OR*
- **Tachycardia: Stable, symptomatic, regular, wide-complex tachycardia consistent with a bundle-branch block**
  - **Adult:**
    - **IV/IO:** 6 mg rapid push over 1-2 seconds followed by a 20 mL saline bolus; if no response:
    - **IV/IO:** 12 mg rapid push over 1-2 seconds followed by a 20 mL saline bolus
  - **Pediatric:**
    - **IV/IO:** 0.1 mg/kg (max dose 6 mg) rapid IV/IO push over 1-2 seconds followed by a 20 mL saline bolus; if no response:
    - **IV/IO:** 0.2 mg/kg (max dose 12 mg) rapid IV/IO push over 1-2 seconds followed by a 20 mL saline bolus

## Adverse Effects

- Neuro: Sense of impending doom, lightheadedness, dizziness
- CV: Chest pressure, throat tightness
- Resp: Dyspnea
- Skin: Facial flushing

## Considerations

- Very short half-life – requires rapid IV administration followed by rapid saline bolus with free flowing IV
- Proximal IV/IO site preferred
- If using PICC line or central line initial dose is 3 mg IV; second dose is 6 mg
- Blood pressure, heart rate, and continuous monitoring of SpO<sub>2</sub>, ETCO<sub>2</sub>, and ECG should be documented before administration, within 5 minutes of administration and throughout patient care
- Requires continuous monitoring of heart rate, blood pressure and ECG; print rhythm strip during administration
- Caffeine and caffeine containing products may diminish the effect of adenosine
- Carbamazepine (Tegretol) and Dipyridamole (Aggrenox) may potentiate AV blocking effect increasing the risk of developing heart block

## Pharmacokinetics

- Onset: Almost immediate
- Half-life: < 10 seconds
- Duration: Very brief

## Pregnancy/Lactation

- Okay for use in pregnancy and breastfeeding

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# ALBUTEROL

**Other Names:** Proventil, Ventolin

## Actions

Albuterol is a bronchodilator. It binds to and stimulates beta<sub>2</sub> receptors resulting in relaxation of bronchial smooth muscle and subsequent bronchodilation.

## Contraindications

- Known hypersensitivity to albuterol or levalbuterol

## Indications & Dose

- **Allergic Reaction/Anaphylaxis**
  - **All ages:**
    - **Nebulized:** 2.5 mg in 3 mL via hand-held nebulizer or mask; may repeat every 10-20 minutes; max 3 doses
    - **For severe exacerbations** 5.0 mg in 3 mL via hand-held nebulizer or mask; may repeat every 10-20 minutes; max 2 doses
    - **If critical** 10 mg immediately via hand-held nebulizer or mask; may repeat every 10-20 minutes; max 2 doses
- **Difficulty Breathing: Asthma/COPD, Wheezing, Bronchospasm**
  - **All ages:**
    - **Nebulized:** 2.5 mg in 3 mL via hand-held nebulizer or mask; may repeat every 10-20 minutes; max 3 doses
    - **For severe exacerbations** 5.0 mg in 3 mL via hand-held nebulizer or mask; may repeat every 10-20 minutes; max 2 doses
    - **If critical** 10 mg immediately via hand-held nebulizer or mask; may repeat every 10-20 minutes; max 2 doses
- **Cardiac Arrest**
  - **Adult and children over 12 years of age:**
    - **Nebulized:** 2.5 mg in 3 mL via in-line nebulizer; may repeat every 10-20 minutes; max 2 doses
- **Hyperkalemia**
  - **Adult and children over 12 years of age:**
    - **Nebulized:** 10 mg via in-line nebulizer; continuous

## Adverse Effects

- Neuro: Anxiety, apprehension, restlessness, dizziness, tremor, insomnia, headache,
- CV: Palpitations, increased heart rate, increased BP, dysrhythmias
- GI: throat irritation, dry cough, nausea, vomiting
- Endo: Hyperglycemia

## Considerations

- Beta-blockers antagonize (diminish) effects of albuterol
- Use with caution in patients with cardiac history, tachyarrhythmias, hyperthyroidism, diabetes, seizure disorder, and hypokalemia

## Pharmacokinetics

- Onset: 5-15 minutes
- Duration: 5-6 hours

## Pregnancy/Lactation

- Okay for use in pregnancy and breastfeeding

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# AMIODARONE

**Other Names:** Cordarone, Nexterone, Pacerone

## Actions

Amiodarone is an antidysrhythmic. It inhibits adrenergic stimulation (alpha- and beta-blocking properties), affects sodium, potassium, and calcium channels, prolongs the action potential and refractory period in myocardial tissue; decreases AV conduction and sinus node function.

## Contraindications

- Known hypersensitivity to amiodarone or iodine
- Cardiogenic shock
- Hypotension
- Bradycardia
- Sick Sinus Syndrome
- 2<sup>nd</sup> or 3<sup>rd</sup> Degree Heart Block

## Indications & Dose

- **Cardiac Arrest:** Ventricular fibrillation or pulseless ventricular tachycardia
  - **Adult:**
    - **IV/IO:** 300 mg rapid push
    - If ventricular fibrillation or pulseless ventricular tachycardia continues after subsequent defibrillation attempt or reoccurs after initially achieving return of spontaneous circulation, administer supplemental dose of 150 mg
  - **Pediatric (children less than 12 years of age):**
    - **IV/IO:** 5 mg/kg rapid push (max dose 300 mg)
- **Tachycardia:** Treat reversible causes first
  - **Adult Stable;** Narrow Complex; Irregular (atrial fibrillation, atrial flutter with variable conduction, multifocal atrial tachycardia)
    - **IV/IO:** 150 mg over 10 minutes
  - **Adult Stable;** Wide Complex; Monomorphic; Regular
    - **IV/IO:** 150 mg over 10 minutes
  - **Stable;** Wide Complex; Monomorphic; Irregular (Wolff-Parkinson White or atrial fibrillation with aberrancy)
    - **IV/IO:** 150 mg over 10 minutes

## Adverse Effects

- Neuro: Dizziness, tremors
- CV: Hypotension, bradycardia
- GI: abdominal discomfort
- Resp: Acute respiratory distress syndrome

## Considerations

- Blood pressure, heart rate, and continuous monitoring of SpO<sub>2</sub>, ETCO<sub>2</sub>, and ECG should be documented before administration, within 5 minutes of administration and throughout patient care
- Increased risk of bradycardia in patients taking calcium channel blockers or beta blockers
- Do not administer with other drugs that prolong the QT interval
- Use with caution in neonates
- While studies show amiodarone is safe to use in WPW with afib for rate control, it often does not convert the rhythm (Alizadeh, 2022)

## Pharmacokinetics

- Onset: Within minutes
- Duration: 9-36 days

## Pregnancy/Lactation

- Okay for use in pregnancy and breastfeeding

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# ASPIRIN

**Other Names:** ASA, Bayer, Ecotrin, St. Josephs

## Actions

Aspirin, an acetylated salicylate (acetylsalicylic acid), is classified among the nonsteroidal anti-inflammatory drugs (NSAIDs). These agents reduce the signs and symptoms of inflammation and exhibit a broad range of pharmacologic activities, including analgesic, antipyretic, and antiplatelet properties.

## Contraindications

- Known hypersensitivity
- GI bleeding
- Suspected or confirmed cerebrovascular bleeding
- Active ulcer
- Bleeding disorder
- Pediatric patient

## Indications & Dose

- [Chest Pain/Acute Coronary Syndrome \(ACS\)/STEMI](#)
  - **Adult**
    - **PO:** 324 mg chewed; if patient has already taken aspirin, may supplement to 324 mg total dose

## Adverse Effects

- Anaphylaxis
- Angioedema
- GI: abdominal discomfort
- Increased risk of bleeding

## Considerations

- Do not use in children < 12 years old

## Pharmacokinetics

- Onset: within 20 minutes
- Duration: 4 to 6 hours; however, platelet inhibitory effects last the lifetime of the platelet (~10 days)

## Pregnancy/Lactation

- Okay for use in pregnancy and breastfeeding

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# ATROPINE

## Other Names:

### Actions

Atropine is an anticholinergic agent (parasympatholytic). It blocks the action of acetylcholine at parasympathetic sites in smooth muscle, secretory glands, and the CNS and dries secretions. Atropine blocks vagal effects (parasympathetic input) to the heart thereby increasing heart rate and enhancing AV conduction.

### Contraindications

- Known hypersensitivity
- Tachycardia
- Narrow-angle glaucoma
- Thyrotoxicosis
- Heart transplant recipients
- Myasthenia gravis

### Indications & Dose

- **Bradycardia-Adult (8 years & older)** – Symptomatic with clinical signs of poor perfusion
  - **Adult (Ages > 8 years):**
    - **IV/IO:** 1 mg; may repeat 1 mg every 3 minutes up to 3 mg if continued symptoms persist
- **Bradycardia – Pediatric (< 8 years old)** – if bradycardia persists with suspected primary AV-block or increased vagal tone
  - **Pediatric (Ages < 8 years):**
    - **IV/IO:** 0.02 mg/kg (minimum dose of 0.1 mg; maximum dose 1 mg); may repeat initial dose once in 3 minutes if continued symptoms persist
- **Overdose or Toxic Exposure: Organophosphate Poisoning**
  - **Adult:**
    - **IV/IO:** 2 mg; may repeat every 3 minutes until drying of secretions occurs
  - **Pediatric:**
    - **IV/IO:** 0.05 mg/kg (max dose 2 mg per dose); may repeat every 3 minutes until drying of secretions occurs

### Adverse Effects

- Neuro: Dizziness, headache
- CV: Palpitation, tachycardiac, dysrhythmias
- GI: Nausea, vomiting, decreased GI motility
- ENT: Dilated pupils
- Skin: Flushing, localized burning at administration site

### Considerations

- Blood pressure, heart rate, and continuous monitoring of SpO<sub>2</sub>, ETCO<sub>2</sub>, and ECG should be documented before administration, within 5 minutes of administration and throughout patient care
- Affects pupillary size so do not rely on pupillary response to monitor CNS status
- May not be effective in 2<sup>nd</sup> Degree Type II or 3<sup>rd</sup> Degree heart block
- Use with caution in the presence of MI and hypoxia; may cause increase in myocardial oxygen demand
- May increase anticholinergic effects when combined with tricyclics, amantadine (Symmetrel), and antiparkinsonian agents

### Pharmacokinetics

- Onset: immediate
- Duration:

### Pregnancy/Lactation

- Okay for use in pregnancy and breastfeeding

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# CALCIUM CHLORIDE

## Other Names:

### Actions

Calcium chloride is an electrolyte. It increases serum calcium levels and is a key electrolyte in normal cardiac and renal cell function. It also has a role in respiration, blood coagulation, and cell membrane and capillary permeability. It is used to replace lost calcium or counteract effects of potassium.

### Contraindications

- Known hypersensitivity
- Digoxin toxicity
- Hypercalcemia
- Hypophosphatemia

### Indications & Dose

- **Bradycardia – Adult (8 Years & Older)** – Known or suspected calcium channel blocker overdose or beta blocker overdose not responding to epinephrine
  - **Adult (Ages ≥ 12 years)**
    - **IV/IO:** 1 gram (10mL) **slowly** over 5 minutes; may repeat initial dose in 15 minutes if continued symptoms persist; may repeat for a total of 3 doses
  - **Pediatric (Ages 8-12 years)**
    - **IV/IO:** 20 mg/kg **slowly** over 10 minutes; maximum single dose 1000 mg; may repeat initial dose in 15 minutes if continued symptoms persist; may repeat for a total of 3 doses
- **Bradycardia – Pediatric (< 8 years old)** – Known or suspected calcium channel blocker overdose or beta blocker overdose not responding to epinephrine
  - **Pediatric (Ages < 8 years)**
    - **IV/IO:** 20 mg/kg **slowly** over 10 minutes; maximum single dose 1000 mg; may repeat initial dose in 15 minutes if continued symptoms persist; may repeat for a total of 3 doses
- **Hyperkalemia** – Known or suspected
  - **Adult (Ages ≥ 12 years):**
    - **IV/IO:** 1 gram **slowly** over 5 minutes; may repeat initial dose in 15 minutes if continued symptoms persist; may repeat for a total of 3 doses
  - **Pediatric (Ages < 12 years)**
    - **IV/IO:** 20 mg/kg **slowly** over 10 minutes; maximum single dose 1000 mg; may repeat initial dose in 15 minutes if continued symptoms persist; may repeat for a total of 3 doses

### Adverse Effects

- Neuro: Dizziness, syncope
- CV: Bradycardia, hypotension
- GI: Nausea
- Skin: Flushing

### Considerations

- Blood pressure, heart rate, and continuous monitoring of SpO<sub>2</sub>, ETCO<sub>2</sub>, and ECG should be documented before administration, within 5 minutes of administration and throughout patient care
- Flush line with 10-20mL NS after administration; may cause precipitation if mixed with alkaline medications (sodium bicarbonate)
- Calcium in cardiac arrest should only be considered in patients with a high suspicion of hyperkalemia (ie. missed more than one dialysis session). Calcium makes outcomes in other cardiac arrest patients worse.
- Bradycardia and hypotension may occur with rapid IV/IO administration
- May cause vasospasm in coronary and cerebral arteries
- May antagonize the peripheral vasodilatory effect of calcium channel blockers
- While calcium protects myocytes from potassium, it does not resolve hyperkalemia, for which other medications are typically administered, such as insulin and dextrose or sodium bicarbonate, which shifts potassium into cells

### Pharmacokinetics

- Onset: 5-15 minutes
- Duration: Dose dependent; may persist up to 4 hours after administration

### Pregnancy/Lactation

- Okay for use in pregnancy and breastfeeding

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# CALCIUM GLUCONATE

## Other Names:

### Actions

Calcium is an electrolyte. It increases serum calcium levels and is a key electrolyte in normal cardiac and renal cell function. It also has a role in respiration, blood coagulation, and cell membrane and capillary permeability. Calcium gluconate has only a third as much elemental calcium as calcium chloride. To replace lost calcium or counteract effects of potassium, dosing would require three times as much calcium gluconate than calcium chloride.

### Contraindications

- Known hypersensitivity
- Digoxin toxicity
- Hypercalcemia
- Hypophosphatemia

### Indications & Dose

- **Bradycardia-Adult (8 years & older)** – Known or suspected calcium channel blocker overdose or beta blocker overdose not responding to epinephrine
  - **Adult (Ages > 12 years)**
    - **IV/IO:** 3 grams **slowly** over 5 minutes; may repeat initial dose in 15 minutes if continued symptoms persist; may repeat for a total of 3 doses
  - **Pediatric (Ages 8- 12 years)**
    - **IV/IO:** 60 mg/kg **slowly** over 5 minutes; maximum single dose 3000 mg; may repeat initial dose in 15 minutes if continued symptoms persist; may repeat for a total of three (3) doses
- **Bradycardia-Pediatric (< 8 years old)** – Known or suspected calcium channel blocker overdose or beta blocker overdose not responding to epinephrine
  - **Pediatric (Ages < 8 years)**
    - **IV/IO:** 60 mg/kg **slowly** over 5 minutes; maximum single dose 3000 mg; may repeat initial dose in 15 minutes if continued symptoms persist; may repeat for a total of three (3) doses
- **Hyperkalemia** - Known or suspected
  - **Adult (Ages ≥ 12 years):**
    - **IV/IO:** 3 grams **slowly** over 5 minutes; may repeat initial dose in 15 minutes if continued symptoms persist; may repeat for a total of 3 doses
  - **Pediatric (Ages < 12 years)**
    - **IV/IO:** 60 mg/kg **slowly** over 5 minutes; maximum initial dose 3000 mg; may repeat initial dose in 15 minutes if continued symptoms persist; may repeat for total of three (3) doses

### Adverse Effects

- Neuro: Dizziness, syncope
- CV: Bradycardia, hypotension
- GI: Nausea
- Skin: Flushing

### Considerations

- Blood pressure, heart rate, and continuous monitoring of SpO<sub>2</sub>, ETCO<sub>2</sub>, and ECG should be documented before administration, within 5 minutes of administration and throughout patient care
- Flush line with 10-20 mL normal saline after administration; may cause precipitation if mixed with alkaline medications (sodium bicarbonate)
- Calcium in cardiac arrest should only be considered in patients with a high suspicion of hyperkalemia (ie. missed more than one dialysis session). Calcium makes outcomes in other cardiac arrest patients worse.
- Bradycardia and hypotension may occur with rapid IV/IO administration
- May cause vasospasm in coronary and cerebral arteries
- May antagonize the peripheral vasodilatory effect of calcium channel blockers

### Pharmacokinetics

- Onset: 5-15 minutes
- Duration: Dose dependent; may persist up to 4 hours after administration

### Pregnancy/Lactation

- Okay to use in pregnancy and breastfeeding

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# DEXAMETHASONE

**Other Names:** Decadron

## Actions

Dexamethasone is a corticosteroid. It depresses the formation, release, and activity of inflammatory mediators to reduce inflammatory and immune responses. It is an alternative to [Methylprednisolone](#).

## Contraindications

- Known hypersensitivity

## Indications & Dose

- **Allergic Reaction/Anaphylaxis**
  - **Adult:**
    - **PO/IM/IV/IO:** 10 mg
  - **Pediatric:**
    - **PO/IM/IV/IO:** 0.3 mg/kg (maximum dose 10 mg)
- **Difficulty Breathing: Asthma/COPD, Wheezing, Bronchospasm**
  - **Adult:**
    - **PO/IM/IV/IO:** 10 mg
  - **Pediatric:**
    - **PO/IM/IV/IO:** 0.3 mg/kg (maximum dose 10 mg)
- **Difficulty Breathing: Croup (seal bark cough), Stridor**
  - **Pediatric:**
    - **PO/IM/IV/IO:** 0.6 mg/kg (maximum dose 10 mg)
- **Hypotension or Shock-Adrenal Insufficiency**
  - **Adult:**
    - **PO/IM/IV/IO:** 10 mg
  - **Pediatric:**
    - **PO/IM/IV/IO:** 0.3 mg/kg (maximum dose 10 mg)

## Adverse Effects

- Neuro: Dizziness, decreased or blurry vision, insomnia
- CV: Hypertension
- GI: Nausea/vomiting
- Skin: Facial flushing, diaphoresis, edema
- Endo: Immunosuppression, hyperglycemia

## Considerations

- May cause hyperglycemia

## Pharmacokinetics

- Onset: 30 minutes to hours
- Duration: 2-3 days

## Pregnancy/Lactation

- Okay to use in pregnancy and breastfeeding

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# DEXTROSE

**Other Names:** D5, D10, D25, D50

## Actions

Dextrose is a carbohydrate, hypertonic solution. In the emergency care of a diabetic, it provides the lacking form of carbohydrate, dextrose.

## Contraindications

- Known hypersensitivity
- Hyperglycemia

## Indications & Dose

- **Hypoglycemia or Hyperglycemia**
  - **Adult:**
    - **IV/IO:** 25 grams of dextrose
      - Dextrose 50%: 50 mL
      - Dextrose 25%: 100 mL
      - Dextrose 10%: 250 mL
  - **Pediatric:**
    - **IV/IO:** Dextrose 10% 10 mL/kg; maximum single dose 250 mL (25 grams)
  - **Pediatric (newborns < 48 hours old):**
    - **IV/IO:** Dextrose 10% - 2 mL/kg over 5 – 15 minutes
    -

## Adverse Effects

- CV: Warmth, pain, or burning at the injection site, localized phlebitis
- Endo: Hyperglycemia

## Considerations

- Check blood sugar levels prior to administration
- Due to the hypertonic nature of D50, infiltration can pose a risk. Consequently, it should be administered through a continuously flowing IV or IO to decrease the possibility of tissue necrosis.

## Pharmacokinetics

- Onset: 1-5 minutes
- Duration: Variable

## Pregnancy/Lactation

- Okay to use in pregnancy and breastfeeding

## Notes

- To make D10% from D25%: Using a 250 mL bag of NS, remove and discard 100 mL NS and add 100 mL D25%. Gently agitate the IV bag to mix the solution.
- To make D10% from D50%: Using a 250 mL bag of NS, remove and discard 50 mL of NS and add 50 mL D50%. Gently agitate the IV bag to mix the solution.

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# DIAZEPAM

**Other Names:** Diastat, valium

## Actions

Diazepam is a benzodiazepine that acts on the central nervous system by stimulating GABA (gamma amino butyric acid) which inhibits the excitatory stimulation in the brain. This produces sedative, hypnotic (sleep-inducing), anxiolytic (anti-anxiety), anticonvulsant, and muscle relaxant properties.

## Contraindications

- Known hypersensitivity
- Acute, narrow-angle glaucoma

## Indications & Dose

- **Sedation - Anxiety:**
  - **Adult (ages 12-64 years):**
    - **IV/IO:** 5 mg IV/IO may repeat every 3 minutes as needed.
  - **Elderly (65 years and older):**
    - **IV/IO:** 2.5 mg IV/IO may repeat every 3 minutes as needed.
  - **Pediatric (<12 years):**
    - **IV/IO:** 0.1 mg/kg max single dose 10 mg; may repeat every 3 minutes as needed
- **Seizure:**
  - **Adult (12 years and older):**
    - **IV/IO:** 5 mg; may repeat every 5 minutes until seizure stops
  - **Pediatric (<12 years):**
    - **IV/IO:** 0.1 mg/kg max single dose 10 mg; may repeat every 5 minutes until seizure stops

## Adverse Effects

- CV: Hypotension, vasodilation
- Neuro: Drowsiness,
- Resp: Respiratory depression

## Considerations

- Diazepam cannot be given in the same line as lactated ringers
- Diazepam is not well absorbed via the intramuscular route and therefore, IM administration is not indicated
- Blood pressure, heart rate, and continuous monitoring of SpO<sub>2</sub>, ETCO<sub>2</sub>, and ECG should be documented before administration, within 5 minutes of administration and throughout patient care
- Effects may be enhanced when given with other CNS depressants

## Pharmacokinetics

- Onset:
  - **IV:** 1-5 minutes
  - **Rectal:** 2-10 minutes
- Duration: 40-120 minutes; dose and age dependent

## Pregnancy/Lactation

- Okay to use in pregnancy and breastfeeding

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# DILTIAZEM

**Other Names:** Cardizem

## Actions

Diltiazem is a calcium channel blocker. It is classified as a negative inotrope (decreased contractile force) and negative chronotrope (decreased rate). It slows conduction through the AV node to decrease the ventricular rate in patients with tachycardia originating in the ventricles.

## Contraindications

- Known hypersensitivity
- Bradycardia
- 2<sup>nd</sup> or 3<sup>rd</sup> degree AV block without a functioning pacemaker
- Hypotension (SBP < 90)
- Sick sinus syndrome
- Atrial fibrillation or atrial flutter with wide complex tachycardia in a patient with WPW (Wolff-Parkinson-White) syndrome
- Ventricular tachycardia

## Indications & Dose

- **Tachycardia, Stable, Narrow, Irregular**
  - **Adult (18 -64 years of age):**
    - 0.25 mg/kg **slowly** over 2 minutes; maximum single dose 20 mg
    - May repeat in 15 minutes 0.35 mg/kg **slowly** over 2 minutes; maximum repeat dose 25 mg
  - **Elderly (65 years and older):**
    - 0.25 mg/kg **slowly** over 2 minutes; maximum single dose 15 mg
    - May repeat in 15 minutes 0.35 mg/kg **slowly** over 2 minutes; maximum repeat dose 20 mg
  - **Pediatric (<18 years):**
    - If suspected in pediatric patients, contact medical control
- **Tachycardia, Stable, Narrow, Regular (if Adenosine is unsuccessful)**
  - **Adult (18 -64 years of age):**
    - 0.25 mg/kg **slowly** over 2 minutes; maximum single dose 20 mg
    - May repeat in 15 minutes 0.35 mg/kg **slowly** over 2 minutes; maximum repeat dose 25 mg
  - **Elderly (65 years and older):**
    - 0.25 mg/kg **slowly** over 2 minutes; maximum single dose 15 mg
    - May repeat in 15 minutes 0.35 mg/kg **slowly** over 2 minutes; maximum repeat dose 20 mg
  - **Pediatric (<18 years):**
    - If suspected in pediatric patients, contact medical control

## Adverse Effects

- CV: Bradycardia, chest pain, dysrhythmias, congestive heart failure, hypotension
- GI: Nausea/vomiting
- Resp: Dyspnea

## Considerations

- Blood pressure, heart rate, and continuous monitoring of SpO<sub>2</sub>, ETCO<sub>2</sub>, and ECG should be documented before administration, within 5 minutes of administration and throughout patient care
- May cause hypotension
- Can induce PVCs when rhythm is converted to sinus rhythm
- Rule out and treat underlying causes. Patients with atrial fibrillation or atrial flutter may have a rapid ventricular response as a compensatory mechanism to hypovolemia, acute hemorrhage, sepsis, pain, etc.

## Pharmacokinetics

- Onset: 2-5 minutes
- Duration: 1-3 hours

## Pregnancy/Lactation

- Okay to use in pregnancy and breastfeeding

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# DIPHENHYDRAMINE

**Other Names:** Benadryl

## Actions

Diphenhydramine is an antihistamine that competes with histamine for H1-receptor sites on respiratory smooth muscles, vascular endothelial cells, the gastrointestinal tract, cardiac tissue, immune cells, the uterus, and the central nervous system (CNS) neurons. It suppresses the medullary cough center, possesses anticholinergic properties resulting in antiemetic, sedative, and anti-dyskinetic effects.

## Contraindications

- Known hypersensitivity

## Indications & Dose

- **Allergic Reaction/Anaphylaxis**
  - **Adult:**
    - **PO/IM/IV/IO:** 50 mg
  - **Pediatric (>1 month):**
    - **PO/IM/IV/IO:** 1 mg/kg; maximum single dose 50 mg
- **Nausea or Vomiting**
  - **Adult:**
    - **PO/IM/IV/IO:** 50 mg
  - **Pediatric (>1 month):**
    - **PO/IM/IV/IO:** 1 mg/kg; maximum single dose 50 mg
- **Overdose or Toxic Exposure – Dystonic Reaction**
  - **Adult:**
    - **PO/IM/IV/IO:** 50 mg
  - **Pediatric (>1 month):**
    - **PO/IM/IV/IO:** 1 mg/kg; maximum single dose 50 mg

## Adverse Effects

- CV: Tachycardia
- Neuro: Blurred vision, drowsiness, agitation, confusion, cognitive dysfunction, delirium
- Resp: Thickened bronchial secretions

## Considerations

- Dystonic reactions may occur with medications such as [Droperidol](#), [Metoclopramide](#), [Prochlorperazine](#), and [Promethazine](#). Diphenhydramine can be utilized as a preventive measure or as a treatment once dystonic reactions have started.
- Acute asthma (may thicken bronchial secretions)
- May cause a burning sensation when given IV. Consider diluting the medication with saline prior to administration.
- May increase CNS depression when combined with barbiturates, benzodiazepines, opiates, alcohol
- May give diphenhydramine prior to administering an antiemetic to prevent dystonic reactions

## Pharmacokinetics

- Onset: 15-30 minutes if given IV; oral delayed
- Duration: 4-6 hours

## Pregnancy/Lactation

- Okay to use in pregnancy and breastfeeding

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# DROPERIDOL

**Other Names:** Inapsine

## Actions

Droperidol is a butyrophenone antipsychotic with an approved indication for reducing the incidence of nausea and vomiting. The antiemetic effect is a result of blockade of dopamine stimulation of the chemoreceptor trigger zone. Other effects include alpha-adrenergic blockade, peripheral vascular dilation, and reduction of the pressor effect of epinephrine resulting in hypotension and decreased peripheral vascular resistance; it may also reduce pulmonary artery pressure.

## Contraindications

- Known hypersensitivity
- Patient < 2 years of age with nausea, vomiting, dizziness, vertigo
- Patient ≤ 7 year of age with behavioral or psychiatric emergencies requiring chemical restraint
- History of tardive dyskinesia or extrapyramidal reaction to droperidol
- Known or suspected QT prolongation
- QT corrected > 500 milliseconds as noted on [12 Lead ECG](#)

## Indications & Dose

- **Nausea or Vomiting**
  - **Adult (age > 14 years):**
    - **IV/IO:** 1.25 mg **slowly** over 2 minutes; may repeat every 5 minutes to achieve desired effect; maximum cumulative dose of 5 mg
    - **IM:** 1.25 mg; may repeat in 15 minutes; maximum cumulative dose of 5 mg
  - **Pediatric (> 2 – 14 years):**
    - **IV/IO/IM:** 0.05 mg/kg slow IV push over 2 minutes; maximum initial dose 1.25 mg; may repeat in 15 minutes; maximum cumulative dose of 5 mg
- **Dizziness or Vertigo**
  - **Adult (age > 14 years):**
    - **IV/IO:** 1.25 mg **slowly** over 2 minutes; may repeat in 5 minutes to achieve desired effect; maximum cumulative dose of 5 mg
    - **IM:** 1.25 mg; may repeat in 15 minutes; maximum cumulative dose of 5 mg
  - **Pediatric (> 2 – 14 years):**
    - **IV/IO/IM:** 0.05 mg/kg slow IV push over 2 minutes; maximum initial dose 1.25 mg; may repeat in 15 minutes; maximum cumulative dose of 5 mg
- **Behavioral or Psychiatric Emergencies**
  - **Adult (age > 14 years):**
    - **IV/IO:** 1.25 mg **slowly** over 2 minutes; may repeat in 5 minutes to achieve desired effect; maximum cumulative dose of 5 mg
    - **IM:** 1.25 mg; may repeat in 15 minutes; maximum cumulative dose of 5 mg
  - **Pediatric (> 2 – 14 years):**
    - **IV/IO/IM:** 0.05 mg/kg slow IV push over 2 minutes; maximum initial dose 1.25 mg; may repeat in 15 minutes; maximum cumulative dose of 5 mg
- **Restraints – Chemical**
  - **Adult (age > 14 years):**
    - **IV/IO:** 2.5 mg slow IV push over 2 minutes; may repeat in 5 minutes to achieve desired effect; maximum cumulative dose of 20 mg
    - **IM:** 5 mg may repeat in 15 minutes to achieve desired effects; maximum cumulative dose 20 mg
  - **Pediatric (7-14 years):**
    - **<34 kg:**
      - **IV/IO/IM:** 0.625 mg
    - **34 to 57 kg:**
      - **IV/IO/IM:** 1.25 mg
    - **>57 to 68 kg:**
      - **IV/IO/IM:** 1.875 mg
    - **>68 kg:**
      - **IV/IO/IM:** 2.5 mg

**Adverse Effects**

- CV: Tachycardia, chest tightness, widening of the QRS
- Neuro: Blurred vision, drowsiness, dizziness, confusion, extrapyramidal symptoms
- Resp: Shortness of breath
- Skin: Sweating

**Considerations**

- The onset of action of single intramuscular and intravenous doses is from three to ten minutes following administration, although the peak effect may not be apparent for up to thirty minutes
- For patients with nausea, vomiting, dizziness, and vertigo, monitor blood pressure, heart rate, and continuous monitoring of SpO2, ETCO2, and ECG should be documented prior to administration, within 5 minutes of administration, and monitored throughout patient care.
  - Prior to repeat administration, a **12 Lead ECG** should be obtained to confirm QTc is < 500 milliseconds.
- For agitated patients, once agitation has subsided, blood pressure, heart rate, and continuous monitoring of SpO2, ETCO2, and ECG should be documented and monitored throughout patient care.
  - Prior to repeat administration, a **12 Lead ECG** should be obtained to confirm QTc is < 500 milliseconds.
- Monitor ECG for potential widening of QRS
- Dystonic reaction and restlessness should be treated with [Benadryl \(Diphenhydramine\)](#). May give diphenhydramine prior to administering an antiemetic to prevent dystonic reactions.

**Pharmacokinetics**

- Onset: 3-10 minutes if given IV
- Duration: 2-12 hours

**Pregnancy/Lactation**

- Okay to use in pregnancy and breastfeeding

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# EPINEPHRINE

## Actions

Sympathomimetic; endogenous catecholamine that directly stimulates  $\alpha_1$ ,  $\beta_1$ , and  $\beta_2$  adrenergic receptors causing vasoconstriction, increased heart rate, and increased cardiac contractility

## Contraindications

- None when used as indicated

## Indications & Dose

- **Allergic Reaction/Anaphylaxis**
    - **Adult:**
      - **IM: Epi Pen** 0.3 mg
      - **IM: Epinephrine (1:1,000)** 0.5 mg every 5-15 minutes if symptoms persist
    - **Pediatric < 25 kg:**
      - **IM: Epi Pen Jr.** 0.15 mg
    - **Pediatric < 50 kg:**
      - **IM: Epinephrine (1:1,000)** 0.01mg/kg every 5-15 minutes if symptoms persist (max single dose 0.5 mg)
  - **Allergic Reaction/Anaphylaxis** – Not improving with IM epinephrine
    - **Adult:**
      - **IV/IO: Epinephrine Push Dose (1:10,000)** 0.05 mg IV/IO every 2-5 minutes as needed; may double subsequent boluses to 0.1 mg
    - OR**
    - **Infusion: Epinephrine Infusion** 2-20 mcg/minute
  - **Pediatric < 50 kg:**
    - **IV/IO: Epinephrine Push Dose (1:10,000)** 0.001 mg/kg every 2-5 minutes as needed (max initial dose 0.05 mg); may double subsequent doses to 0.002 mg/kg (max dose 0.1 mg)
- **Bradycardia – Adult (8 Years & Older)**
  - **Adult (> 8 years old):**
    - **IV/IO: Epinephrine Push Dose (1:10,000)** 0.05 mg every 2-5 minutes as needed; may double subsequent boluses to 0.1 mg
  - OR**
  - **Infusion: Epinephrine Infusion** 2-20 mcg/minute
- **Bradycardia – PEDIATRIC (<8 YEARS & OLD) - if bradycardia persists and HR < 60 see [Cardiac Arrest](#)**
  - **Pediatric (ages < 8 years old):**
    - **IV/IO: [Epinephrine \(1:10,000\)](#)** 0.01 mg/kg every 3-5 minutes as needed (max initial dose 1 mg); maximum 4 doses
- **Bradycardia – PEDIATRIC (<8 YEARS & OLD) - if bradycardia persists and child is hypotensive or with clinical signs of dehydration or poor perfusion**
  - **Pediatric < 50 kg:**
    - **IV/IO: Epinephrine Push Dose (1:10,000)** 0.001 mg/kg every 2-5 minutes as needed (max initial dose 0.05 mg); may double subsequent doses to 0.002 mg/kg (max dose 0.1 mg)
- **Cardiac Arrest**
  - **Adult:**
    - **IV/IO: Epinephrine 1:10,000** 1 mg; may repeat every 3-5 minutes for a maximum of 4 doses
  - **Pediatric < 50 kg:**
    - **IV/IO: Epinephrine 1:10,000** 0.01 mg/kg; may repeat every 3-5 minutes for a maximum of 4 doses
- **Difficulty Breathing: Asthma/COPD, Wheezing, Bronchospasm** – Critical respiratory distress or severe difficulty breathing not improving with [Albuterol](#)
  - **Adult:**
    - **IM: Epinephrine (1:1,000)** 0.5 mg every 5-15 minutes if symptoms persist
  - **Pediatric < 50 kg:**
    - **IM: Epinephrine (1:1,000)** 0.01mg/kg IM every 5-15 minutes if symptoms persist (max single dose 0.5 mg)

- **Difficulty Breathing: Asthma/COPD, Wheezing, Bronchospasm** – Critical respiratory distress or severe difficulty breathing not improving with albuterol or IM epinephrine
  - **Adult:**
    - **IV/IO: Epinephrine Push Dose (1:10,000)** 0.05 mg every 2-5 minutes as needed; may double subsequent boluses to 0.1 mg
  - **Pediatric < 50 kg:**
    - **IV/IO: Epinephrine Push Dose (1:10,000)** 0.001 mg/kg every 2-5 minutes as needed (max initial dose 0.05 mg); may double subsequent doses to 0.002 mg/kg (max dose 0.1 mg)
- **Difficulty Breathing: Pediatric – Croup (seal bark cough), Stridor, Bronchiolitis**
  - **Pediatric:**
    - **Nebulized: Epinephrine (1:1,000)** 3 mL (3 mg) via hand-held nebulizer or mask; may repeat once if severe distress and stridor at rest continues
- **Epistaxis (Nosebleed)**
  - **Epinephrine (1:1,000)** 2 mg (2 mL) to saturate 2x2; use additional normal saline to ensure 2x2 is completely saturated so the epinephrine can leave the 2x2 and contact the nasal mucosa
- **Hypotension or Shock**
  - **Adult:**
    - **IV/IO: Epinephrine Push Dose (1:10,000)** 0.05 mg IV/IO every 2-5 minutes as needed; may double subsequent boluses to 0.1 mg
    - **Infusion: Epinephrine Infusion** 2-20 mcg/minute
  - **Pediatric < 50 kg:**
    - **IV/IO: Epinephrine Push Dose (1:10,000)** 0.001 mg/kg every 2-5 minutes as needed (max initial dose 0.05 mg); may double subsequent doses to 0.002 mg/kg (max dose 0.1 mg)
- **Neonatal Resuscitation** - If HR remains < 60 bpm after 30 seconds of BVM ventilation that inflate the lungs as evidenced by chest movement, **AND** another 60 seconds of chest compressions coordinated with BVM ventilations using 100% oxygen:
  - **Birth to 48 hours old:**
    - **IV/IO:** 0.01 mg/kg followed by a 3-mL flush; may repeat every 3 minutes; maximum 4 doses
- **Sepsis**
  - **Adult:**
    - **IV/IO: Epinephrine Push Dose (1:10,000)** 0.05 mg IV/IO every 2-5 minutes as needed; may double subsequent boluses to 0.1 mg
    - **Infusion: Epinephrine Infusion** 2-20 mcg/minute
  - **Pediatric < 50 kg:**
    - **IV/IO: Epinephrine Push Dose (1:10,000)** 0.001 mg/kg every 2-5 minutes as needed (max initial dose 0.05 mg); may double subsequent doses to 0.002 mg/kg (max dose 0.1 mg)

#### Adverse Effects

- Hypertension
- Nausea
- Tachycardia; dysrhythmias
- Angina

#### Considerations

- May increase oxygen demand
- Beta-blockers may blunt inotropic response

#### Pharmacokinetics

- Onset: Varies based on dose and route of administration
- Duration: Varies based on dose and route of administration

#### Pregnancy/Lactation

- Okay for use in pregnancy and breastfeeding

IM or Epinephrine for Asthma/COPD/Bronchospasm				Manual drawn Epinephrine 1:1,000		Mechanical Epinephrine (Epi-Pen)	
Age	Broselow	Kilos	Pounds	mg	mL	Junior	Adult
newborn	3-5 kg	3-5 kg	6 - 11 lbs	0.05	0.05	Junior	
6 mo	PINK	6-7 kg	13 - 15 lbs	0.07	0.07	Junior	
9 mo	RED	8-9 kg	16 - 20 lbs	0.08	0.08	Junior	
1 yr	PURPLE	10-11 kg	21 - 24 lbs	0.1	0.1	Junior	
2 yrs	YELLOW	12-14 kg	25 - 31 lbs	0.15	0.15	Junior	
4 yrs	WHITE	15-18 kg	32 - 40 lbs	0.15	0.15	Junior	
6 yrs	BLUE	19-23 kg	41 - 48 lbs	0.2	0.2	Junior	
8 yrs	ORANGE	24-29 kg	49 - 66 lbs	0.3	0.3		Adult
10 yrs	GREEN	30-36 kg	67 - 80 lbs	0.35	0.35		Adult
12 yrs		40 kg	88 lbs	0.4	0.4		Adult
14 yrs		45 kg	99 lbs	0.45	0.45		Adult
16 yrs + (Max Single Dose)		50 kg+	110 lbs+	0.5	0.5		Adult

IV Epinephrine for Severe Allergic Reaction, Shock, Severe Asthma/COPD/Bronchospasm				Epinephrine Dosing 0.001 mg/kg	Push Dose 1:10,000 0.1mg/mL	Push Dose 1:100,000 0.01 mg/mL
Age	Broselow	Kilos	Pounds	mg	mL	mL
Newborn	3-5 kg	3-5 kg	6 - 11 lbs	0.004 mg	0.04 mL	0.4 mL
6 mo	PINK	6-7 kg	13 - 15 lbs	0.006 mg	0.06 mL	0.6 mL
9 mo	RED	8-9 kg	16 - 20 lbs	0.008 mg	0.08 mL	0.8 mL
1 yr	PURPLE	10-11 kg	21 - 24 lbs	0.01 mg	0.1 mL	1 mL
2 yrs	YELLOW	12-14 kg	25 - 31 lbs	0.013mg	0.13 mL	1.3 mL
4 yrs	WHITE	15-18 kg	32 - 40 lbs	0.015mg	0.15 mL	1.5 mL
6 yrs	BLUE	19-23 kg	41 - 48 lbs	0.02 mg	0.2 mL	2.0 mL
8 yrs	ORANGE	24-29 kg	49 - 66 lbs	0.03 mg	0.3 mL	3 mL
10 yrs	GREEN	30-36 kg	67 - 80 lbs	0.035 mg	0.35 mL	3.5 mL
12 yrs		40 kg	88 lbs	0.04 mg	0.4 mL	4 mL
14 yrs		45 kg	99 lbs	0.045 mg	0.45 mL	4.5 mL
16 yrs + (Max Single Dose)		50 kg+	110 lbs+	0.05mg	0.5 mL	5 mL

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# ETOMIDATE

**Other Names:** Amidate

**Actions**

Etomidate is a non-barbiturate hypnotic, anesthesia induction agent. It is a short-acting drug that acts at the level of the reticular activating system to produce anesthesia.

**Contraindications**

- Known hypersensitivity

**Indications & Dose**

- **Airway Management – Medication Assisted Airway Management (MAAM):** Induction agent for [Endotracheal Intubation](#)
  - **IV/IO:** 0.3mg/kg; max 40 mg single dose
- **Sedation - Procedural (Cardioversion) (Tachycardia)**
  - **IV/IO:** All ages 0.1 mg/kg; max single dose 10mg; may repeat once

**Adverse Effects**

- Neuro: Involuntary muscle movement (myoclonus)
- Endocrine: Adrenal insufficiency
- GI: Nausea/vomiting
- Local: Pain at injection site
- Resp: Apnea

**Considerations**

- Blood pressure, heart rate, and continuous monitoring of SpO2, ETCO2, and ECG should be documented throughout patient care
- Effects may be enhanced when given with other CNS depressants
- Etomidate provides NO analgesic effects

**Pharmacokinetics**

- Onset: Within 30 seconds
- Duration: 3-5 minutes (induction)
- Duration: 2-5 minutes (conscious sedation)

**Pregnancy/Lactation**

- Okay to use in pregnancy and breastfeeding

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# FENTANYL

**Other Names:** Sublimaze, Duragesic Patch

## Actions

Fentanyl is an opioid analgesic. It binds to opioid receptors to produce analgesia and euphoria

## Contraindications

- Known hypersensitivity
- Respiratory depression with an unsecured airway
- Hypotension MAP < 65 mmHg

## Indications & Dose

- **Airway Management - For Pain Management/Sedation following intubation AND MAP is > 65 mmHg (adult) and age appropriate (pediatric)**
  - **All ages:**
    - **IV/IO:** Fentanyl 1 mcg/kg max single dose 200 mcg; repeat every 5 minutes until desired effect
- **Cardiac Arrest – ROSC - For Pain Management/Sedation following intubation AND MAP is > 65 mmHg (adult) and age appropriate (pediatric)**
  - **All ages:**
    - **IV/IO:** Fentanyl 1 mcg/kg max single dose 200 mcg; repeat every 5 minutes until desired effect
- **Medication Assisted Airway Management (MAAM) – For Pain Management/Sedation following intubation AND MAP is > 65 mmHg (adult) and age appropriate (pediatric)**
  - **All ages:**
    - **IV/IO:** Fentanyl 1 mcg/kg max single dose 200 mcg; repeat every 5 minutes until desired effect
- **Pain Management: Moderate or severe pain**
  - **Adult (age > 14 years):**
    - **IN:** 100 mcg; may repeat every 10 minutes as needed for pain control
    - **Nebulized:** 300 mcg; may repeat every 15 minutes as needed for pain control
    - **IM:** 50 mcg; may repeat every 10 minutes as needed for pain control.
    - **IV/IO:** 50 mcg; may repeat every 5 minutes as needed for pain control.
  - **Pediatric:**
    - **IN:** may repeat every 10 minutes as needed for pain control
      - 2 mcg/kg (Age < 2 years)
      - 50 mcg (Age 2 years - 8 years)
      - 100 mcg (Age ≥ 9 years)
    - **Nebulized:** 4 mcg/kg; maximum single dose 300 mcg; may repeat every 15 minutes as needed for pain control
    - **IM:** 1 mcg/kg; maximum single dose 50 mcg; may repeat every 10 minutes as needed for pain control.
    - **IV/IO:** 1 mcg/kg; maximum single dose 50 mcg; may repeat every 5 minutes as needed for pain control.
- **Sedation - For Pain Management/Sedation following intubation AND MAP is > 65 mmHg (adult) and age appropriate (pediatric)**
  - **All ages:**
    - **IV/IO:** Fentanyl 1 mcg/kg max single dose 200 mcg; repeat every 5 minutes until desired effect
- **Sedation - Procedural Sedation prior to cardioversion**
  - **Adult (age > 14 years):**
    - **IV/IO:** 100 mcg
  - **Pediatric:**
    - **IV/IO:** 1 mcg/kg; maximum single dose 100 mcg
- **Tachycardia – Procedural Sedation prior to cardioversion**
  - **Adult (age > 14 years):**
    - **IV/IO:** 100 mcg
  - **Pediatric:**
    - **IV/IO:** 1 mcg/kg; maximum single dose 100 mcg

## Adverse Effects

- Neuro: Confusion, somnolence
- CV: Bradycardia, hypotension
- GI: Nausea/vomiting
- Resp: Apnea, respiratory depression, chest wall/muscle rigidity

**Considerations**

- Blood pressure, heart rate, and continuous monitoring of SpO2, ETCO2, and ECG should be documented throughout patient care
- Moderate pain: Patient rates pain as 4-7 using a pain scale 1-10
- Severe pain: Patient rates pain as 8-10 using a pain scale 1-10
- Concomitant use with other sedatives, benzodiazepines, or opioids may result in profound [Sedation](#), respiratory depression, coma, and death
- Give slow IV push to prevent chest wall/muscle rigidity

**Pharmacokinetics**

- Onset:
  - **IV/IO:** almost immediate
  - **IN:** 5-10 minutes
  - **IM:** 7-10 minutes
- Duration: 30-60 minutes

**Pregnancy/Lactation**

- Okay to use in pregnancy and breastfeeding

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# GLUCAGON

**Other Names:** Glucagen

**Actions**

Glucagon is a hormone excreted by the alpha cells of the pancreas. When released, glucagon increases the level of circulating blood sugar by stimulating the release of glycogen.

**Contraindications**

- Known hypersensitivity
- Pheochromocytoma

**Indications & Dose**

- **Hypoglycemia:**
  - **≥ 20 kg:**
    - **IM:** 1 mg; may repeat once in 15 minutes if not improved
  - **< 20 kg:**
    - **IM:** 0.5 mg; may repeat once in 15 minutes if not improved

**Adverse Effects**

- CV: Hypotension, sinus tachycardia
- GI: Nausea/vomiting
- Resp: Cough, nasal congestion
- Endo: Rebound hyperglycemia

**Considerations**

- Can be considered for beta-blocker overdose, however, an initial starting dose of 3 mg is necessary to be effective
- Drug is supplied in a powdered form and must be reconstituted in the solution supplied with the powder
- If IV/IO access available, IV dextrose is preferred
- May not be effective in patients with advanced liver disease, severe malnutrition, pre-term, and small for gestational age newborns, or other patients with inadequate glycogen liver stores
- Recheck glucose level 5-10 minutes after administration
- Patient needs to eat carbohydrates as soon as awake and able to swallow safely
- Monitor patient frequently for progressive signs of hypoglycemia (sweating, weakness, headache, dizziness, tremor, irritability)

**Pharmacokinetics**

- Onset:
  - **IM:** 5-10 minutes
- Duration: 2-3 hours

**Pregnancy/Lactation**

- Okay to use in pregnancy and breastfeeding

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# GLUCOSE (ORAL GEL)

**Other Names:** Insta-Glucose, Glucose, Transcend

**Actions**

Glucose is a monosaccharide carbohydrate. After absorption from the GI tract, glucose is distributed in the tissues and provides a prompt increase in circulating blood sugar.

**Contraindications**

- Unresponsive patient
- Responsive patient who is unable to swallow adequately

**Indications & Dose**

- **Hypoglycemia:**
  - **Adult (Ages > 8 years):**
    - **PO:** 30 grams of glucose; may repeat in 15 minutes if not improved
  - **Pediatric (Ages 1-8 years):**
    - **PO:** 15 grams of glucose; may repeat in 15 minutes if not improved
  - **Infant (< 1 year of age):**
    - **PO:** 7.5 grams of glucose; may repeat in 15 minutes if not improved

**Adverse Effects**

- GI: Nausea/vomiting

**Considerations**

- Recheck glucose level 15 minutes after administration
- Monitor patient frequently for progressive signs of hypoglycemia (sweating, weakness, headache, dizziness, tremor, irritability)

**Pharmacokinetics**

- Onset: 10-15 minutes
- Duration: Dependent of blood sugar levels

**Pregnancy/Lactation**

- Okay to use in pregnancy and breastfeeding

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# HYDROMORPHONE

**Other Names:** Dilaudid

## Actions

Hydromorphone is an opioid analgesic that binds to opioid receptors in the central nervous system. It produces analgesia by inhibition of ascending pain pathways, altering the perception of and response to pain.

## Contraindications

- Known hypersensitivity
- Respiratory depression with an unsecured airway
- Hypotension
  - **Adult:** MAP <65 mmHg
  - **Pediatric:** See MAP Chart

## Indications & Dose

- **Airway Management - For Pain Management/Sedation following intubation AND MAP is > 65 mmHg (adult) and age appropriate (pediatric)**
  - **All ages:**
    - **IV/IO:** 0.015 mg/kg max single dose 1 mg; repeat every 10 minutes until desired effect
- **Cardiac Arrest – ROSC - For Pain Management/Sedation following intubation AND MAP is > 65 mmHg (adult) and age appropriate (pediatric)**
  - **All ages:**
    - **IV/IO:** 0.015 mg/kg max single dose 1 mg; repeat every 10 minutes until desired effect
- **Medication Assisted Airway Management (MAAM) - For Pain Management/Sedation following intubation AND MAP is > 65 mmHg (adult) and age appropriate (pediatric)**
  - **All ages:**
    - **IV/IO:** 0.015 mg/kg max single dose 1 mg; repeat every 10 minutes until desired effect
- **Pain Management: Moderate Acute Pain**
  - **Adult: (> 14 years)**
    - **IV/IO:** 0.5 mg; may repeat every 15 minutes as needed for pain control
  - **Pediatric (< 14 years):**
    - **IV/IO:** 0.0075 mg/kg; maximum dose 0.5 mg; may repeat every 15 minutes as needed for pain control
- **Pain Management: Moderate or severe pain**
  - **Adult (14 – 64 years):**
    - **IV/IO:** 1 mg; may repeat every 15 minutes as needed for pain control
  - **Pediatric (< 14 years):**
    - **IV/IO:** 0.015 mg/kg; maximum dose 1 mg, may repeat every 15 minutes as needed for pain control
  - **Elderly (65 years or older) OR any age chemically or otherwise impaired**
    - **IV/IO:** 0.5 mg; may repeat every 15 minutes as needed for pain control
- **Sedation - For Pain Management/Sedation following intubation AND MAP is > 65 mmHg (adult) and age appropriate (pediatric)**
  - **All ages:**
    - **IV/IO:** 0.015 mg/kg max single dose 1 mg; repeat every 10 minutes until desired effect

## Adverse Effects

- Neuro: Euphoria, sedation
- CV: Bradycardia, hypotension
- GI: Nausea/vomiting
- Resp: Respiratory depression

## Considerations

- IM Dilaudid has variable absorption lag time to peak effect and should not be used
- Blood pressure, heart rate, and continuous monitoring of SpO<sub>2</sub>, ETCO<sub>2</sub>, and ECG should be documented throughout patient care
- Moderate pain: Patient rates pain as 4-7 using a pain scale 1-10
- Severe pain: Patient rates pain as 8-10 using a pain scale 1-10
- Concomitant use with other sedatives, benzodiazepines, or opioids may result in profound sedation, respiratory depression, coma, and death
- Reassess patient's pain scale score every 5 minutes following each medication administration

## Pharmacokinetics

- Onset: 5 minutes (IV)
- Duration: 3-4 hours

**Pregnancy/Lactation**

- Okay to use in pregnancy and breastfeeding

BROSELOW-LUTEN	Kilograms	Pounds	Age	Dilaudid 0.015 mg/kg	Dilaudid Diluted with 4mL Normal Saline gives 0.4 mg/mL	RR	SBP greater than
3 kg - 4kg - 5 kg		6.7, 9, 11 lbs.	1 wk., 1mo			40-60	60
PINK	6-7 kg	13 - 15 lbs.	6 mo.	0.1 mg	0.25 mL	24-36	70
RED	8-9 kg	16 - 20 lbs.		0.1 mg	0.25 mL		70
PURPLE	10-11 kg	21 - 24 lbs.	1 yr.	0.2 mg	0.5 mL	22-30	70
YELLOW	12-14 kg	25 - 31 lbs.	2 yrs.	0.2 mg	0.5 mL	20-26	70
WHITE	15-18 kg	32 - 40 lbs.	4 yrs.	0.3 mg	0.75 mL	20-24	75
BLUE	19-23 kg	41 - 48 lbs.	6 yrs.	0.3 mg	0.75 mL	18-22	80
ORANGE	24-29 kg	49 - 66 lbs.	8 yrs.	0.4 mg	1 mL	18-22	80
GREEN	30-36 kg	67 - 80 lbs.	10 yrs.	0.5 mg	1.25 mL	18-22	85

Kilograms	Pounds	Age	Dilaudid 0.015 mg/kg	Dilaudid 2mg/mL
40 kg	88 lbs.		0.6 mg	0.3 mL
45 kg	99 lbs.		0.7 mg	0.35 mL
50 kg	110 lbs.		0.8 mg	0.4 mL
55 kg	121 lbs.		0.8 mg	0.4 mL
60 kg	132 lbs.		0.9 mg	0.45 mL
70 kg	154 lbs.		1 mg	0.5 mL
80 kg	176 lbs.		1 mg	0.5 mL
90 kg	198 lbs.		1 mg	0.5 mL

PEDIATRIC VITAL SIGNS				
Age	Pulse	Respiratory Rate	Systolic BP Lowest Normal	Lowest Normal MAP
Newborn	120-160	30-60	60	40
Up to 1 year	100-140	30-60	70	42
1-3 years	100-140	20-40	76	45
4-6 years	80-120	20-30	80	48
7-9 years	80-120	16-24	84	52
10-12 years	80-120	16-20	90	55
13-14 years	60-100	16-20	90	60

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# IBUPROFEN

**Other Names:** Advil, Motrin

**Actions**

Ibuprofen is a nonsteroidal anti-inflammatory (NSAID). It works by inhibiting the cyclooxygenase enzymes, which decreases the synthesis of prostaglandins involved in mediating inflammation, pain, fever, and swelling.

**Contraindications**

- Known hypersensitivity
- Suspected or confirmed cerebrovascular bleeding
- Active GI bleeding
- Pregnancy
- <6 months of age
- Inability to safely take oral medication

**Indications & Dose**

- **Pain Management:** Mild to moderate pain

- **Adult:**
  - **PO:** 600 mg; maximum dose 3.2 g/24 hours
- **Pediatric:**
  - **PO:** 10mg/kg; maximum initial dose 600 mg

- **Fever or Suspected Sepsis:** Antipyretic

- **Adult:**
  - **PO:** 600 mg; maximum dose 3.2 g/24 hours
- **Pediatric:**
  - **PO:** 10mg/kg; maximum initial dose 600 mg

Pain Management, Fever, Sepsis				IBUPROFEN	
Age	Broselow	Kilos	Pounds	mg	100 mg/5mL
Newborn	3kg 4kg 5 kg	3-5 kg	6 - 11 lbs		
6 mo	PINK	6-7 kg	13 - 15 lbs	60	3 mL
9 mo	RED	8-9 kg	16 - 20 lbs	80	4 mL
1 yr	PURPLE	10-11 kg	21 - 24 lbs	100	5 mL
2 yrs	YELLOW	12-14 kg	25 - 31 lbs	120	6 mL
4 yrs	WHITE	15-18 kg	32 - 40 lbs	160	8 mL
6 yrs	BLUE	19-23 kg	41 - 48 lbs	200	10 mL
8 yrs	ORANGE	24-29 kg	49 - 66 lbs	260	13 mL
10 yrs	GREEN	30-36 kg	67 - 80 lbs	300	15 mL
12 yrs		38.5 kg	84 lbs	400	20 mL
14 yrs		44 kg	97 lbs	440	22 mL
16 yrs		50 kg	110 lbs	500	25 mL
		55 kg	121 lbs	540	27 mL
<b>MAX DOSE</b>		60+ kg	132+ lbs	600	30 mL

**Adverse Effects**

- GI: Nausea, epigastric pain, bleeding
- Neuro: Dizziness, headache
- Skin: Rash

**Considerations**

- Use with caution/avoid in (consider use of other analgesic medications):
  - Patients on anticoagulants (can increase antiplatelet properties)
  - Advanced renal disease

**Pharmacokinetics**

- Onset:
  - Analgesic: 30-60 minutes
  - Antipyretic: 2-4 hours
- Duration: 6-8 hours

**Pregnancy/Lactation**

- Pregnancy: **NOT** recommended during pregnancy; consider acetaminophen as a pregnancy safe alternative
- Okay to use in breastfeeding

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# IPRATROPIUM BROMIDE

**Other Names:** Atrovent

## Actions

Ipratropium Bromide is an anticholinergic. It antagonizes the acetylcholine receptor on bronchial smooth muscle, producing bronchodilation.

## Contraindications

- Known hypersensitivity

## Indications & Dose

- **Allergic Reaction/Anaphylaxis**
  - **Nebulized:** 0.5 mg in combination with [Albuterol](#) 2.5 mg
    - May repeat every 10-20 minutes as needed; Repeat dosing should be [Albuterol](#) only; max of 3 doses
    - Initial [Albuterol](#) dose can be increased to 5 mg if severe and 10 mg if critical
  - **Nebulized:** DuoNeb ([Albuterol](#) 2.5 mg and [Ipratropium Bromide](#) 0.5 mg)
    - May repeat DuoNeb every 10-20 minutes as needed; max of 3 doses
    - Repeat dosing should be [Albuterol](#) only, if available
- **Difficulty Breathing:** Bronchospasm associated with asthma, COPD, or pneumonia
  - **Nebulized:** 0.5 mg in combination with [Albuterol](#) 2.5 mg
    - May repeat every 10-20 minutes as needed; Repeat dosing should be [Albuterol](#) only; max of 3 doses
    - Initial [Albuterol](#) dose can be increased to 5 mg if severe and 10 mg if critical
  - **Nebulized:** DuoNeb ([Albuterol](#) 2.5 mg and [Ipratropium Bromide](#) 0.5 mg)
    - May repeat DuoNeb every 10-20 minutes as needed; max of 3 doses
    - Repeat dosing should be [Albuterol](#) only, if available

## Adverse Effects

- CV: Palpitations, tachycardia
- GI: Nausea
- Neuro: Headache, dizziness
- Resp: Cough, throat irritation, dry mouth, paradoxical acute bronchospasm

## Considerations

- Repeat dosing of ipratropium has no added benefit but is not harmful to the patient

## Pharmacokinetics

- Onset: 5-15 minutes
- Duration: 4 hours

## Pregnancy/Lactation

- Okay to use in pregnancy and breastfeeding

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# ISOPROPYL ALCOHOL

**Other Names:**

**Actions**

Isopropyl alcohol nasal inhalation has been demonstrated by meta-analysis of multiple trials to be more effective than saline solution in treating postoperative nausea and vomiting. Specific action unknown.

**Contraindications**

- Patient is altered and unable to cooperate
- Patient is unable to smell

**Indications & Dose**

- **Nausea or Vomiting**
  - **All patients:**
    - Hold alcohol prep pad 2.5 cm from their nose and inhale deeply for up to 60 seconds; may stop if nausea resolves; If nausea persists or returns, may repeat 60 second inhalation at 2 minutes and 4 minutes.

**Adverse Effects**

- Neuro: Headache
- GI: Abdominal pain, vomiting, diarrhea
- Skin: Irritation of nasal mucosa

**Considerations**

- None

**Pharmacokinetics**

- Onset: 1 minutes
- Duration: unknown

**Pregnancy/Lactation**

- Okay to use in pregnancy and breastfeeding

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# KETAMINE

**Other Names:** Ketalar

## Actions

Ketamine is a nonbarbiturate dissociative anesthetic that produces a cataleptic-like state in which the patient is dissociated from the surrounding environment by direct action on the cortex and limbic system. Ketamine is a noncompetitive NMDA receptor antagonist that blocks glutamate in the brain. Low (subanesthetic) doses produce analgesia, and modulate central sensitization, hyperalgesia and opioid tolerance. The unique dissociative action and partial agonism on opiate mu-receptors permit the performance of painful procedures in a consistent state of sedation and patient comfort. Ketamine may have bronchodilatory effects making it a preferred agent for severe asthma and other diseases with bronchoconstriction requiring advanced airway management.

## Contraindications

- Known hypersensitivity
- Patients < 3 months old

## Indications & Dose

- **Airway Management - Sedation-Post Advanced Airway Placement:**
  - **Ages ≥ 3 months:**
    - **IV/IO:** 2 mg/kg; maximum single dose 200 mg
- **Behavioral or Psychiatric Emergencies – Chemical Restraint:**
  - **Ages ≥ 3 months:**
    - **IM:** 5 mg/kg; maximum single dose 500 mg; may administer 250 mg IM initially; if initial dose ineffective after 2 minutes, give remaining dose in another muscle; if sedation inadequate, may repeat one-half (1/2) initial dose in 10 minutes
    - **IV/IO:** 2 mg/kg; maximum single dose 200 mg; may repeat every 5 minutes as needed
- **Medication Assisted Airway Management (MAAM) - Option for drug-assisted [Endotracheal Intubation](#) induction:**
  - **Ages ≥ 3 months:**
    - **IV/IO:** 2 mg/kg; maximum single dose 200 mg
- **Pain Management: Severe pain:**
  - **Adult (≥ 16 years):**
    - **IN/IM:** 40 mg; may repeat every 15 minutes as needed for pain control.
    - **IV/IO:** 10 mg; may repeat every 5 minutes as needed for pain control.
  - **Pediatric (≥ 3 months – 15 years):**
    - **IN/IM:** 1 mg/kg (maximum dose 40 mg); may repeat every 15 minutes as needed for pain control.
    - **IV/IO:** 0.2 mg/kg (maximum dose 10 mg); may repeat every 5 minutes as needed for pain control.
- **Restraints – Chemical:**
  - **Ages ≥ 3 months:**
    - **IM:** 5 mg/kg; maximum single dose 500 mg; may administer 250 mg IM initially; if initial dose ineffective after 2 minutes, give remaining dose in another muscle; if sedation inadequate, may repeat one-half (1/2) initial dose in 10 minutes
    - **IV/IO:** 2 mg/kg; maximum single dose 200 mg; may repeat every 5 minutes as needed
- **Sedation - For Pain Management/Sedation following intubation AND MAP is > 65 mmHg (adult) and age appropriate (pediatric):**
  - **Ages ≥ 3 months:**
    - **IV/IO:** 2 mg/kg; maximum single dose 200 mg
- **Sedation - Procedural [Cardioversion](#):**
  - **Adult (if hypotensive MAP<65 mmHg):**
    - **IV/IO:** 1.5 mg/kg; maximum single dose 200 mg
- **Seizures: If benzodiazepines are unavailable and patient is still seizing**
  - **Ages ≥ 3 months:**
    - **IM:** 5 mg/kg; maximum single dose 500 mg
    - **IV/IO:** 1.5 mg/kg; maximum single dose 200 mg; may repeat 0.5 mg/kg every 5 minutes until seizure stops

## Adverse Effects

- Neuro: Dissociative experiences, emergence reactions, hallucinations
- CV: Increased heart rate, increased blood pressure, increased myocardial oxygen demand
- Resp: Apnea, respiratory depression, laryngospasm
- GI: Nausea, vomiting, hypersalivation

**Considerations**

- Should not be used if patient has a known or suspected history of schizophrenia
- Blood pressure, heart rate, and continuous monitoring of SpO2, ETCO2, and ECG should be documented before administration, within 5 minutes of administration and throughout patient care

**Pharmacokinetics**

- Onset:
  - Anesthetic
    - Within 30 seconds (**IV/IO**)
    - 3 – 4 minutes (**IM**)
  - Analgesia
    - Within 10 – 15 minutes (**IM**)
    - Within 8 – 10 minutes (**IN**)
- Duration:
  - Anesthetic
    - 5 – 10 minutes (**IV/IO**)
    - 12 – 25 minutes (**IM**)
  - Analgesia
    - 15 – 30 minutes (**IM**)
    - Up to 60 minutes (**IN**)

**Pregnancy/Lactation**

- Okay to use in pregnancy and breastfeeding

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# KETOROLAC

**Other Names:** Toradol

## Actions

Ketorolac is a nonsteroidal anti-inflammatory. Like other NSAIDs, ketorolac exhibits peripherally acting non-narcotic analgesic activity by inhibiting prostaglandin synthesis. The inhibition of these substances decreases pain, fever, and inflammation.

## Contraindications

- Known hypersensitivity or allergy to other NSAIDs
- Pediatric patients < 6 months old
- Pregnancy
- NSAID use within the past 4 hours
- Active GI bleeding
- Suspected or confirmed cerebrovascular bleeding
- Renal failure or advanced renal disease

## Indications & Dose

- **Pain Management:**
  - **Adult (≥ 17 years):**
    - **IV/IO:** 0.5 mg/kg (15 mg maximum dose)
    - **IM/PO:** 1.0 mg/kg (30 mg maximum initial dose)
  - **Pediatric (≥ 6 months – 17 years of age):**
    - **PO/IM/IV/IO:** 0.5 mg/kg (15 mg maximum initial dose)
- **Fever or Suspected Sepsis:**
  - **Adult (≥ 17 years):**
    - **IV/IO:** 0.5 mg/kg (15 mg maximum dose)
    - **IM/PO:** 1.0 mg/kg (30 mg maximum initial dose)
  - **Pediatric (≥ 6 months – 17 years of age):**
    - **PO/IM/IV/IO:** 0.5 mg/kg (15 mg maximum initial dose)

## Adverse Effects

- Neuro: Headache
- GI: Nausea

## Considerations

- The injectable liquid can be given orally
- Drug of choice when given IV/IO for patients with pain related to known or suspected kidney stones
- Use caution in patients with hypovolemia
- Use with caution/avoid in (consider use of other analgesic medications):
  - Patients on anticoagulants (can increase antiplatelet properties)
  - Advanced renal disease

## Pharmacokinetics

- Onset:
  - **IV/IO:** 1 – 3 minutes
  - **IM/PO:** 30 – 60 minutes
- Duration:
  - 6 – 8 hours

## Pregnancy/Lactation

- Pregnancy: NOT recommended during pregnancy
- Okay to use in breastfeeding

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# LABETALOL

**Other Names:** Trandate

## Actions

Labetalol is a combined beta-adrenergic and alpha-adrenergic blocker that decreases sympathetic tone reducing the blood pressure and the heart rate. Its rapid onset of action makes it a useful intravenous medication for the treatment of hypertensive emergencies.

## Contraindications

- Known hypersensitivity
- Severe bradycardia
- 2<sup>nd</sup> or 3<sup>rd</sup> Degree AV Block without an artificial pacemaker
- Hypotension
- Cardiogenic shock

## Indications & Dose

- **Hypertensive Emergencies (SBP > 220 or DBP > 120 mmHg AND HR > 60)**
  - **Adult:**
    - **IV/IO:** 20 mg slow push over 2 minutes; may repeat every 10 minutes as needed for target BP control
  - **Pediatric:**
    - **IV/IO:** 0.2 mg/kg slow push over 2 minutes (maximum single dose 20 mg); may repeat every 10 minutes as needed for target BP control
- **Obstetrical Complications (Gestational Hypertension/Pre-eclampsia with SBP > 160 or DBP >110 mmHg)**
  - **Adult:**
    - **IV/IO:** 20 mg slow push over 2 minutes; may repeat every 10 minutes as needed to decrease SBP < 160 and DBP < 110 mmHg

## Adverse Effects

- Neuro: Dizziness, fatigue
- CV: Bradycardia, hypotension, orthostatic hypotension
- Resp: Bronchospasm in patients with existing bronchospastic disease
- GI: Nausea

## Considerations

- Blood pressure, heart rate, and continuous monitoring of SpO<sub>2</sub>, ETCO<sub>2</sub>, and ECG should be documented before administration, within 5 minutes of administration and throughout patient care
- Avoid standing patient after medication administration

## Pharmacokinetics

- Onset:
  - **IV/IO:** within 5 minutes
- Duration:
  - **IV/IO:** 16 – 18 hours (dose dependent)

## Pregnancy/Lactation

- Okay to use in pregnancy and breastfeeding

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# LIDOCAINE

**Other Names:** XylOCAINE

## Actions

Lidocaine is an antiarrhythmic (sodium channel blocker) and local anesthetic. It decreases diastolic depolarization to decrease ventricular automaticity which suppresses premature ventricular complexes and raises the ventricular fibrillation threshold.

## Contraindications

- Known hypersensitivity
- Allergy to other “caine” drugs
- 2<sup>nd</sup> or 3<sup>rd</sup> Degree AV Block without an artificial pacemaker

## Indications & Dose

- **Intraosseous (IO) Access:** IO anesthetic for awake patients who are aware of pain associated with IO infusion

- **All Ages:**

- **IO:** 1 mg/kg infused *slowly* (maximum dose 50 mg). As clinical situation permits, allow lidocaine to dwell in site for up to 1 minute before flushing the insertion site with normal saline. May repeat once if pain not controlled with initial dose.

- **Cardiac Arrest** (Ventricular fibrillation or Pulseless Ventricular Tachycardia)

- **All ages:**

- **IV/IO:** 1.0 mg/kg initial dose (maximum dose 100 mg); may repeat 0.5 mg/kg every 5-10 minutes if refractory; total dose 3 mg/kg

- **Tachycardia**

- **All ages:** Stable; Wide Complex; Monomorphic; Regular

- **IV/IO:** 1.0 mg/kg initial dose (maximum dose 100 mg); may repeat 0.5 mg/kg every 5-10 minutes if refractory; total dose 3 mg/kg

Cardiac Arrest Dosages				LIDOCAINE
Age	Broselow	Kilos	Pounds	1 mg/kg
Newborn	3kg 4kg 5 kg	3-5 kg	6 - 11 lbs	4 mg
6 mo	PINK	6-7 kg	13 - 15 lbs	7 mg
9 mo	RED	8-9 kg	16 - 20 lbs	9 mg
1 yr	PURPLE	10-11 kg	21 - 24 lbs	11 mg
2 yrs	YELLOW	12-14 kg	25 - 31 lbs	14 mg
4 yrs	WHITE	15-18 kg	32 - 40 lbs	18 mg
6 yrs	BLUE	19-23 kg	41 - 48 lbs	23 mg
8 yrs	ORANGE	24-29 kg	49 - 66 lbs	29 mg
10 yrs	GREEN	30-36 kg	67 - 80 lbs	36 mg
		38.5 kg	84 lbs	39 mg
		44 kg	97 lbs	44 mg
		50 kg	110 lbs	50 mg
		55 kg	121 lbs	55 mg
		60 kg	132 lbs	60 mg
		67 kg	147 lbs	67 mg
		70 kg	154 lbs	70 mg
		75 kg	165 lbs	75 mg
		80 kg	176 lbs	80 mg
		85 kg	187 lbs	85 mg
		90 kg	198 lbs	90 mg
		95 kg	209 lbs	95 mg
		100+ kg	220+ lbs	100 mg

## Adverse Effects

- Neuro: Anxiety

## Considerations

- Blood pressure, heart rate, and continuous monitoring of SpO2, ETCO2, and ECG should be documented before administration, within 5 minutes of administration and throughout patient care
- **Flush the IV with a 10 mL saline flush**

## Pharmacokinetics

- Onset:
  - **IV/IO:** within 2 minutes
- Duration:
  - **IV/IO:** 10 – 20 minutes

## Pregnancy/Lactation

- Okay to use in pregnancy and breastfeeding

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# LORAZEPAM

**Other Names:** Ativan

## Actions

Lorazepam is a benzodiazepine. It binds to the benzodiazepine receptor and enhances the effects of the brain neurotransmitter Gamma Aminobutyric Acid (GABA). It can produce any level of CNS depression required including sedation, skeletal muscle relaxation, and anticonvulsant activity. It is an appropriate alternative to midazolam if shortages exist.

## Contraindications

- Known hypersensitivity
- Uncorrected shock, hypotension

## Indications & Dose

- **Behavioral or Psychiatric Emergencies – Chemical Restraint**
  - **Adult (age ≥ 12 years):**
    - **IM:** 2 mg; may repeat every 20 minutes for desired effect
    - **IV/IO:** 2 mg; may repeat every 5 minutes for desired effect
  - **Pediatric (<12 years):**
    - **IM:** 0.1 mg/kg; max single dose 2 mg; may repeat every 20 minutes for desired effect
    - **IV/IO:** 0.1 mg/kg; max single dose 2 mg; may repeat every 5 minutes for desired effect
- **Dizziness or Vertigo**
  - **Adult (12 - 64 years):**
    - **IM:** 0.5 mg; may repeat every 20 minutes as needed for anxiolytic effect
    - **IV/IO:** 0.5 mg; may repeat every 10 minutes as needed for anxiolytic effect
  - **Pediatric (<12 years):**
    - **IM:** 0.1 mg/kg; max single dose 1 mg; may repeat in 20 minutes as needed
    - **IV/IO:** 0.1 mg/kg; max single dose 1 mg; may repeat every 5 minutes as needed
  - **Elderly (65 years and older):**
    - **IM:** 0.25 mg; may repeat in 20 minutes as needed for anxiolytic effect
    - **IV/IO:** 0.25 mg; may repeat in 10 minutes as needed for anxiolytic effect
- **Medication Assisted Airway Management (MAAM) – For Pain Management/Sedation** following intubation AND MAP is > 65 mmHg (adult) and age appropriate (pediatric)
  - **Adult (age ≥ 12 years):**
    - **IM:** 2 mg; may repeat every 20 minutes for desired effect
    - **IV/IO:** 2 mg; may repeat every 5 minutes for desired effect
  - **Pediatric (<12 years):**
    - **IM:** 0.1 mg/kg; max single dose 2 mg; may repeat every 20 minutes for desired effect
    - **IV/IO:** 0.1 mg/kg; max single dose 2 mg; may repeat every 5 minutes for desired effect
- **Restraints – Chemical**
  - **Adult (age ≥ 12 years):**
    - **IM:** 2 mg; may repeat every 20 minutes for desired effect
    - **IV/IO:** 2 mg; may repeat every 5 minutes for desired effect
  - **Pediatric (<12 years):**
    - **IM:** 0.1 mg/kg; max single dose 2 mg; may repeat every 20 minutes for desired effect
    - **IV/IO:** 0.1 mg/kg; max single dose 2 mg; may repeat every 5 minutes for desired effect
- **Sedation**
  - **Adult (12 - 64 years):**
    - **IM:** 0.5 mg; may repeat every 20 minutes as needed for anxiolytic effect
    - **IV/IO:** 0.5 mg; may repeat every 10 minutes as needed for anxiolytic effect
  - **Pediatric (<12 years):**
    - **IM:** 0.1 mg/kg; max single dose 1 mg; may repeat in 20 minutes as needed
    - **IV/IO:** 0.1 mg/kg; max single dose 1 mg; may repeat every 5 minutes as needed
  - **Elderly (65 years and older):**
    - **IM:** 0.25 mg; may repeat in 20 minutes as needed for anxiolytic effect
    - **IV/IO:** 0.25 mg; may repeat in 10 minutes as needed for anxiolytic effect

- **Seizure**
  - **Adult (age ≥ 12 years):**
    - **IM:** 4 mg; may repeat every 20 minutes until seizure stops
    - **IV/IO:** 2 mg; may repeat every 5 minutes until seizure stops
  - **Pediatric (<12 years):**
    - **IM:** 0.1 mg/kg; max single dose 2 mg; may repeat every 20 minutes until seizure stops
    - **IV/IO:** 0.1 mg/kg; max single dose 2 mg; may repeat every 5 minutes until seizure stops

**Adverse Effects**

- Neuro: Confusion, paradoxical reaction (such as aggression), sedation
- CV: Hypotension
- Resp: Respiratory depression

**Considerations**

- Lorazepam cannot be given in the same line as lactated ringers
- Blood pressure, heart rate, and continuous monitoring of SpO2, ETCO2, and ECG should be documented before administration, within 5 minutes of administration, and throughout patient care
- Concomitant use with other sedatives, benzodiazepines, or opioids may result in profound sedation, respiratory depression, coma, and death

**Pharmacokinetics**

- Onset:
  - **IV/IO:** within 10 minutes
  - **IM:** within 10-30 minutes
- Duration:
  - **IV/IO/IM:** variable

**Pregnancy/Lactation**

- Okay to use in pregnancy and breastfeeding

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# MAGNESIUM SULFATE

## Other Names:

### Actions

Magnesium Sulfate is an electrolyte that is necessary for the movement of calcium, sodium and potassium in and out of cells. Because of this, Magnesium stabilizes excitable cell membranes, which helps in Eclampsia/Preeclampsia and polymorphic ventricular tachycardia (Torsades de Pointes). Magnesium also causes relaxation of bronchial smooth muscles which improves pulmonary function in severe asthma/COPD attacks.

### Contraindications

- Known hypersensitivity

### Indications & Dose

- **Cardiac Arrest: Polymorphic ventricular tachycardia (Torsades de Pointes) only**
  - **Adult:**
    - **IV/IO:** Mix 2 grams in 10 mL and administer IV push over 1-2 minutes, if ineffective may repeat a second dose immediately
  - **Pediatric < 12 years of age:**
    - **IV/IO:** Mix 50 mg/kg in 10 mL and administer IV push over 1-2 minutes, if ineffective may repeat once immediately. Maximum total dose 2 grams
- **Difficulty Breathing: Asthma/COPD, Wheezing, Bronchospasm-Severe or critical respiratory distress or moderate respiratory distress not improving with treatment**
  - **Adult:**
    - **IV/IO:** Mix 2 grams in 10 mL and administer **slowly** over 10 minutes
  - **Pediatric:**
    - **IV/IO:** Mix 50 mg/kg in 10 mL and administer **slowly** over 10 minutes; maximum dose 2 grams
- **OB – Complications: Sustained hypertension without seizure**
  - **All ages:**
    - **IV/IO:** Mix 4 grams in 20 mL and administer **slowly** over 10 minutes
- **OB – Complications: Seizure**
  - **All ages:**
    - **IV/IO:** Mix 4 grams in 20 mL and administer **slowly** over 4 minutes
- **OB – Complications: Post seizure, if not already given**
  - **All ages:**
    - **IV/IO:** Mix 4 grams in 20 mL and administer **slowly** over 10 minutes
- **Seizure: Patient is > 20 weeks pregnant (fundus is above the umbilicus) or < 6 weeks postpartum**
  - **Adult**
    - **IV/IO:** Mix 4 grams in 20 mL and administer **slowly** over 4 minutes
- **Tachycardia: Stable; Wide Complex, Polymorphic (Torsades de Pointes)**
  - **Adult:**
    - **IV/IO:** Mix 2 grams in 50-100 mL and administer over 10 minutes, if ineffective may repeat once in 15 minutes
  - **Pediatric:**
    - **IV/IO:** Mix 50 mg/kg in 10 mL and administer **slowly** over 10 minutes; maximum dose 2 grams

### Adverse Effects

- CV: Hypotension (rate related), vasodilation (rate related)
- Skin: Flushing (dose related)

### Considerations

- Use with caution in patients with Myasthenia Gravis
- Not effective on monomorphic, non-Torsades de Pointes ventricular tachycardia (with normal baseline QT interval)
- Magnesium toxicity can lead to fatal respiratory paralysis and/or cardiovascular arrest (occurs when patient is receiving IV magnesium infusions)

**Pharmacokinetics**

- Onset: **IV** Immediate; **IM** 1 hour
- Duration of antiseizure: **IV** 30 minutes; **IM** 3-4 hours

**Pregnancy/Lactation**

- Okay for use in pregnancy and breastfeeding

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# METHYLPREDNISOLONE

**Other Names:** Medrol, SOLU-medrol

**Actions**

Methylprednisolone is a glucocorticoid. It suppresses acute and chronic inflammation and potentiates vascular smooth muscle relaxation by stimulating beta receptors and may alter airway hyperactivity.

**Contraindications**

- Known hypersensitivity

**Indications & Dose**

- **Allergic Reaction/Anaphylaxis**
  - **Adult:**
    - PO/IM/IV/IO: 125 mg
  - **Pediatric:**
    - PO/IM/IV/IO: 2 mg/kg max single dose 125 mg
- **Difficulty Breathing: Asthma/COPD, Wheezing, Bronchospasm**
  - **Adult:**
    - PO/IM/IV/IO: 125 mg
  - **Pediatric:**
    - PO/IM/IV/IO: 2 mg/kg max single dose 125 mg
- **Hypotension or Shock – Adrenal Insufficiency or Addison’s Disease**
  - **Adult:**
    - PO/IM/IV/IO: 125 mg
  - **Pediatric:**
    - PO/IM/IV/IO: 2 mg/kg maximum single dose 125 mg
- **Sepsis (Patients on chronic steroids or with Adrenal Insufficiency or Addison’s Disease)**
  - **Adult:**
    - PO/IM/IV/IO: 125 mg
  - **Pediatric:**
    - PO/IM/IV/IO: 2 mg/kg max single dose 125 mg

**Adverse Effects**

- CV: Hypertension
- GI: Nausea/vomiting
- Endo: Hyperglycemia, sodium, and water retention

**Considerations**

- May blunt response of insulin or other hypoglycemic medications

**Pharmacokinetics**

- Onset: within 60 minutes
- Duration: variable

**Pregnancy/Lactation**

- Okay to use in pregnancy and breastfeeding

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# METOCLOPRAMIDE

**Other Names:** Reglan

## Actions

Metoclopramide blocks central and peripheral dopamine receptors providing relief from symptoms such as nausea, vomiting, heartburn, vertigo, and motion sickness. It also blocks serotonin receptors in chemoreceptor trigger zone of the CNS.

## Contraindications

- Known hypersensitivity
- History of tardive dyskinesia or dystonic reaction to metoclopramide
- GI obstruction/perforation

## Indications & Dose

- **Dizziness or Vertigo**
  - **Adult (ages > 14 - 64 years):**
    - **PO:** 10 mg; may repeat once in 60 minutes if needed
    - **IM:** 10 mg; may repeat once in 15 minutes if needed
    - **IV/IO:** 10mg ***slowly*** over 1-2 minutes; may repeat once in 5 minutes if needed
  - **Elderly (age 65 years and older):**
    - **IV/IO:** 5 mg ***slowly*** over 1-2 minutes; may repeat once in 5 minutes if needed
  - **Pediatric (≥ 2 years – 14 years):**
    - **PO:** 0.1 mg/kg; maximum initial dose 10 mg; may repeat once in 60 minutes if needed
    - **IM:** 0.1 mg/kg; maximum initial dose 10 mg; may repeat once in 15 minutes if needed
    - **IV/IO:** 0.1 mg/kg ***slowly*** over 1-2 minutes; maximum initial dose 10 mg; may repeat once in 5 minutes if needed
- **Nausea or Vomiting**
  - **Adult (ages > 14 - 64 years):**
    - **PO:** 10 mg; may repeat once in 60 minutes if needed
    - **IM:** 10 mg; may repeat once in 15 minutes if needed
    - **IV/IO:** 10mg ***slowly*** over 1-2 minutes; may repeat once in 5 minutes if needed
  - **Elderly (age 65 years and older):**
    - **IV/IO:** 5 mg ***slowly*** over 1-2 minutes; may repeat once in 5 minutes if needed
  - **Pediatric (≥ 2 years – 14 years):**
    - **PO:** 0.1 mg/kg; maximum initial dose 10 mg; may repeat once in 60 minutes if needed
    - **IM:** 0.1 mg/kg; maximum initial dose 10 mg; may repeat once in 15 minutes if needed
    - **IV/IO:** 0.1 mg/kg ***slowly*** over 1-2 minutes; maximum initial dose 10 mg; may repeat once in 5 minutes **if needed**
- **Pain Management -Headache (migraine) with normal neuro exam**
  - **Adult (ages > 14 - 64 years):**
    - **PO:** 10 mg; may repeat once in 60 minutes if needed
    - **IM:** 10 mg; may repeat once in 15 minutes if needed
    - **IV/IO:** 10mg ***slowly*** over 1-2 minutes; may repeat once in 5 minutes if needed
  - **Elderly (age 65 years and older):**
    - **IV/IO:** 5 mg ***slowly*** over 1-2 minutes; may repeat once in 5 minutes if needed
  - **Pediatric (≥ 2 years – 14 years):**
    - **PO:** 0.1 mg/kg; maximum initial dose 10 mg; may repeat once in 60 minutes if needed
    - **IM:** 0.1 mg/kg; maximum initial dose 10 mg; may repeat once in 15 minutes if needed
    - **IV/IO:** 0.1 mg/kg ***slowly*** over 1-2 minutes; maximum initial dose 10 mg; may repeat once in 5 minutes if needed

## Adverse Effects

- Neuro: Restlessness (akathisia), drowsiness, dizziness, confusion, dystonic reaction

## Considerations

- Use with caution in patients under the effects of alcohol and other CNS depressants
- Avoid use in patients with Parkinson's disease as it may exacerbate their symptoms
- Metoclopramide may cause some people to be agitated, irritable, or display other abnormal behaviors
- Dystonic reaction and restlessness should be treated with [Benadryl \(Diphenhydramine\)](#). May give diphenhydramine prior to administering an antiemetic to prevent dystonic reactions.



**Pharmacokinetics**

- Onset:
  - **IV:** 1-3 minutes
  - **IM:** 10-15 minutes
  - **PO:** 30-60 minutes
  
- Duration: 1-2 hours

**Pregnancy/Lactation**

- Okay to use in pregnancy and breastfeeding

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# METOPROLOL

**Other Names:** Lopressor, Toprol XL

## Actions

Metoprolol is a selective inhibitor of beta<sub>1</sub>-adrenergic receptors. It competitively blocks beta<sub>1</sub>-receptors, with little or no effect on beta<sub>2</sub>-receptors resulting in a slower heart rate and decreased blood pressure. When the blood pressure is lowered, the amount of blood and oxygen is increased to the heart.

## Contraindications

- Known hypersensitivity
- Heart rate < 60
- Suspicion of Wolff-Parkinson White Syndrome (WPW)
- Systolic blood pressure < 90 mmHg or MAP < 65 mmHg
- Cocaine induced tachycardia

## Indications & Dose

- **Hypertensive Emergencies (SBP > 220 or DBP > 120 mmHg AND HR > 60) if labetalol not available**
  - **Adult:**
    - IV/IO: 5 mg **slowly** over 2 minutes; may repeat every 5 minutes as needed; maximum total dose 15 mg
  - **Pediatric:**
    - **Not Recommended**
- **Tachycardia – Narrow Complex – if rhythm persists despite Adenosine**
  - Narrow Regular (SVT)
  - Narrow Irregular (SVT-atrial fibrillation/atrial flutter with fixed conduction)
  - **Adult:**
    - IV/IO: 5 mg **slowly** over 2 minutes; may repeat every 5 minutes as needed until HR <100 or rhythm converts; maximum total dose 15 mg; hold if MAP is < 65 mmHg

## Adverse Effects

- Neuro: Fatigue, dizziness
- CV: Bradycardia, impaired AV node conduction, hypotension; chest pain
- GI: Nausea/vomiting
- Resp: Bronchospasm

## Considerations

- Blood pressure, heart rate, and continuous monitoring of SpO<sub>2</sub>, ETCO<sub>2</sub>, and ECG should be documented before administration, within 5 minutes of administration and throughout patient care
- Concurrent use of calcium channel blockers can result in bradycardia and hypotension

## Pharmacokinetics

- Onset: 15-30 minutes if given IV
- Duration: < 10 hours

## Pregnancy/Lactation

- Okay to use in pregnancy and breastfeeding

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# MIDAZOLAM

**Other Names:** Versed

## Actions

Midazolam is a short acting benzodiazepine; schedule IV-controlled substance. It binds the benzodiazepine receptor and enhances the effects of the brain neurotransmitter Gamma Aminobutyric Acid (GABA); can produce any level of CNS depression required including sedation, skeletal muscle relaxation, and anticonvulsant activity.

## Contraindications

- Known hypersensitivity
- Hypotension, shock
- CNS depression

## Indications & Dose

- **Airway Management – For Pain Management/Sedation following intubation AND MAP is > 65 mmHg (adult) and age appropriate (pediatric)**
  - **Adult (ages 12 years – 64 years):**
    - **IV/IO:** 5mg; may repeat every 3 minutes until desired effect
  - **Pediatric (age < 12 years):**
    - **IV/IO:** 0.1 mg/kg; maximum single dose 10 mg; may repeat every 3 minutes until desired effect
  - **Elderly (ages 65 years and older):**
    - **IV/IO:** 2 mg; repeat every 3 minutes until desired effect
  - If patient is not adequately sedated after second dose, consider [Pain Management](#)
- **Behavioral or Psychiatric Emergencies**
  - **Adult (ages 12 years – 64 years):**
    - **IM/IN:** 10 mg; may repeat every 10 minutes until desired effect
    - **IV/IO:** 5mg; may repeat every 3 minutes until desired effect
  - **Pediatric (age < 12 years):**
    - **IM/IN:** 0.2 mg/kg; maximum single dose 10 mg; may repeat every 10 minutes until desired effect
    - **IV/IO:** 0.1 mg/kg; maximum single dose 10 mg; may repeat every 3 minutes until desired effect
  - **Elderly (ages 65 years and older):**
    - **IM/IN:** 5 mg; may repeat every 10 minutes until desired effect
    - **IV/IO:** 2 mg; repeat every 3 minutes until desired effect
- **Hyperthermia or Heat Exposure: Shivering**
  - **Adult (ages 12 years – 64 years):**
    - **IM/IN:** 5 mg; may repeat every 10 minutes until desired effect
    - **IV/IO:** 2mg; may repeat every 3 minutes until desired effect
  - **Pediatric (age < 12 years):**
    - **IM/IN:** 0.2 mg/kg; maximum single dose 10 mg; may repeat every 10 minutes until desired effect
    - **IV/IO:** 0.1 mg/kg; maximum single dose 10 mg; may repeat every 3 minutes until desired effect
  - **Elderly (ages 65 years and older):**
    - **IM/IN:** 2 mg; may repeat every 10 minutes until desired effect
    - **IV/IO:** 1 mg; may repeat every 3 minutes until desired effect
- **Medication Assisted Airway Management (MAAM) – For Pain Management/Sedation following intubation AND MAP is > 65 mmHg (adult) and age appropriate (pediatric)**
  - **Adult (ages 12 years – 64 years):**
    - **IV/IO:** 5mg; may repeat every 3 minutes until desired effect
  - **Pediatric (age < 12 years):**
    - **IV/IO:** 0.1 mg/kg; maximum single dose 10 mg; may repeat every 3 minutes until desired effect
  - **Elderly (ages 65 years and older):**
    - **IV/IO:** 2 mg; repeat every 3 minutes until desired effect
  - If patient is not adequately sedated after second dose, consider [Pain Management](#)
- **OB Complications – Seizure**
  - **Pregnant Patients Actively Seizing:**
    - **IM:** 10 mg; may repeat every 5 minutes until seizure stops
    - **IV/IO:** 5mg; may repeat every 3 minutes until seizure stops

- **Restraint: Chemical**
  - **Adult (ages 12 years – 64 years):**
    - **IM/IN:** 10 mg; may repeat every 10 minutes until desired effect
    - **IV/IO:** 5mg; may repeat every 3 minutes until desired effect
  - **Pediatric (age < 12 years):**
    - **IM/IN:** 0.2 mg/kg; maximum single dose 10 mg; may repeat every 10 minutes until desired effect
    - **IV/IO:** 0.1 mg/kg; maximum single dose 10 mg; may repeat every 3 minutes until desired effect
  - **Elderly (ages 65 years and older):**
    - **IM/IN:** 5 mg; may repeat every 10 minutes until desired effect
    - **IV/IO:** 2 mg; repeat every 3 minutes until desired effect
- **Sedation-Moderate to Severe Anxiety**
  - **Adult (ages 12 years – 64 years):**
    - **IM/IN:** 5 mg; may repeat every 10 minutes until desired effect
    - **IV/IO:** 2mg; may repeat every 3 minutes until desired effect
  - **Pediatric (age < 12 years):**
    - **IM/IN:** 0.2 mg/kg; maximum single dose 10 mg; may repeat every 10 minutes until desired effect
    - **IV/IO:** 0.1 mg/kg; maximum single dose 10 mg; may repeat every 3 minutes until desired effect
  - **Elderly (ages 65 years and older): Elderly patients are more prone to adverse reactions**
    - **IM/IN:** 2 mg; may repeat every 10 minutes until desired effect
    - **IV/IO:** 1 mg; repeat every 3 minutes until desired effect
- **Sedation-Procedural (if MAP > 65 mmHg or age-appropriate)**
  - **Adult (ages 12 years and older):**
    - **IV/IO:** 5mg; may repeat every 3 minutes until desired effect
  - **Pediatric (< 12 years):**
    - **IV/IO:** 0.1 mg/kg; maximum single dose 10 mg; may repeat every 3 minutes until desired effect
- **Sedation - Airway Management – For Pain Management/Sedation following intubation AND MAP is > 65 mmHg (adult) and age appropriate (pediatric)**
  - **Adult (ages 12 years – 64 years):**
    - **IV/IO:** 5mg; may repeat every 3 minutes until desired effect
  - **Pediatric (age < 12 years):**
    - **IV/IO:** 0.1 mg/kg; maximum single dose 10 mg; may repeat every 3 minutes until desired effect
  - **Elderly (ages 65 years and older):**
    - **IV/IO:** 2 mg; repeat every 3 minutes until desired effect
- **Seizure** – (IM administration preferred if IV access has not been previously established)
  - **Adult (ages 12 years and older):**
    - **IM:** 10 mg; may repeat every 5 minutes until seizure stops
    - **IV/IO:** 5mg; may repeat every 3 minutes until seizure stops
  - **Pediatric (age < 12 years):**
    - **IM:** < 13 kg: 0.2 mg/kg; maximum single dose 2.6 mg; may repeat every 5 minutes until seizure stops
    - **IM:** 13-40 kg: 5 mg; may repeat every 5 minutes until seizure stops
    - **IM:** > 40 kg: 10 mg; may repeat every 5 minutes until seizure stops
    - **IV/IO:** 0.1 mg/kg; maximum single dose 5 mg; may repeat every 3 minutes until seizure stops

#### **Adverse Effects**

- Neuro: Confusion, sedation; disinhibition resulting in agitation
- CV: Bradycardia, hypotension
- Resp: Respiratory depression

#### **Considerations**

- For patients experiencing a seizure, do not delay medication administration to establish IV access
- Blood pressure, heart rate, and continuous monitoring of SpO<sub>2</sub>, ETCO<sub>2</sub>, and ECG should be documented before administration, within 5 minutes of administration and throughout patient care
- Concomitant use with other sedatives, benzodiazepines, or opioids may result in profound sedation, respiratory depression, coma, and death
- Use with caution in patients under the effects of alcohol and other CNS depressants
- If 5 mg/mL concentration is available may give pediatric dose IN

**Pharmacokinetics**

- Onset:
  - Within 3-5 minutes if given **IV**
  - Within 4-8 minutes if given **IN**
  - Within 10-15 minutes if given **IM**
- Duration:
  - Sedation: 7 – 75 minutes when given **IV**
  - Other routes vary; 1-12 hours

**Pregnancy/Lactation**

- Okay to use in pregnancy and breastfeeding

PEDIATRIC VITAL SIGNS				
Age	Pulse	Respiratory Rate	Systolic BP Lowest Normal	Lowest Normal MAP
Newborn	120-160	30-60	60	40
Up to 1 year	100-140	30-60	70	42
1-3 years	100-140	20-40	76	45
4-6 years	80-120	20-30	80	48
7-9 years	80-120	16-24	84	52
10-12 years	80-120	16-20	90	55
13-14 years	60-100	16-20	90	60

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# MORPHINE

**Other Names:** Astromorph, MS Contin, Duramorph, Kadian

**Actions**

Morphine is an opioid analgesic that binds to opioid receptors to primarily decrease pain. Morphine reduces stimulation of the sympathetic nervous system caused by pain and anxiety, thereby decreasing myocardial oxygen demand. Morphine also decreases preload and afterload through peripheral vasodilation.

**Contraindications**

- Known hypersensitivity to narcotics
- Hypotension, shock
- Respiration depression with an unsecured airway

**Indications & Dose**

- **Pain Management: Moderate acute pain**
  - **All ages < 65 years:**
    - **IV/IO/IM:** 0.05 mg/kg; maximum initial dose 5 mg; may repeat every 10 minutes as needed for pain control.
  - **Elderly (age 65 years and older) OR otherwise impaired:**
    - **IV/IO/IM:** 0.025 mg/kg; maximum initial dose 2.5 mg; may repeat every 10 minutes as needed for pain control
- **Pain Management: Severe Acute Pain**
  - **All ages < 65 years:**
    - **IV/IO/IM:** 0.1 mg/kg; maximum initial dose 10 mg; may repeat every 10 minutes as needed for pain control.
  - **Elderly (age 65 years and older) OR otherwise impaired:**
    - **IV/IO/IM:** 0.05 mg/kg; maximum initial dose 5 mg; may repeat every 10 minutes as needed for pain control
- **Medication Assisted Airway Management (MAAM) – For pain management/sedation following intubation AND MAP is > 65 mmHg (adult) or age-appropriate MAP (pediatric)**
  - **All ages:**
    - **IV/IO:** 0.1 mg/kg max single dose 10 mg repeat every 10 minutes until desired effect

**Adverse Effects**

- Neuro: Drowsiness, syncope
- CV: Hypotension, palpitations
- GI: Nausea
- Skin: Facial flushing, itching
- Resp: Respiratory depression

**Considerations**

- Blood pressure, heart rate, respiratory rate, and continuous monitoring of SpO2, ETCO2, and ECG should be documented before administration, within 5 minutes of administration and throughout patient care
- **Moderate pain:** Patient rates pain as 4-7 using a pain scale 1-10
- **Severe pain:** Patient rates pain as 8-10 using a pain scale 1-10
- Use with caution in elderly patients and patient with renal/hepatic failure
- Concomitant use with other sedatives, benzodiazepines, or opioids may result in profound sedation, respiratory depression, coma, and death

PEDIATRIC VITAL SIGNS				
Age	Pulse	Respiratory Rate	Systolic BP Lowest Normal	Lowest Normal MAP
Newborn	120-160	30-60	60	40
Up to 1 year	100-140	30-60	70	42
1-3 years	100-140	20-40	76	45
4-6 years	80-120	20-30	80	48
7-9 years	80-120	16-24	84	52
10-12 years	80-120	16-20	90	55
13-14 years	60-100	16-20	90	60

**Pharmacokinetics**

- Onset: 5-15 minutes if given IV
- Duration: 3-5 hours

**Pregnancy/Lactation**

- Okay to use in pregnancy and breastfeeding

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# NALOXONE

**Other Names:** Narcan

## Actions

Naloxone is an opioid antagonist. It competes and displaces opioids at opioid receptor sites.

## Contraindications

- Newborn (< 24 hours old)
- Known hypersensitivity
- Breathing adequately

**Indications & Dose** – Administration of naloxone should **NOT** occur until after basic [Airway Management](#)

- **Altered Mental Status** – if patient is not conscious AND evidence of opiate overdose with respiratory depression
  - **Adult or Pediatric ≥20 kg:**
    - **IN:** 1 mg (0.5 mg each nostril); may repeat every 5 minutes as needed
    - **IM:** 0.5 mg; may repeat every 5 minutes as needed
    - **IV/IO:** 0.4 mg – 0.5 mg; may repeat every 2 minutes as needed
  - **Pediatric < 20 kg:**
    - **IV/IO/IM/IN:** 0.1 mg/kg; may repeat every 2 minutes as needed; maximum single dose 2 mg
- **Overdose or Toxic Exposure**
  - **Adult or Pediatric ≥20 kg:**
    - **IN:** 1 mg (0.5 mg each nostril); may repeat every 5 minutes as needed
    - **IM:** 0.5 mg; may repeat every 5 minutes as needed
    - **IV/IO:** 0.4 mg – 0.5 mg; may repeat every 2 minutes as needed
  - **Pediatric < 20 kg:**
    - **IV/IO/IM/IN:** 0.1 mg/kg; may repeat every 2 minutes as needed; maximum single dose 2 mg
- **Cardiac Arrest: Suspected narcotic/opioid overdose**
  - **Adult or Pediatric ≥20 kg:**
    - **IV/IO/IM/IN:** 2 mg; may repeat every 2 minutes as needed; maximum total dose 10 mg
  - **Pediatric < 20 kg:**
    - **IV/IO/IM/IN:** 0.1 mg/kg; may repeat every 2 minutes as needed; maximum single dose 2 mg

## Adverse Effects

- Neuro: Agitation, combativeness, tremors
- CV: Hypertension, tachycardia, ventricular arrhythmias
- GI: Nausea, vomiting

## Considerations

- Ventilatory support should always be provided prior to naloxone administration
- Sudden reversal of opioids may lead to combativeness; consider physical restraints prior to naloxone administration
- Goal of titration is to achieve and maintain adequate respiratory drive, not necessarily consciousness
- Duration of action of naloxone may be shorter than the narcotic and patient may relapse
- May induce narcotic withdrawal in chronic opioid user (nausea, vomiting, diaphoresis, tachycardia, hypertension)
- Alteration of consciousness or respiratory depression of presumed traumatic etiology
- Positive pressure ventilation with a BVM is the treatment of choice for newborns with depressed respiratory effort due to narcotics

## Pharmacokinetics

- Onset:
  - **IV/IO:** 2 minutes; **IM:** 3-5 minutes; **IN:** 5-13 minutes
- Duration: 30-120 minutes; varies based on route of administration

## Pregnancy/Lactation

- Okay to use in pregnancy and breastfeeding

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# NITROGLYCERIN

**Other Names:** Nitrostat, Nitro-Bid, Nitro-Dur

## Actions

Nitroglycerin dilates coronary arteries and improves collateral flow to ischemic regions. It relaxes vascular smooth muscle, thereby dilating peripheral arteries and veins which decreases both preload and afterload. It also reduces left ventricle systolic wall tension, which decreases afterload and lowers the oxygen demand of the heart.

## Contraindications

- SBP < 100 mmHg
- HR > 140 or < 50
- Known hypersensitivity to nitrates
- Recent use of erectile dysfunction medications in past 48 hours such as: Viagra (sildenafil), Cialis (tadalafil), Levitra (vardenafil), Stendra (avanafil)
- Head injury

## Indications & Dose

- **Chest Pain/Acute Coronary Syndrome (ACS)**
  - **Adult:**
    - **SL:** 0.4 mg tablet or metered spray; may repeat every 5 minutes; no maximum total dose
- **Difficulty Breathing: Pulmonary Edema**
  - **Adult Systolic BP 100-159 mmHg:**
    - **SL:** 0.4 mg tablet or metered spray; may repeat every 3 minutes until symptoms improve or systolic BP drops to < 100 mmHg
  - **Adult Systolic BP 160-199 mmHg:**
    - **SL:** 0.8 mg (2 tablets or metered sprays); may repeat every 3 minutes until symptoms improve. If systolic BP drops to < 160 mmHg, proceed to dosing above.
  - **Adult Systolic BP 200 mmHg or greater:**
    - **SL:** 1.2 mg (3 tablets or metered sprays); may repeat every 3 minutes until symptoms improve. If systolic BP drops to < 200 mmHg, proceed to the appropriate dosing above.
- **Hypertensive Emergencies** (2 consecutive systolic blood pressures > 220 mmHg or diastolic BP > 120 mmHg AND HR > 60)
  - **Adult:**
    - **SL:** 0.4 mg tablet or metered spray; may repeat every 5 minutes; no maximum total dose

## Adverse Effects

- Neuro: Dizziness, headache
- CV: Hypotension, syncope

## Considerations

- Blood pressure and heart rate should be documented before administration, within 5 minutes of administration and throughout patient care
- Erectile dysfunction medications can lead to severe hypotension
- Hypotension is enhanced in the elderly and in cases of hypovolemia (dehydration)
- Nitroglycerin is not an ideal medication to treat isolated hypertension, unless the hypertension is related to pulmonary edema or chest pain

## Pharmacokinetics

- Onset:
  - **SL:** 1-3 minutes; peak effect 5 minutes
- Duration:
  - **SL:** 25 minutes

## Pregnancy/Lactation

- Okay to use in pregnancy and breastfeeding

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# NITROUS OXIDE

**Other Names:** Laughing gas, nitronox

## Actions

Nitrous Oxide is an inhaled anesthetic and analgesic. It influences Gamma Aminobutyric Acid (GABA) receptors and opiate receptors causing sedation, analgesia, and amnesia.

## Contraindications

- Known hypersensitivity
- Inability to self-administer or follow directions
- Pneumothorax
- Bowel obstruction
- 1<sup>st</sup> or 2<sup>nd</sup> trimester of pregnancy
- Penetrating eye trauma or recent eye surgery

## Indications & Dose

- Pain Management
  - **All ages:**
    - Self-administered inhalation; 50% nitrous oxide and 50% oxygen
- Sedation
  - **All ages:**
    - Self-administered inhalation; 50% nitrous oxide and 50% oxygen

## Adverse Effects

- Neuro: Altered mentation, giddiness
- GI: Nausea, vomiting
- CV: Hypotension

## Considerations

- Blood pressure, heart rate, and continuous monitoring of SpO<sub>2</sub>, ETCO<sub>2</sub>, and ECG should be documented before administration, within 5 minutes of administration and throughout patient care
- Patient must be able to self-administer and hold the mask up to their face independently
- Concomitant use with other sedatives, benzodiazepines, or opioids may result in profound sedation, respiratory depression, coma, and death

## Pharmacokinetics

- Onset:
  - Inhaled: 2-5 minutes
- Duration:
  - Effects significantly decrease 5 minutes after inhalation stopped

## Pregnancy/Lactation

- Do not use in 1<sup>st</sup> or 2<sup>nd</sup> trimester of pregnancy
- Okay to use during labor, delivery, and breastfeeding

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# NOREPINEPHRINE

**Other Names:** Levophed

## Actions

Norepinephrine is a vasopressor. It stimulates alpha- and beta-adrenergic receptors causing increased heart rate and contractility as well as vasoconstriction, thereby increasing systemic blood pressure and coronary blood flow.

## Contraindications

- Known hypersensitivity

## Indications & Dose

- **Cardiac Arrest – ROSC – Persistent hypotension or signs of shock not responding to initial fluid bolus or epinephrine push dose**
  - **Adult (> 12 years old):**
    - **IV/IO Infusion ONLY:**
      - Mix 4 mg in 250 mL NS = 16 mcg/mL *OR*
      - Mix 4 mg in 500 mL NS = 8 mcg/mL
      - **Infusion:** 4-12 mcg/min; titrate to keep MAP > 65 mmHg
    - **Pediatric (< 12 years old):**
      - **IV/IO Infusion ONLY:**
        - Mix 4 mg in 500 mL NS = 8 mcg/mL
        - **Infusion:** 0.1 mcg/kg/min; titrate to maintain age-appropriate minimum SBP; Maximum dose 2 mcg/kg/min
  - **Hypotension or Shock - Preferred for septic shock and vasodilatory (distributive) shock**
    - **Adult (> 12 years old):**
      - **IV/IO Infusion ONLY:**
        - Mix 4 mg in 250 mL NS = 16 mcg/mL *OR*
        - Mix 4 mg in 500 mL NS = 8 mcg/mL
        - **Infusion:** 4-12 mcg/min; titrate to keep MAP > 65 mmHg
      - **Pediatric (< 12 years old):**
        - **IV/IO Infusion ONLY:**
          - Mix 4 mg in 500 mL NS = 8 mcg/mL
          - **Infusion:** 0.1 mcg/kg/min; titrate to maintain age-appropriate minimum SBP; Maximum dose 2 mcg/kg/min

## Adverse Effects

- Neuro: Anxiety, headache
- CV: Cardiac arrhythmia, hypertension, reflex bradycardia, tachycardia
- Resp: Dyspnea
- Skin: Tissue necrosis if infiltration occurs, local vasoconstriction

## Considerations

- Blood pressure, heart rate, and continuous monitoring of SpO<sub>2</sub>, ETCO<sub>2</sub>, and ECG should be documented before administration, within 5 minutes of administration and throughout patient care
- Ensure IV/IO patency prior to administration and monitor carefully for signs of infiltration during administration
- IV should ideally be larger bore and placed more proximal

## Pharmacokinetics

- Onset: Within 1 minute
- Duration: 1-2 minutes

## Pregnancy/Lactation

- Okay to use in pregnancy and breastfeeding

Norepinephrine Drip					
Mix: 4 mg in 250 mL = 16 mcg/mL					
Mix: 4 mg om 500 mL = 8 mcg/mL					
Shock - All Types Dose 4 - 12 mcg/min	4 mcg/min	6 mcg/min	8 mcg/min	10 mcg/min	12 mcg/min
Ages > 12 years	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)
250 mL (16 mcg/mL)	15	22.5	30	37.5	45
500 mL (8 mcg/mL)	30	45	60	75	90

Norepinephrine Drip								
Mix: 4 mg in 500 mL = 8 mcg/mL								
Shock - All Types Starting dose 0.1 mcg/kg/min Maximum dose 2 mcg/kg/min				0.1 mcg/kg/min	0.2 mcg/kg/min	0.3 mcg/kg/min	0.4 mcg/kg/min	0.5 mcg/kg/min
Age	Broselow	Kilos	Pounds	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)	gtts/min (60 gtt tubing)
Newborn	3-5 kg	3-5 kg	6 - 11 lbs	4	7	11	15	18
6 mo	PINK	6-7 kg	13 - 15 lbs	5	10	15	21	26
9 mo	RED	8-9 kg	16 - 20 lbs	6	12	20	27	33
1 yr	PURPLE	10-11 kg	21 - 24 lbs	8	16	24	33	41
2 yrs	YELLOW	12-14 kg	25 - 31 lbs	10	20	31	42	52
4 yrs	WHITE	15-18 kg	32 - 40 lbs	13	26	40	54	67
6 yrs	BLUE	19-23 kg	41 - 48 lbs	17	34	51	69	86
8 yrs	ORANGE	24-29 kg	49 - 66 lbs	21	42	65	87	108
10 yrs	GREEN	30-36 kg	67 - 80 lbs	27	52	81	108	135
11-12 years		40 kg	88 lbs	30	60	90	120	150

Fluid Bolus 20 mL/kg				
Age	Broselow	Kilos	Pounds	NS or LR
newbrn	3-5 kg	3-5 kg	6 - 11 lbs	80 mL
6 mo	PINK	6-7 kg	13 - 15 lbs	120 mL
9 mo	RED	8-9 kg	16 - 20 lbs	180 mL
1 yr	PURPLE	10-11 kg	21 - 24 lbs	200 mL
2 yrs	YELLOW	12-14 kg	25 - 31 lbs	250 mL
4 yrs	WHITE	15-18 kg	32 - 40 lbs	350 mL
6 yrs	BLUE	19-23 kg	41 - 48 lbs	400 mL
8 yrs	ORANGE	24-29 kg	49 - 66 lbs	500 mL
10 yrs	GREEN	30-36 kg	67 - 80 lbs	600 mL
12 yrs		38.5 kg	84 lbs	800 mL
14 yrs		44 kg	97 lbs	900 mL
16 yrs + (Max Single Dose)		50 kg	110 lbs	1000 mL

PEDIATRIC VITAL SIGNS				
Age	Pulse	Respiratory Rate	Systolic BP Lowest Normal	Lowest Normal MAP
Newborn	120-160	30-60	60	40
Up to 1 year	100-140	30-60	70	42
1-3 years	100-140	20-40	76	45
4-6 years	80-120	20-30	80	48
7-9 years	80-120	16-24	84	52
10-12 years	80-120	16-20	90	55
13-14 years	60-100	16-20	90	60

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# ONDANSETRON

**Other Names:** Zofran

## Actions

Ondansetron is an antiemetic. It is a serotonin receptor antagonist that prevents vomiting impulses from being sent to the brain causing suppression of nausea and vomiting. It also reduces the activity of the vagus nerve that activates the vomiting center of the medulla oblongata.

## Contraindications

- Known hypersensitivity to ondansetron or other serotonin receptor antagonists
- Prolonged QT
- Infants <6 months of age

## Indications & Dose

- Nausea or Vomiting
  - **Adult ≥ 12 years:**
    - **ODT/PO/IV/IO:** 8 mg; one time only
    - **IM:** 8 mg one time only; use thigh or gluteal site only
  - **Pediatric < 12 years of age:**
    - **PO/IV/IO:** 0.2 mg/kg; max initial dose 8 mg one time dose
    - **IM:** 0.2 mg/kg; maximum initial dose 8 mg one time dose; use thigh or gluteal site only
    - **ODT: Weight based dosing:**
      - 8-15 kg: 2 mg; one time only
      - 15.1 kg to 30 kg: 4 mg; one time only
      - 30 kg: 8 mg; one time only

## Adverse Effects

- Neuro: Drowsiness, headache
- CV: Bradycardia, tachycardia, QT prolongation
- GI: Dry mouth, diarrhea, constipation
- Musculo: Weakness

## Considerations

- Use caution when administering to patients with other serotonergic medications (SSRIs, SNRIs, MAOIs, fentanyl, lithium, tramadol, and/or methylene blue) due to risk of serotonin syndrome

## Pharmacokinetics

- Onset: < 30 minutes
- Duration: 6 hours

## Pregnancy/Lactation

- Okay to use in pregnancy and breastfeeding

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# OXYGEN

Other Names:

Actions

Oxygen is a colorless, odorless, and tasteless gas essential to living organisms. Oxygen is taken up via respiration and used in aerobic metabolism to create energy.

Contraindications

- Flammable environment

Indications & Dose

- Using an oxygen delivery device appropriate for the patient, titrate oxygen to the lowest level to maintain pulse oximetry (SpO2) > 93%. In patients with severe underlying lung disease, titrate oxygen to the lowest level to maintain SpO2 between 88- 92%. Presentations include, but are not limited to:
  - Difficulty breathing
  - Evidence of ineffective oxygenation or ventilations
  - Respiratory failure
  - Inability to maintain patency of airway
- Do not withhold oxygen if patient is having difficulty breathing or if unable to assess an oxygen saturation
- Cardiac Arrest:
  - Administer passive oxygenation via nasal cannula or non-rebreather or via Bag Mask Ventilation 1 breath every 6 seconds, approximately 1 every 10 compressions or a ratio 30:2 (compressions : ventilations)

Delivery Device & Oxygen Flow Rate	% of Oxygen Delivered	Indications	Notes
Blow-by	<30%	Use for spontaneously breathing children who require low doses of oxygen and do not tolerate a mask	Best delivered at a flow rate of a least 10L/minute through a reservoir (e.g., a simple mask)
Low-flow Nasal Cannula 1-6 L/minute	25% - 45%	Use to deliver low-dose oxygen to spontaneously breathing patients	Actual percent of oxygen delivered affected by patient's respiratory rate, tidal volume, and extent of mouth breathing. In infants, limit flow to 2L/minute or less to avoid inadvertent administration of positive airway pressure.
Simple Mask 6-10 L/minute	35% - 50%	Use for both mouth and/or nose breathers who require a higher percentage of oxygen than a nasal cannula can provide	Can be used for patient's experiencing nasal irritation or epistaxis. Should be used for patients who are strictly mouth breathers.
Non-Rebreather Mask 10-15 L/minute	65% - 95%	Use to deliver high-dose oxygen to spontaneously breathing patients	Tight mask fit required to deliver higher concentrations of oxygen. <i>Oxygen flow needs to be sufficient to ensure the reservoir bag remains two-thirds (2/3) full during inspiration.</i>

Adverse Effects

- None

Considerations

- Patient with COPD may develop a hypoxic drive to breathe. As a result, administering high concentrations of oxygen may suppress their respiratory drive. Oxygen should still be administered when clinically indicated.
- Although supplemental oxygen is valuable in many clinical situations, excessive or inappropriate supplemental oxygen can be detrimental and cause cellular injury, particularly in the lungs.

Pharmacokinetics

- Onset: Immediate

Pregnancy/Lactation

- Okay to use in pregnancy and breastfeeding

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# OXYMETAZOLINE

**Other Names:** Afrin

**Actions**

Topical acting alpha-adrenergic receptor agonist causing nasal mucosa vasoconstriction

**Contraindications**

- Known hypersensitivity
- Less than 6 years old

**Indications & Dose**

- **Epistaxis (Nosebleed)**
  - **Age ≥ 6 years:**
    - 2 sprays up bleeding nostril(s) after having patient blow out blood clots. Pinch nose with fingers or clamp after oxymetazoline spray

**Adverse Effects**

- Resp: Discomfort (stinging) in the nose, mouth, throat; sneezing

**Considerations**

- Not to be used for more than 3 days in a row because nasal tissue can become accustomed to its effects and become swollen when it isn't used (Rebound congestion- Rhinitis medicamentosa).

**Pharmacokinetics**

- Onset: within 10 minutes
- Duration: up to 12 hours

**Pregnancy/Lactation**

- One time use of oxymetazoline during pregnancy or breastfeeding is well tolerated. Not indicated for long term use in pregnancy.

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# OXYTOCIN

**Other Names:** Pitocin

**Actions**

Oxytocin stimulates uterine contractions by acting on receptors in the uterus. This decreases abnormal postpartum bleeding due to uterine atony.

**Contraindications**

- Known hypersensitivity
- Fetus not yet delivered

**Indications & Dose**

- **Childbirth – Complications: Postpartum Hemorrhage**
  - **All Ages:**
    - **IM Only:** 10 Units

**Adverse Effects**

- Neuro: Headache
- CV: Tachycardia, bradycardia, cardiac arrhythmias, QTc prolongation, hypotension
- GI: Nausea and vomiting

**Considerations**

- **IM use only: IV administration can cause cardiovascular collapse**
- Postpartum hemorrhage is generally defined as more than 500 ml blood loss after vaginal delivery
- Give in conjunction with uterine fundal massage
- Can be given before or after placental delivery

**Pharmacokinetics**

- Onset: 3-5 minutes
- Duration: 2-3 hours

**Pregnancy/Lactation**

- Should only be given after delivery in the prehospital setting
- Safe in breastfeeding

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# PHENYLEPHRINE

**Other Names:** NeoSynephrine

## Actions

Phenylephrine is a vasopressor and vasoconstrictor. It stimulates alpha-1 adrenergic receptors causing strong vasoconstriction effects in both veins and arteries enhancing cardiac preload without exerting significant effects on myocardial workload. Phenylephrine is contraindicated in hypovolemic shock. It is a good drug choice for cardiogenic and vasodilatory (distributive) shock.

## Contraindications

- Known hypersensitivity
- Hypovolemic shock
- Hypertension

## Indications & Dose

- **Epistaxis (Nosebleed) – may use nasal spray or mucosal atomizing device (0.1 mL = 1 spray)**
  - **Ages ≥ 6 years:**
    - **Nasal spray:** 2-3 sprays per nostril
    - **Mucosal atomizer:** 0.3 mL = 3 sprays
  - **≤ 6 years:**
    - **Nasal spray:** 1 spray per nostril
    - **Mucosal atomizer:** 0.1 mL = 1 spray
- **Hypotension or Shock – Cardiogenic or Vasodilatory (distributive)**
  - **All ages greater than 10 kg:**
    - **IV/IO Push Dose ONLY: Mix 10 mg phenylephrine in 100 mL normal saline = 100 mcg/mL**
      - Withdraw 10 mL of diluted solution into 10 mL syringe and apply label
        - Starting dose: 50 mcg = 0.5 mL every 2-5 minutes as needed to achieve age-appropriate MAP
        - If MAP not significantly improved, increase each subsequent dose by 50 mcg
          - 2<sup>nd</sup> dose = 100 mcg
          - 3<sup>rd</sup> dose = 150 mcg
          - Maximum dose 400 mcg or 5 mcg/kg

## Adverse Effects

- Neuro: Anxiety
- CV: Hypertension, reflex bradycardia
- Skin: Burning sensation at infusion site, local vasoconstriction

## Considerations

- Blood pressure, heart rate, and continuous monitoring of SpO<sub>2</sub>, ETCO<sub>2</sub>, and ECG should be documented before administration, within 5 minutes of administration and throughout patient care
- Ensure IV/IO patency prior to administration and monitor carefully for signs of infiltration during administration
- IV should ideally be larger bore and placed more proximal

## Pharmacokinetics

- Onset:
  - IV: 1-3 minutes
  - IN: < 2minutes
- Duration:
  - IV: 10-20 minutes
  - IN: 2-4 hours

## Pregnancy/Lactation

- Okay to use in pregnancy and breastfeeding

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# PROCHLORPERAZINE

**Other Names:** Compazine

## Actions

Prochlorperazine has both antiemetic and antipsychotic effects and is one of the first-line recommended treatments for severe migraine episodes. Its effectiveness is linked to its influence on dopamine—a neurotransmitter that acts on the brain to modulate muscle movement, emotions, and pain, but also on gastrointestinal activity.

## Contraindications

- Known hypersensitivity
- Age < 2 years
- Weight < 9 kg
- History of tardive dyskinesia or extrapyramidal reaction to prochlorperazine

## Indications & Dose

- **Dizziness or Vertigo**
  - **Adult (ages 18 – 64 years):**
    - PO/IM/IV/IO: 10 mg; administer IV/IO ***slowly*** over a minimum of 2 minutes
  - **Elderly (ages 65 years and older):**
    - PO/IM/IV/IO: 5 mg; administer IV/IO ***slowly*** over a minimum of 2 minutes
  - **Pediatric (≥ 2 years and ≥ 9 kg):**
    - PO/IM/IV/IO: 0.1 mg/kg max single dose 10 mg; administer IV/IO ***slowly*** over a minimum of 2 minutes
- **Nausea or Vomiting**
  - **Adult (ages 18 – 64 years)**
    - PO/IM/IV/IO: 10 mg; administer IV/IO ***slowly*** over a minimum of 2 minutes
  - **Elderly (ages 65 years and older):**
    - PO/IM/IV/IO: 5 mg; administer IV/IO ***slowly*** over a minimum of 2 minutes
  - **Pediatric (≥ 2 years and ≥ 9 kg):**
    - PO/IM/IV/IO: 0.1 mg/kg max single dose 10 mg; administer IV/IO ***slowly*** over a minimum of 2 minutes
- **Pain Management -Headache (migraine) with normal neuro exam**
  - **Adult (ages 18 – 64 years):**
    - PO/IM/IV/IO: 10 mg; administer IV/IO ***slowly*** over a minimum of 2 minutes
  - **Elderly (ages 65 years and older):**
    - PO/IM/IV/IO: 5 mg; for IV/IO, administer ***slowly*** over a minimum of 2 minutes
  - **Pediatric (≥ 2 years and ≥ 9 kg):**
    - PO/IM/IV/IO: 0.1 mg/kg max single dose 10 mg; administer IV/IO ***slowly*** over a minimum of 2 minutes

## Adverse Effects

- Neuro: Blurred vision, drowsiness, dizziness, confusion, extrapyramidal symptoms
- CV: Tachycardia, orthostatic hypotension

## Considerations

- Dystonic reaction and restlessness should be treated with [Benadryl \(Diphenhydramine\)](#). May give diphenhydramine prior to administering an antiemetic to prevent dystonic reactions.

## Pharmacokinetics

- Onset: IV/IO Peak antiemetic effect: 30-60 minutes
- Duration: 3 -4 hours

## Pregnancy/Lactation

- Okay to use in pregnancy and breastfeeding

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# PROMETHAZINE

**Other Names:** Phenergan, Promethegan

## Actions

Promethazine is a phenothiazine derivative that crosses the blood brain barrier and acts as a dopamine antagonist and anti-histamine. It reduces stimuli to the brainstem reticular system which also reduces nausea and vomiting.

## Contraindications

- Known hypersensitivity to promethazine or other phenothiazines
- Less than 2 years of age

## Indications & Dose

- Dizziness or Vertigo
  - **Adult (ages > 14 - 64 years):**
    - **PO/IM:** 25 mg
    - **IV/IO:** 12.5 mg; administer IV/IO ***slowly*** over a minimum of 2 minutes
  - **Elderly (age 65 years and older):**
    - **PO/IM:** 12.5 mg
    - **IV/IO:** 6.25 mg; administer IV/IO ***slowly*** over a minimum of 2 minutes
  - **Pediatric (≥ 2 years – 14 years):**
    - **PO/IM:** 0.25 mg/kg maximum single dose 25 mg
    - **IV/IO:** 0.25 mg/kg; administer ***slowly*** over a minimum of 2 minutes; maximum single dose 12.5 mg
- Nausea or Vomiting
  - **Adult (ages > 14 - 64 years):**
    - **PO/IM:** 25 mg
    - **IV/IO:** 12.5 mg; administer IV/IO ***slowly*** over a minimum of 2 minutes
  - **Elderly (age 65 years and older):**
    - **PO/IM:** 12.5 mg
    - **IV/IO:** 6.25 mg; administer IV/IO ***slowly*** over a minimum of 2 minutes
  - **Pediatric (≥ 2 years – 14 years):**
    - **PO/IM:** 0.25 mg/kg maximum single dose 25 mg;
    - **IV/IO:** 0.25 mg/kg; administer ***slowly*** over a minimum of 2 minutes; maximum single dose 12.5 mg
- Pain Management -Headache (migraine) with normal neuro exam
  - **Adult (ages > 14 - 64 years):**
    - **PO/IM:** 25 mg
    - **IV/IO:** 12.5 mg; administer IV/IO ***slowly*** over a minimum of 2 minutes
  - **Elderly (age 65 years and older):**
    - **PO/IM:** 12.5 mg
    - **IV/IO:** 6.25 mg; administer IV/IO ***slowly*** over a minimum of 2 minutes
  - **Pediatric (≥ 2 years – 14 years):**
    - **PO/IM:** 0.25 mg/kg maximum single dose 25 mg
    - **IV/IO:** 0.25 mg/kg; administer ***slowly*** over a minimum of 2 minutes; maximum single dose 12.5 mg

## Adverse Effects

- Neuro: Dystonic Reaction, drowsiness, delirium, sedation
- Skin: Pain with IM injection

## Considerations

- Other IV/IM anti-nausea medications are preferable over Promethazine, if available and patient not allergic.
- Dystonic reaction and restlessness should be treated with [Benadryl \(Diphenhydramine\)](#). May give diphenhydramine prior to administering an antiemetic to prevent dystonic reactions.
- Promethazine is acidic (pH 4 to 5.5). Intraarterial administration and extravasation have been associated with local tissue necrosis.
- Myasthenia gravis may be exacerbated by anti-cholinergic effects of promethazine
- Narrow-angle glaucoma may be exacerbated by anti-cholinergic effects of promethazine

**Pharmacokinetics**

- Onset: IV 5 minutes; Oral and IM 20 minutes
- Duration: usually 4-6 hours (up to 12 hours)

**Pregnancy/Lactation**

- Okay to use in pregnancy and breastfeeding

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# ROCURONIUM

**Other Names:** Zemuron, Esmeron

## Actions

Rocuronium is a non-depolarizing skeletal muscle relaxant that blocks acetylcholine from binding to receptors on motor endplates which prevents skeletal muscles from contracting.

## Contraindications

- Known hypersensitivity

## Indications & Dose

- **Medication Assisted Airway Management (MAAM):** Option for drug-assisted paralysis for airway placement when succinylcholine contraindicated or not available
  - **All Ages:**
    - **IV/IO:** 1 mg/kg rapid IV push; maximum dose 100 mg

## Adverse Effects

- CV: Increased peripheral vascular resistance, tachycardia, hypertension, transient hypotension

## Considerations

- Should not be administered unless personnel are confident they will be able to secure an airway
- Rocuronium in doses sufficient for rapid **Medication Assisted Airway Management (MAAM)** cause paralysis that lasts a lot longer than succinylcholine
- Rocuronium does not provide analgesia or sedation, patients receiving this medication must receive a sedative (induction agent) prior to administration and throughout paralysis.
- Rocuronium lasts longer in the body than Etomidate or Ketamine, therefore, if either of these drugs was used for induction, it is crucial to provide additional sedation promptly after intubating the patient.
- Ketamine or fentanyl is the preferred agent for post-intubation sedation as there is likely a component of pain/discomfort with intubation and these medications are less likely than midazolam to alter hemodynamics.
- Myasthenia Gravis may have prolonged paralysis

## Pharmacokinetics

- Onset: 1-2 minutes
- Duration: 20-60 minutes

## Pregnancy/Lactation

- Rocuronium crosses into the placenta and causes fetal paralysis. Not recommended for patients delivering.
- Safe in breastfeeding

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# SODIUM BICARBONATE

## Other Names:

### Actions

Sodium bicarbonate buffers excess hydrogen ion concentration, raising blood pH, and reversing the clinical manifestations of acidosis. Additionally, it indirectly affects the movement of potassium into cells, thereby decreasing the serum level of potassium.

### Contraindications

- Known hypersensitivity

### Indications & Dose

- **Hyperkalemia: After administration of calcium**
  - **Adult ≥12 years:**
    - **IV/IO:** 50 mEq over 5 minutes. Single dose.
  - **Pediatric < 12 years:**
    - **IV/IO:** 1 mEq/kg over 5 minutes, max 50 mEq. Single dose.
- **Overdose or Toxic Exposure-Tricyclic Antidepressant (QRS > 0.12 seconds)**
  - **All ages:**
    - **IV/IO:** 1 mEq/kg; may repeat every 5 minutes until adequate response (see below).

### Adverse Effects

- CV: CHF exacerbation, edema
- GI: Nausea and vomiting
- Endo: Hyponatremia, hypokalemia, hypocalcemia
- Skin: Tissue necrosis with extravasation

### Considerations

- Sodium bicarbonate is not compatible with numerous medications
- To decrease the risk of extravasation, use a large bore IV line whenever possible
- If extravasation occurs, Do **NOT** flush the line. Stop infusion immediately and disconnect IV.
- For known or suspected hyperkalemia, calcium should always be given prior to sodium bicarbonate to help stabilize the cardiac cell membrane.
- For TCA overdose, continue to administer sodium bicarbonate until QRS < 100 msec unless the patient has a known bundle branch block.

### Pharmacokinetics

- Onset: Immediate
- Duration: 8-10 minutes

### Pregnancy/Lactation

- Okay to use in pregnancy and breastfeeding

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# SUCCINYLCHOLINE

**Other Names:** Anectine

**Actions**

Succinylcholine is a depolarizing neuromuscular blocker that causes paralysis. It binds to acetylcholine receptors producing depolarization of the muscle membrane which often leads to fasciculations and some muscle contractions. Succinylcholine should be used in combination with a sedative (induction medication) to render a patient rapidly unconscious and flaccid to facilitate emergency endotracheal intubation and to minimize the risk of aspiration.

**Contraindications**

- Known hypersensitivity
- History of malignant hyperthermia (if history known)
- Suspected hyperkalemia
- Burn injury > 72 hours
- Myasthenia gravis (paralysis ineffective)
- Muscular dystrophy

**Indications & Dose**

- **Airway Management – Advanced Airway – Medication Assisted Airway Management (MAAM):** Option for drug-assisted endotracheal intubation paralysis
  - **Adult ≥ 10 years old:**
    - IV/IO: 1.5 mg/kg rapid IV push; maximum dose 200 mg
  - **Pediatric < 10 years old:**
    - IV/IO: 2 mg/kg rapid IV push; maximum dose 200 mg

Medication Assisted Airway: Paralysis				Succinylcholine 200mg/10mL	
Age	Broselow	Kilos	Pounds	mg	mL
newbrn	3-5 kg	3-5 kg	6 - 11 lbs	10	0.5
6 mo	PINK	6-7 kg	13 - 15 lbs	14	0.7
9 mo	RED	8-9 kg	16 - 20 lbs	18	0.9
1 yr	PURPLE	10-11 kg	21 - 24 lbs	20	1
2 yrs	YELLOW	12-14 kg	25 - 31 lbs	26	1.3
4 yrs	WHITE	15-18 kg	32 - 40 lbs	30	1.5
6 yrs	BLUE	19-23 kg	41 - 48 lbs	40	2
8 yrs	ORANGE	24-29 kg	49 - 66 lbs	60	3
10 yrs	GREEN	30-36 kg	67 - 80 lbs	70	3.5
		40 kg	88 lbs	60	3
		45 kg	99 lbs	70	3.5
		50 kg	110 lbs	75	3.75
		55 kg	121 lbs	85	4.25
		60 kg	132 lbs	90	4.5
		70 kg	154 lbs	105	5.25
		80 kg	176 lbs	120	6
		90 kg	198 lbs	135	6.75
		100 kg	220 lbs	150	7.5
		110 kg	242 lbs	165	8.25
		120 kg	264 lbs	180	9
<b>MAX DOSE:</b>		133+ kg	293 + lbs	200	10

**Adverse Effects**

- Neuro: **DOES NOT PROVIDE SEDATION**, intraocular pressure
- CV: Bradycardia, dysrhythmias, hypotension
- Resp: Respiratory arrest
- Musculo: Trismus, fasciculations

**Considerations**

- Should not be administered unless personnel are confident they will be able to secure an airway
- Succinylcholine does not provide analgesia or sedation, patients receiving this medication must receive a sedative (induction agent) prior to administration.
- If cardiac arrest occurs shortly after administration, consider **Hyperkalemia** and if suspected treat immediately.
- Lidocaine, beta blockers, magnesium sulfate, and other neuromuscular blockers enhance blocking action
- Paralysis starts in the eyelids and jaw, progresses to extremities, abdomen, and finally diaphragm and intercostal muscles.

**Pharmacokinetics**

- Onset: 60-90 seconds
- Duration: 4 – 5 minutes

**Pregnancy/Lactation**

- Okay to use in pregnancy and breastfeeding if **Airway Management** is needed to survive

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# TETRACAINE

**Other Names:** Altacaine, Tetcaine

**Actions**

Local ophthalmic anesthetic that blocks the initiation and conduction of nerve impulses.

**Contraindications**

- Known hypersensitivity

**Indications & Dose**

- **Traumatic Injuries – Eye Injuries**
  - **All Ages:**
    - **Ophthalmic:** Instill 1-2 drops in affected eye(s) to control pain, repeat every 5-10 minutes as needed to a maximum of three doses.

**Adverse Effects**

- Eye: conjunctival erythema (transient), lacrimation (tearing), transient burning or stinging in the eyes

**Considerations**

- Advise patients not to rub their eyes. Because of numbing, they could cause a corneal abrasion by rubbing and not realize it.

**Pharmacokinetics**

- Onset: 30 seconds
- Duration: 10-20 minutes

**Pregnancy/Lactation**

- Okay to use in pregnancy and breastfeeding

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# TRANEXAMIC ACID (TXA)

**Other Names:** Cyklokapron

## Actions

Tranexamic Acid is an antifibrinolytic (prevents clot breakdown) amino acid that has been shown to reduce mortality when given to trauma patients.

## Contraindications

- Known hypersensitivity
- Greater than 3 hours from time of injury
- Non-traumatic hemorrhagic shock (e.g., GI bleed)
- Hemorrhagic shock stabilized by other means
- Hypercoagulopathy

## Indications & Dose

- **Hypotension or Shock – Traumatic hemorrhage**
  - **Adult:** > 18 years old with major trauma and clinical evidence of marked blood loss, internal or external with any one of the following:
    - HR > 110 OR SBP < 90
      - **Slow IV/IO:** 20 mg/kg mixed in 100 cc NS/LR/D5W and infused over 10 minutes; maximum initial dose 1 gram. **DO NOT administer as an IV bolus**
- **Hemorrhage Control – Traumatic hemorrhage**
  - **Adult:** > 18 years old with major trauma and clinical evidence of marked blood loss, internal or external with any one of the following:
    - HR > 110 OR SBP < 90
      - **Slow IV/IO:** 20 mg/kg mixed in 100 cc NS/LR/D5W and infused over 10 minutes; maximum initial dose 1 gram. **DO NOT administer as an IV bolus**
- **Traumatic Injuries – Traumatic hemorrhage**
  - **Adult:** > 18 years old with major trauma and clinical evidence of marked blood loss, internal or external with any one of the following:
    - HR > 110 OR SBP < 90
      - **Slow IV/IO:** 20 mg/kg mixed in 100 cc NS/LR/D5W and infused over 10 minutes; maximum initial dose 1 gram. **DO NOT administer as an IV bolus**

## Adverse Effects

- Neuro: Headache, cerebral edema, seizure
- CV: Hypotension
- GI: Nausea, vomiting
- Musculo: Muscle cramps
- Hemat: Thromboembolism

## Considerations

- TXA did not reduce mortality in post-partum hemorrhage, GI bleeding, and head bleeds.
- Drug should be administered as early as possible, but NOT initiated beyond 3 hours from time of injury
- Patients with history of previous clotting disorders (DVT) may be at higher risk for developing clots
- Rapid administration may cause hypotension
- Use a filter needle if drawing from an ampule
- Drug must be properly maintained between 15-30° Celsius (59-86° Fahrenheit)

## Pharmacokinetics

- Onset: As early as 3-4 minutes
- Duration: Max effect within 4 hours; delayed effects up to 48 hours

## Pregnancy/Lactation

- Okay to use in pregnancy and breastfeeding

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# VECURONIUM

**Other Names:** norcuron

**Actions**

Vecuronium is a long-acting, non-depolarizing neuromuscular blocker. It inhibits transmission of nerve impulses by competitively binding with cholinergic receptor sites, antagonizing the action of acetylcholine.

**Contraindications**

- Known hypersensitivity

**Indications & Dose**

- **Medication Assisted Airway Management (MAAM):** Option for drug-assisted paralysis for airway placement when succinylcholine contraindicated or not available
  - **All Ages:**
    - **IV/IO:** 0.1 mg/kg

**Adverse Effects**

- CV: Tachycardia
- Resp: Respiratory arrest
- Musculo: Prolonged muscle weakness

**Considerations**

- Blood pressure, heart rate, and continuous monitoring of SpO2, ETCO2, and ECG should be documented before administration, within 5 minutes of administration and throughout patient care
- Patients receiving vecuronium must also receive sedation. Paralytic action does not affect level of consciousness or pain sensation

**Pharmacokinetics**

- Onset: 2 – 5 minutes
- Duration: 25 – 40 minutes

**Pregnancy/Lactation**

- Use with caution in pregnancy and breastfeeding

PEDIATRIC VITAL SIGNS				
Age	Pulse	Respiratory Rate	Systolic BP Lowest Normal	Lowest Normal MAP
Newborn	120-160	30-60	60	40
Up to 1 year	100-140	30-60	70	42
1-3 years	100-140	20-40	76	45
4-6 years	80-120	20-30	80	48
7-9 years	80-120	16-24	84	52
10-12 years	80-120	16-20	90	55
13-14 years	60-100	16-20	90	60

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# TACTICAL EMS GUIDELINES

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# TACTICAL EMS: GUIDELINE OVERVIEW

Tactical EMS (TEMS) provides medical support for specialized law enforcement units, such as Special Weapons and Tactics (SWAT) Teams, functioning in a high threat environment. Due to the risks associated with these operations, TEMS must be similarly specialized to operate safely and cohesively with law enforcement to provide care under tactical conditions.

Care of trauma patients in the threat environment differs from care of trauma patients in the secure environment. In tactical medicine, care of the patient must be modified to adapt to the level of risk posed to both the provider and the patient.

The dynamic and potentially violent nature of the threat environment creates unique challenges for TEMS Providers that are unlikely for general EMS providers to encounter. Trauma care in these situations is fundamentally different, requiring a balance between both medical and tactical priorities, and may result in trauma care that is limited or potentially delayed based on operational factors or conditions.

While there are some similarities, distinction should be made between a TEMS Provider and a Rescue Task Force (RTF) clinician. The TEMS Provider should be certified, highly trained, and properly equipped to operate as part of a SWAT Team in a high-risk threat environment. The RTF provider is functioning as part of a secondary team of law enforcement officers and local EMS services, providing care limited to the warm and cold zones at a tactical incident. While this is a critical duty, an RTF provider is not part of a law enforcement team and does not have the same responsibilities, capabilities, or guidelines as a TEMS Provider. The following guideline applies to TEMS Providers attached to a SWAT Team only; RTF providers should refer to their original guidelines.

This guideline is limited to activities of patient care taking place in a tactical environment and does not provide any guidance on any aspect of the tactical operation. Always refer to appropriate law enforcement and interdepartmental guidelines for on-scene command concerning actual tactical operations.

If a TEMS Team is operating outside their service area as part of a tactical operation or training exercise, medical control and guidelines will remain with Aurora South WI EMS Office of Medical Direction (OMD), unless alternate arrangements have been agreed upon in advance. OMD should be notified if operations that may involve clinical care outside of our service area are likely.

TEMS Providers assigned to a SWAT Team have different responsibilities and priorities compared to general EMS Systems. TEMS functions include the following:

- Primary function is to provide trauma and medical care for the entry team in accordance with law enforcement's operational procedures.
- Secondary function is to provide medical care for any perimeter team(s) and/or anyone injured during law enforcement operations.
- Coordinate on-scene rehabilitative activities for tactical operators, command staff, and support services.
- Provide medical preplanning for tactical operations to command staff.
- Serve as liaison between EMS agencies, hospitals, and the tactical team.

## Zones of Care

The medical care provided in a threat environment is mainly dictated by the degree of risk faced by the patient and the medical provider. During conditions in which there is a direct threat, eliminating the threat may take precedence over critical medical priorities. When they are performed, medical intervention may be limited or even deferred despite having a severely injured patient, when there is a high threat level. As the patient is moved successively to a safer environment and the threat level decreases, the complexity of medical care increases. A standardized system has been developed using three zones of care to categorize the different levels of risk and the subsequent levels of medical care that are appropriate:

- **Hot Zone** – threat environment where there is an immediate and direct threat of harm, such as active weapon fire.
- **Warm Zone** – threat environment where a potential threat exists, but the danger is not immediate and may be limited by distance and/or substantial cover.
- **Cold Zone** – area where no threat is reasonably expected to exist.

Each level defined only provides a general guideline. Every tactical operation is dynamic, and the level of threat can change instantly without warning. The transition between zones is not strictly linear and, in some situations, a patient can be moved directly from the **Hot Zone** to the **Cold Zone**.

# TEMS: CARE FOR TACTICAL PERSONNEL

**INCLUSION Criteria:** Authorized Tactical EMS (TEMS) providers attached to a SWAT Team, with an approved TEMS Endorsement and credentialing with Aurora South WI EMS.

**EXCLUSION Criteria:** All other Aurora South WI EMS care providers.

**OTHER PROTOCOLS TO CONSIDER:** [Universal Care](#) or [Universal Care – Trauma Management](#)

<b>NOTES</b>	<ul style="list-style-type: none"> <li>• <b>W: Weapons Securement (if altered or incapacitated)</b></li> <li>• <b>X: Exsanguinating Hemorrhage</b> <ul style="list-style-type: none"> <li>○ <a href="#">Hemorrhage Control</a></li> </ul> </li> <li>• <b>A: Airway</b> <ul style="list-style-type: none"> <li>○ <a href="#">Airway Management</a></li> </ul> </li> <li>• <b>B: Breathing</b> <ul style="list-style-type: none"> <li>○ <a href="#">Open chest wound</a></li> <li>○ <a href="#">Tension pneumothorax</a></li> <li>○ <a href="#">Respiratory support</a></li> </ul> </li> <li>• <b>C: Circulation</b> <ul style="list-style-type: none"> <li>○ <a href="#">Fluid Bolus – IV/IO</a></li> <li>○ <a href="#">Pain Management</a></li> <li>○ <a href="#">Tranexamic Acid (TXA)</a></li> <li>○ <a href="#">Tourniquet – Junctional</a></li> <li>○ <a href="#">Pelvic Binder</a></li> </ul> </li> <li>• <b>D: Disability</b> <ul style="list-style-type: none"> <li>○ <a href="#">Head trauma</a></li> </ul> </li> <li>• <b>E: Environmental Exposures</b> <ul style="list-style-type: none"> <li>○ <a href="#">Hyperthermia or Heat Exposure</a></li> <li>○ <a href="#">Hypothermia or Cold Exposure</a></li> </ul> </li> <li>• <b>F: Fast Extraction</b> <ul style="list-style-type: none"> <li>○ <a href="#">Secondary Assessment</a></li> <li>○ <a href="#">Plan of extraction</a></li> </ul> </li> <li>• <b>G: General Guidelines</b> <ul style="list-style-type: none"> <li>○ <a href="#">Definitive Care Disposition</a></li> <li>○ <a href="#">Helicopter EMS (HEMS)</a></li> <li>○ <a href="#">Medical Threat Assessment (MTA)</a></li> <li>○ <a href="#">Rehabilitation</a></li> <li>○ <a href="#">Special Situations</a></li> </ul> </li> </ul>
	<p>All patients who are able should attempt self-rescue by moving to cover under their own power. Once in a safer area, direct the patient to perform self-care. Perform a remote medical assessment of the patients to determine severity. If appropriate, injured tactical operators who are capable, should be encouraged to stay engaged in the fight.</p> <p>If the patient is unable to self-rescue, the primary goal is to physically move that patient as quickly and safely as possible from the <b>Hot Zone</b> to a safer location. This operation is high risk; only attempt after weighing the risks and benefits within the context of the tactical situation. When deemed appropriate, any rescue attempts should be done according to departmental guidelines.</p>

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# TEMS: X – EXSANGUINATING HEMORRHAGE

**INCLUSION Criteria:** Uncontrolled, external hemorrhage involving an extremity, not controlled by other means.

**EXCLUSION Criteria:** Other wounds controlled by means of bandaging or non-bleeding wounds.

**OTHER PROTOCOLS TO CONSIDER:** [Tourniquet – Intentional](#), [Tourniquet – Junctional](#), [Pain Management](#), [Tranexamic Acid \(TXA\)](#), [Universal Care – Trauma Management](#)

<b>HOT ZONE CARE</b>	<p>All patients who are able should attempt self-rescue by moving to cover under their own power. Once in a safer area, direct the patient to perform self-care. Perform a remote medical assessment of the patients to determine severity. If appropriate, injured tactical operators who are capable, should be encouraged to stay engaged in the fight.</p> <p>If the patient is unable to self-rescue, the primary goal is to physically move that patient as quickly and safely as possible from the <b>Hot Zone</b> to a safer location. This operation is high risk; only attempt after weighing the risks and benefits within the context of the tactical situation. When deemed appropriate, any rescue attempts should be done according to departmental guidelines.</p> <p><b>Extremities:</b></p> <ul style="list-style-type: none"> <li>• Direct patient to apply tourniquet as proximal as possible (high and tight) on the injured limb to control all major bleeding. Refer to <a href="#">Tourniquet – Intentional</a>. If patient is unable to self-apply the tourniquet, apply for them when tactical event allows. Do not apply over hard objects such as keys, phones, from pockets. Tourniquet should be placed over thin clothing or directly onto the skin.             <ul style="list-style-type: none"> <li>○ If bleeding is not controlled, apply a second tourniquet adjacent to and below the first. Do not remove first tourniquet.</li> <li>○ Verify effectiveness by confirming absent distal pulses, or bleeding has stopped.</li> <li>○ Do not release and retighten the tourniquet to check for bleeding control.</li> <li>○ Leave the tourniquet exposed for visibility.</li> </ul> </li> <li>• Remove patient from further direct threat when tactical event allows.</li> </ul>
<b>WARM ZONE CARE</b>	<p><b>Extremities:</b></p> <ul style="list-style-type: none"> <li>• If bleeding is severe or amputation is present, immediately apply a tourniquet as proximal as possible (high and tight) on injured limb to control all major bleeding. If first tourniquet fails, apply second tourniquet just distal to high and tight tourniquet. Refer to <a href="#">Tourniquet – Intentional</a>.</li> <li>• If tactical event allows to expose limb and fully evaluate, an Intentional Tourniquet can be applied directly to the skin 2-3 inches above bleeding site.             <ul style="list-style-type: none"> <li>○ If bleeding is uncontrolled, apply a second tourniquet adjacent to and above the first. Do not remove first tourniquet.</li> <li>○ Verify effectiveness by confirming absent distal pulses, or bleeding has stopped.</li> <li>○ Do not release and retighten the tourniquet to check for bleeding control.</li> <li>○ Leave the tourniquet exposed for visibility.</li> </ul> </li> <li>• If a high and tight tourniquet was applied during <b>Hot Zone</b> care, and tactical event allows, convert to an Intentional Tourniquet. Consider <a href="#">Tourniquet – Intentional</a> guideline.</li> <li>• For non-life-threatening limb bleeding, expose the wound and apply firm, direct pressure utilizing hemostatic gauze for 5 minutes. Consider <a href="#">Wound Packing</a> guideline.             <ul style="list-style-type: none"> <li>○ Attempt to isolate and identify the bleeding vessels.</li> <li>○ Clear the wound field of any pooling blood.</li> <li>○ Apply hemostatic dressing directly to bleeding vessels and hold direct pressure for 5 minutes.</li> <li>○ Consider packing wound if deep, or if bleeding has slowed/stopped, or if patient requires rapid movement or extraction where direct pressure cannot be maintained.</li> <li>○ Secure packed gauze with a pressure dressing.</li> <li>○ If bleeding penetrates the gauze, apply additional dressings, and maintain continued direct pressure. Do not remove dressings once placed.</li> </ul> </li> <li>• Extract patient to <b>Cold Zone</b> when tactical event allows.</li> </ul>

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# TEMS: X – EXSANGUINATING HEMORRHAGE NON-EXTREMITY

**INCLUSION Criteria:** Uncontrolled, external hemorrhage involving a non-extremity, not controlled by other means.

**EXCLUSION Criteria:** Other wounds controlled by means of bandaging or non-bleeding wounds.

**OTHER PROTOCOLS TO CONSIDER:** [Pain Management](#), [Tranexamic Acid \(TXA\)](#), [Universal Care – Trauma Management](#), [Tourniquet – Junctional](#)

<b>HOT ZONE CARE</b>	<p>All patients who are able should attempt self-rescue by moving to cover under their own power. Once in a safer area, direct the patient to perform self-care. Perform a remote medical assessment of the patients to determine severity. If appropriate, injured tactical operators who are capable, should be encouraged to stay engaged in the fight.</p> <p>If the patient is unable to self-rescue, the primary goal is to physically move that patient as quickly and safely as possible from the <b>Hot Zone</b> to a safer location. This operation is high risk; only attempt after weighing the risks and benefits within the context of the tactical situation. When deemed appropriate, any rescue attempts should be done according to departmental guidelines.</p> <ul style="list-style-type: none"> <li>Extract patient to <b>Warm Zone</b>, as tactical event allows.</li> </ul>
<b>WARM ZONE CARE</b>	<p><b>Non-Extremities:</b></p> <ul style="list-style-type: none"> <li>Expose the wound and apply firm, direct pressure utilizing hemostatic gauze for a minimum of three (3) minutes. Consider <a href="#">Wound Packing</a> guideline.             <ul style="list-style-type: none"> <li>Attempt to isolate and identify the bleeding vessels.</li> <li>Clear the wound field of any pooling blood.</li> <li>Apply hemostatic dressing directly to the bleeding vessels and hold direct pressure for 5 minutes.</li> <li>Consider packing wound if deep, or if bleeding has slowed/stopped, or if the patient requires rapid movement or evacuation where direct pressure cannot be maintained.</li> <li>Secure packed gauze with a pressure dressing if able.</li> <li>If bleeding penetrates the gauze, apply additional dressings, and maintain continued direct pressure. Do not remove dressings once placed.</li> </ul> </li> <li>Apply a <a href="#">Tourniquet – Junctional</a> (target compression device) to the injured region to control:             <ul style="list-style-type: none"> <li>Inguinal hemorrhage</li> <li>Axillary hemorrhage</li> <li>Pelvic stability</li> </ul> </li> <li>For bilateral application, apply a second <a href="#">Tourniquet – Junctional</a></li> <li>Extract patient to <b>Cold Zone</b> when tactical event allows.</li> </ul>
<b>NOTES</b>	<p>Application of a tourniquet or junctional tourniquet device, or IV therapy/medication administration requires transport by EMS to an appropriate hospital capable of managing the patient.</p>

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# TEMS: A – AIRWAY MANAGEMENT

**INCLUSION Criteria:** Patient in a threat environment with signs/symptoms of airway compromise

**EXCLUSION Criteria:** Not in a threat environment; no signs/symptoms of airway compromise

**OTHER PROTOCOLS TO CONSIDER:** [Basic Airway Adjunct – NPA](#), [Basic Airway Adjunct – OPA](#), [i-gel®](#), [Bag Valve Mask \(BVM\) Ventilation](#), [Needle Decompression](#), [Universal Care – Trauma Management](#)

<b>HOT ZONE CARE</b>	<p>All patients who are able should attempt self-rescue by moving to cover under their own power. Once in a safer area, direct the patient to perform self-care. Perform a remote medical assessment of the patients to determine severity. If appropriate, injured tactical operators who are capable, should be encouraged to stay engaged in the fight.</p> <p>If the patient is unable to self-rescue, the primary goal is to physically move that patient as quickly and safely as possible from the <b>Hot Zone</b> to a safer location. This operation is high risk; only attempt after weighing the risks and benefits within the context of the tactical situation. When deemed appropriate, any rescue attempts should be done according to departmental guidelines.</p> <ul style="list-style-type: none"> <li>Extract patient to <b>Warm Zone</b>, as tactical event allows.</li> </ul>
<b>WARM ZONE CARE</b>	<p><b>Airway Management:</b></p> <ul style="list-style-type: none"> <li>When inundated with patients, start by placing patient in recovery position until triage is complete.</li> <li>For patients that are alert and able to follow commands:             <ul style="list-style-type: none"> <li>Allow them to assume a position of comfort.</li> <li>Do not force them to lie down.</li> </ul> </li> <li>For patients that are not alert and following commands:             <ul style="list-style-type: none"> <li>Ensure airway is clear of foreign material like vomit, blood, or teeth.</li> </ul> </li> <li>Airway control can be achieved initially with jaw thrust and placement of a nasopharyngeal (if no facial trauma) or oropharyngeal airway as appropriate.</li> <li>After initial interventions are complete, consider <a href="#">i-gel®</a> guideline.</li> <li>The tactical environment may not be suitable for endotracheal intubation; this should be deferred until more definitive care in the <b>Cold Zone</b> if alternate airway interventions are working.</li> <li><b>PARAMEDIC LEVEL OR HIGHER:</b> Consider <a href="#">Cricothyroidotomy – Surgical</a> guideline, as indicated.</li> </ul>
<b>NOTES</b>	<p>Placement of an airway, or patients with <a href="#">Altered Mental Status</a> require transport by EMS to a local area hospital capable of managing the patient.</p>

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# TEMS: B – BREATHING

**INCLUSION Criteria:** Open wounds to the chest or thorax, or injuries causing pneumothorax.

**EXCLUSION Criteria:** Not in a threat environment; no risk of impaired breathing or actual impaired breathing

**OTHER PROTOCOLS TO CONSIDER:** [Airway Management](#), [Needle Decompression](#), [i-gel®](#), [Universal Care – Trauma Management](#)

<b>HOT ZONE CARE</b>	<p>All patients who are able should attempt self-rescue by moving to cover under their own power. Once in a safer area, direct the patient to perform self-care. Perform a remote medical assessment of the patients to determine severity. If appropriate, injured tactical operators who are capable, should be encouraged to stay engaged in the fight.</p> <p>If the patient is unable to self-rescue, the primary goal is to physically move that patient as quickly and safely as possible from the <b>Hot Zone</b> to a safer location. This operation is high risk; only attempt after weighing the risks and benefits within the context of the tactical situation. When deemed appropriate, any rescue attempts should be done according to departmental guidelines.</p> <p><b>Open Chest Wound:</b></p> <ul style="list-style-type: none"> <li>Place a gloved hand below the body armor, over the open chest wound and apply pressure.</li> <li>Remove patient from further direct threat, as tactical event allows.</li> </ul>
<b>WARM ZONE CARE</b>	<p><b>Open Chest Wound:</b></p> <ul style="list-style-type: none"> <li>Remove <b>ONLY</b> necessary body armor to expose the wounds.</li> <li>Apply a chest seal or occlusive dressing to all open chest wounds and seal all four sides.</li> <li>Conduct a rapid <a href="#">Trauma Assessment</a> to identify all other sustained injuries and open wounds.</li> <li>Be prepared to manage the evolution of a tension pneumothorax in patients who had occlusive dressings applied.</li> </ul> <p><b>Tension Pneumothorax:</b></p> <ul style="list-style-type: none"> <li>If able, lift body armor to place a chest seal to an open chest wound, without removing body armor.</li> <li>Temporarily burp the chest seal, as needed.</li> <li><b>PARAMEDIC LEVEL OR HIGHER:</b> Perform a <a href="#">Needle Decompression</a> to the injured side if no improvement in patients with signs of a tension pneumothorax.</li> <li>Repeated <a href="#">Needle Decompression</a> may be necessary for redevelopment of tension pneumothorax.</li> <li>If available, apply <a href="#">Oxygen</a> via NRB and monitor <a href="#">Pulse Oximetry</a>.</li> <li>Consider <a href="#">i-gel®</a> as indicated.</li> </ul> <p><b>Respiratory Support:</b></p> <ul style="list-style-type: none"> <li>Manage respiratory drive with <a href="#">Bag Valve Mask (BVM) Ventilation</a> as indicated.</li> <li>Administer <a href="#">Oxygen</a> as needed, if available.</li> <li>Monitor any patient with torso trauma or development of a tension pneumothorax which may be evident by increased respiratory distress, altered level of consciousness, agitation, decreased lung sounds on one side, and/or hypotension.</li> <li>Address any tension pneumothorax burping any applied Chest Seals first, followed by <a href="#">Needle Decompression</a> on injured side.</li> <li>Address any sucking chest wounds with occlusive vented chest seals, or chest seal taped on four sides.</li> </ul>
<b>NOTES</b>	

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# TEMS: C – CIRCULATION

**INCLUSION Criteria:** Patient in a threat environment with risk of impaired perfusion/circulation or actual impaired perfusion/circulation

**EXCLUSION Criteria:** Not in a threat environment; no risk or actual impaired perfusion/circulation

**OTHER PROTOCOLS TO CONSIDER:** [Tourniquet – Intentional](#), [Pelvic Binder](#), [Pain Management](#), [Fluid Bolus - IV/IO](#), [Tranexamic Acid \(TXA\)](#), [Universal Care – Trauma Management](#)

<b>HOT ZONE CARE</b>	<p>All patients who are able should attempt self-rescue by moving to cover under their own power. Once in a safer area, direct the patient to perform self-care. Perform a remote medical assessment of the patients to determine severity. If appropriate, injured tactical operators who are capable, should be encouraged to stay engaged in the fight.</p> <p>If the patient is unable to self-rescue, the primary goal is to physically move that patient as quickly and safely as possible from the <b>Hot Zone</b> to a safer location. This operation is high risk; only attempt after weighing the risks and benefits within the context of the tactical situation. When deemed appropriate, any rescue attempts should be done according to departmental guidelines.</p> <ul style="list-style-type: none"> <li>• Consider guideline: <a href="#">Tourniquet – Intentional</a></li> </ul> <p>No other care should be performed in the <b>Hot Zone</b>. All other circulatory care efforts should be initiated in the <b>Warm Zone</b> or <b>Cold Zone</b>.</p>
<b>WARM ZONE CARE</b>	<p><b>IV/IO Access:</b></p> <ul style="list-style-type: none"> <li>• For patients requiring IV medications or fluids, or have potential for deterioration, consider establishing <a href="#">IV/IO Access</a>.             <ul style="list-style-type: none"> <li>○ Peripheral access</li> <li>○ <a href="#">Intraosseous (IO) Access</a></li> <li>○ <b>PARAMEDIC LEVEL OR HIGHER:</b> External jugular access</li> </ul> </li> </ul> <p><b>Analgesia:</b></p> <ul style="list-style-type: none"> <li>• <b>PARAMEDIC LEVEL OR HIGHER:</b> <a href="#">Ketamine</a> is the suggested analgesic in the tactical environment, given <b>IM</b>.             <ul style="list-style-type: none"> <li>○ Can be given <a href="#">IV/IO Access</a> once established.</li> </ul> </li> </ul> <p><b>Pelvic Binder:</b></p> <ul style="list-style-type: none"> <li>○ A <a href="#">Pelvic Binder</a> is used for any lower extremity amputation or unstable pelvis fracture and should be considered in trauma related shock without other obvious cause when mechanism of injury is concerning for this type of injury (fall, MVC, explosion).</li> </ul> <p><b>IV/IO Fluid Bolus:</b></p> <ul style="list-style-type: none"> <li>• If evidence of dehydration, hypovolemia, hypotension, or hypoperfusion, consider <a href="#">Fluid Bolus – IV/IO</a>.             <ul style="list-style-type: none"> <li>○ Manage W-X-ABC’s as indicated.</li> <li>○ Treat for signs of shock after mitigating life threats.</li> </ul> </li> </ul> <p><b>Intentional Tourniquet:</b></p> <ul style="list-style-type: none"> <li>• For all tourniquet application being initiated in the <b>Warm Zone</b>, consider <a href="#">Tourniquet – Intentional</a> or <a href="#">Tourniquet – Junctional</a> guideline.</li> </ul> <p><b>Transitional Tourniquet:</b></p> <ul style="list-style-type: none"> <li>• Transitioning tourniquet to pressure dressing is allowed if:             <ul style="list-style-type: none"> <li>○ Patient is no longer in shock AND,</li> <li>○ Injured area is not an amputation AND,</li> <li>○ Time of application is less than 2 hours, AND</li> <li>○ Dressing applied to wound controls bleeding (pressure dressing, hemostatic agent)</li> <li>○ Tourniquet can be loosened but should be left in place; loosen tourniquet pressure <b>slowly</b>. If bleeding resumes, tighten tourniquet to control bleeding.</li> </ul> </li> </ul> <p><b>TXA:</b></p> <ul style="list-style-type: none"> <li>• <b>PARAMEDIC LEVEL OR HIGHER:</b> Start <a href="#">Tranexamic Acid (TXA)</a> within 3 hours for significant trauma with signs of shock (shock index &gt; 1). See <a href="#">Tranexamic Acid (TXA)</a> guideline for administration guidance.</li> </ul>

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# TEMS: D – DISABILITY

**INCLUSION Criteria:** Traumatic injuries to the head or face that may cause intracranial injury

**EXCLUSION Criteria:** Not in a threat environment; no traumatic neurologic impairment

**OTHER PROTOCOLS TO CONSIDER:** [IV/IO Access](#), [Fluid Bolus - IV/IO](#), [Blood Glucose Monitoring](#), [Universal Care – Trauma Management](#)

<b>HOT ZONE CARE</b>	<p>All patients who are able should attempt self-rescue by moving to cover under their own power. Once in a safer area, direct the patient to perform self-care. Perform a remote medical assessment of the patients to determine severity. If appropriate, injured tactical operators who are capable, should be encouraged to stay engaged in the fight.</p> <p>If the patient is unable to self-rescue, the primary goal is to physically move that patient as quickly and safely as possible from the <b>Hot Zone</b> to a safer location. This operation is high risk; only attempt after weighing the risks and benefits within the context of the tactical situation. When deemed appropriate, any rescue attempts should be done according to departmental guidelines.</p> <p><b>Head Injuries:</b></p> <ul style="list-style-type: none"> <li>If unable to extract patient due to direct threat, place patient in recovery position until patient can be safely extracted to <b>Warm Zone</b>, as tactical event allows.</li> </ul>
<b>WARM ZONE CARE</b>	<p><b>Head Injuries:</b></p> <ul style="list-style-type: none"> <li>Goal is to avoid hypotension (SBP &lt; 90 mmHg) or hypoxia (SpO2 &lt; 90%) in patients with severe head trauma (unable to follow commands) by having higher SBP goal of 110 mmHg and SpO2 goal of 93-98%             <ul style="list-style-type: none"> <li>Establish <a href="#">IV/IO Access</a></li> <li><a href="#">Fluid Bolus – IV/IO</a> <ul style="list-style-type: none"> <li>500ml increments to maintain SBP at 110 mmHg; maximum 2000 mL</li> </ul> </li> <li>Administer supplemental <a href="#">Oxygen</a> to maintain SpO2 93% - 98%</li> <li><b>Do NOT</b> hyperventilate even if there are signs of cerebral herniation.                 <ul style="list-style-type: none"> <li>If supplemental oxygen fails to achieve an SPO2 level above 90%, or if the patient's ventilation is inadequate, initiate <a href="#">Bag Valve Mask (BVM) Ventilation</a> with <a href="#">Oxygen</a> at an initial rate of 10 breaths per minute for adults</li> <li>Titrate ventilations to target ETCO2 of 40 mmHg; Target ETCO2 range 35-45 mmHg</li> </ul> </li> <li>Initiate <a href="#">Blood Glucose Monitoring</a></li> </ul> </li> </ul>
<b>NOTES</b>	<p>Administration of medications or IV therapy requires transport by EMS to a local hospital for evaluation, unless examined by a Medical Director on-scene of tactical incident.</p>

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# TEMS: E – ENVIRONMENTAL EXPOSURES

**INCLUSION Criteria:** Patients experiencing [Hyperthermia or Heat Exposure](#) or [Hypothermia or Cold Exposure](#) from environmental conditions.

**EXCLUSION Criteria:** Normothermic patients.

**OTHER PROTOCOLS TO CONSIDER:** [Hyperthermia or Heat Exposure](#), [Hypothermia or Cold Exposure](#), [IV/IO Access](#), [Fluid Bolus – IV/IO](#), [Universal Care – Trauma Management](#)

<b>HOT ZONE CARE</b>	<p>All patients who are able should attempt self-rescue by moving to cover under their own power. Once in a safer area, direct the patient to perform self-care. Perform a remote medical assessment of the patients to determine severity. If appropriate, injured tactical operators who are capable, should be encouraged to stay engaged in the fight.</p> <p>If the patient is unable to self-rescue, the primary goal is to physically move that patient as quickly and safely as possible from the <b>Hot Zone</b> to a safer location. This operation is high risk; only attempt after weighing the risks and benefits within the context of the tactical situation. When deemed appropriate, any rescue attempts should be done according to departmental guidelines.</p> <p><b>Environmental Exposures:</b></p> <ul style="list-style-type: none"> <li>• If unable to extract patient due to direct threat, place patient in recovery position until patient can be safely extracted to <b>Warm Zone</b>, as tactical event allows.</li> </ul>
<b>WARM ZONE CARE</b>	<p><b><a href="#">Hyperthermia or Heat Exposure:</a></b></p> <ul style="list-style-type: none"> <li>• Have patient stop all exertional activity.</li> <li>• If patient is tolerant, alert, and without abdominal trauma, consider giving the patient fluids to drink as needed.</li> <li>• Establish <a href="#">IV/IO Access</a>.</li> <li>• If evidence of dehydration or heat stroke, consider <a href="#">Fluid Bolus – IV/IO</a> <ul style="list-style-type: none"> <li>○ Manage <b>W-X-ABC's</b> as indicated.</li> <li>○ Treat for signs of shock after mitigating life threats.</li> <li>○ Consider rapid cooling if improvised resources are discovered and available.</li> </ul> </li> </ul> <p><b><a href="#">Hypothermia or Cold Exposure:</a></b></p> <ul style="list-style-type: none"> <li>• Hypothermia is a significant contributor to poor coagulation and increased mortality. Steps should be taken to prevent hypothermia even in a warm environment.</li> <li>• Heat packs, warmed fluids, and/or hypothermia bags should be used when available.</li> </ul>
<b>NOTES</b>	<p>Administration of medications or IV therapy requires transport by EMS to a local hospital for evaluation, unless examined by a Medical Director on-scene of tactical incident.</p>

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# TEMS: F – FAST EXTRACTION

**INCLUSION Criteria:** Patients with life-threatening injuries stabilized and ready for extraction to the **Cold Zone**.

**EXCLUSION Criteria:** Direct threat environment, or active engagement with a threat.

**OTHER PROTOCOLS TO CONSIDER:** [Universal Care – Trauma Management](#)

<b>HOT ZONE CARE</b>	<p>All patients who are able should attempt self-rescue by moving to cover under their own power. Once in a safer area, direct the patient to perform self-care. Perform a remote medical assessment of the patients to determine severity. If appropriate, injured tactical operators who are capable, should be encouraged to stay engaged in the fight.</p> <p>If the patient is unable to self-rescue, the primary goal is to physically move that patient as quickly and safely as possible from the <b>Hot Zone</b> to a safer location. This operation is high risk; only attempt after weighing the risks and benefits within the context of the tactical situation. When deemed appropriate, any rescue attempts should be done according to departmental guidelines.</p>
<b>WARM ZONE CARE</b>	<p><b>Extraction:</b></p> <ul style="list-style-type: none"> <li>• Patient extraction should be high priority after managing immediate life threats.</li> <li>• When the tactical situation allows, extract patient to the <b>Cold Zone</b> or <b>Casualty Collection Point (CCP)</b>, where care can be transferred to the transporting EMS crew.</li> <li>• Care should be transferred to an equal or higher level of care.</li> </ul> <p><b>Secondary Assessment:</b></p> <ul style="list-style-type: none"> <li>• Indicated if extraction is delayed.</li> <li>• Manage W-X-ABC's as indicated.</li> <li>• Complete a thorough secondary assessment. See <a href="#">Universal Care – Trauma Management</a>.</li> </ul> <p><b>Patient Hand Off:</b></p> <ul style="list-style-type: none"> <li>• Patient hand off to transporting EMS crew should follow <b>DMIST</b>:             <ul style="list-style-type: none"> <li>○ <b>D</b> – Demographics                     <ul style="list-style-type: none"> <li>▪ Age, sex, name</li> </ul> </li> <li>○ <b>M</b> – Mechanism/Medical Complaint</li> <li>○ <b>I</b> – Identified Injuries/Illness</li> <li>○ <b>S</b> – Signs/Symptoms, including vitals if obtained</li> <li>○ <b>T</b> – Treatments                     <ul style="list-style-type: none"> <li>▪ Fluids, analgesia, needle decompression, chest seal, tourniquet, and interventional response</li> </ul> </li> </ul> </li> </ul> <p><b>Patient Care Reports:</b></p> <ul style="list-style-type: none"> <li>• All patients treated by a TEMS Provider shall have a Patient Care Report (PCR) completed.</li> </ul>
<b>NOTES</b>	<p> </p>

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# TEMS: G – DEFINITIVE CARE DISPOSITION

**INCLUSION Criteria:** Patients involved in a TEMS incident needing transport

**EXCLUSION Criteria:** Patient does not require transport and/or was not involved in a TEMS incident

**OTHER PROTOCOLS TO CONSIDER:** Destination Determination, Patient In Law Enforcement Custody

<b>G: GENERAL GUIDELINES</b>	<p>The TEMS provider shall make notification of transport as soon as reasonably possible when a patient exhibits signs or symptoms that are most effectively managed by a definitive care facility. The SWAT IC should be advised of all outside resources requested to the operation.</p> <p><b>Medical Transport – Transport of Civilian NOT in Custody:</b></p> <ul style="list-style-type: none"> <li>• TEMS provider shall request EMS response as soon as reasonably possible, for all serious (or suspected serious) injuries or illnesses.</li> <li>• Civilians shall be transported by ambulance for further treatment as required.</li> <li>• In situations where EMS systems are overwhelmed or transport ambulances are unavailable, law enforcement vehicles may be used to transport civilians for further treatment, if the TEMS provider deems this mode of transport necessary for the benefit of the patient or others. The TEMS provider should accompany the patient to the hospital with appropriate medical equipment for care enroute.</li> </ul> <p><b>Medical Transport – Transport of Subject in Custody:</b></p> <ul style="list-style-type: none"> <li>• TEMS provider shall request an EMS response as soon as reasonably possible, for all serious (or suspected serious) injuries or illnesses.</li> <li>• All persons shall be transported by the method that is most practical in treating their medical condition. Patients that present danger to the transporting team or vehicle may be transported in the safest manner for all concerned. This may include:             <ul style="list-style-type: none"> <li>○ Transported by ambulance for further care unless it is clear such transport is inappropriate due to the very minor nature of injuries or patient refuses care. A Law Enforcement Officer should accompany the patient to the hospital, with the officer in the patient compartment of the ambulance.</li> </ul> </li> </ul> <p><b>Medical Transport for Law Enforcement Personnel:</b></p> <ul style="list-style-type: none"> <li>• TEMS provider shall request an EMS response as soon as reasonably possible, for all serious (or suspected serious) injuries, conditions, or illnesses.</li> </ul>
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# TEMS: G – HELICOPTER EMS (HEMS)

**INCLUSION Criteria:** Patients with an acute life-threatening or traumatic injury that requires a time critical intervention to reduce morbidity and mortality

**EXCLUSION Criteria:** Patient can be safely managed and transported to definitive care within the interventional window by ground ambulance

**OTHER PROTOCOLS TO CONSIDER:** [Helicopter EMS \(HEMS\) Response](#),

G: GENERAL GUIDELINES	<p><b>Helicopter EMS (HEMS):</b></p> <ul style="list-style-type: none"> <li>• TEMS Provider may request a HEMS response if:                             <ul style="list-style-type: none"> <li>○ the patient has an acute life-threatening or traumatic injury that requires a time critical intervention to reduce mortality and/or morbidity, AND</li> <li>○ Ground transportation cannot effectively deliver the patient to receive definitive care within the interventional window, AND</li> <li>○ The patient’s condition would not be adversely affected by flight.</li> <li>○ Potential for advanced skill level or access to Packed Red Blood Cells (PRBC).</li> </ul> </li> <li>• HEMS should be considered if the injured patient meets the State of Wisconsin Field <b>Trauma Triage Guidelines RED</b> criteria (shown below) AND are greater than 30 minutes ground travel to the closest Level I or Level II trauma center</li> <li>• HEMS may provide clinical resources to patients needing critical care services if unable to obtain critical care services by GEMS</li> </ul>				
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: red; color: white; text-align: center; padding: 5px;"><b>Injury Patterns</b></td> <td style="background-color: red; color: white; text-align: center; padding: 5px;"><b>Mental Status &amp; Vital Signs</b></td> </tr> <tr> <td style="padding: 5px;"> <ul style="list-style-type: none"> <li>• Penetrating injuries to head, neck, torso, and proximal extremities</li> <li>• Skull deformity, suspected skull fracture</li> <li>• Suspected spinal injury with new motor or sensory loss</li> <li>• Chest wall instability, deformity, or suspected flail chest</li> <li>• Suspected pelvic fracture</li> <li>• Suspected fracture of two or more proximal long bones</li> <li>• Crushed, degloved, mangled, or pulseless extremity</li> <li>• Amputation proximal to wrist or ankle</li> <li>• Active bleeding requiring a tourniquet or wound packing with continuous pressure</li> </ul> </td> <td style="padding: 5px;"> <p><b>All Patients</b></p> <ul style="list-style-type: none"> <li>• Unable to follow commands (motor GCS &lt; 6)</li> <li>• RR &lt; 10 or &gt; 29 breaths/min</li> <li>• Respiratory distress or need for respiratory support</li> <li>• Room-air pulse oximetry &lt; 90%</li> </ul> <p><b>Age 0–9 years</b></p> <ul style="list-style-type: none"> <li>• SBP &lt; 70mmHg + (2 x age in years)</li> </ul> <p><b>Age 10–64 years</b></p> <ul style="list-style-type: none"> <li>• SBP &lt; 90 mmHg or</li> <li>• HR &gt; SBP</li> </ul> <p><b>Age &gt; 65 years</b></p> <ul style="list-style-type: none"> <li>• SBP &lt; 110 mHg or</li> <li>• HR &gt; SBP</li> </ul> </td> </tr> </table>	<b>Injury Patterns</b>	<b>Mental Status &amp; Vital Signs</b>	<ul style="list-style-type: none"> <li>• Penetrating injuries to head, neck, torso, and proximal extremities</li> <li>• Skull deformity, suspected skull fracture</li> <li>• Suspected spinal injury with new motor or sensory loss</li> <li>• Chest wall instability, deformity, or suspected flail chest</li> <li>• Suspected pelvic fracture</li> <li>• Suspected fracture of two or more proximal long bones</li> <li>• Crushed, degloved, mangled, or pulseless extremity</li> <li>• Amputation proximal to wrist or ankle</li> <li>• Active bleeding requiring a tourniquet or wound packing with continuous pressure</li> </ul>	<p><b>All Patients</b></p> <ul style="list-style-type: none"> <li>• Unable to follow commands (motor GCS &lt; 6)</li> <li>• RR &lt; 10 or &gt; 29 breaths/min</li> <li>• Respiratory distress or need for respiratory support</li> <li>• Room-air pulse oximetry &lt; 90%</li> </ul> <p><b>Age 0–9 years</b></p> <ul style="list-style-type: none"> <li>• SBP &lt; 70mmHg + (2 x age in years)</li> </ul> <p><b>Age 10–64 years</b></p> <ul style="list-style-type: none"> <li>• SBP &lt; 90 mmHg or</li> <li>• HR &gt; SBP</li> </ul> <p><b>Age &gt; 65 years</b></p> <ul style="list-style-type: none"> <li>• SBP &lt; 110 mHg or</li> <li>• HR &gt; SBP</li> </ul>
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	<ul style="list-style-type: none"> <li>• It is imperative that the designated landing zone and flight path both to and from the landing zone are situated within the “cold zone” to ensure the safety and security of both medical personnel and patients. This not only minimizes risks from potential threats but also ensures safe access for medical teams and patients throughout the evacuation process.</li> </ul>				

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# TEMS: G – MEDICAL THREAT ASSESSMENT

**INCLUSION Criteria:** Planned operation involving tactical specialty teams, TEMS, or other law enforcement personnel; if unplanned operation, when time is available a threat assessment should be performed

**EXCLUSION Criteria:** Not a tactical, law enforcement, or TEMS operation

**OTHER PROTOCOLS TO CONSIDER:** None

<b>G: GENERAL GUIDELINES</b>	<p><b>Medical Threat Assessment:</b></p> <ul style="list-style-type: none"> <li>• TEMS Providers are responsible for providing a Medical Threat Assessment for a planned operation, or a large or specialized training evolution. This should be provided to the SWAT Commander prior to the event. For operations sustained longer than 4 hours, a new assessment should be conducted every four hours. This should take into consideration factors to include but not limited to:             <ul style="list-style-type: none"> <li>○ Weather:                 <ul style="list-style-type: none"> <li>▪ Temperature</li> <li>▪ Humidity</li> <li>▪ Wind</li> </ul> </li> <li>○ Duration of event</li> <li>○ Time of day</li> <li>○ Expected amount of exertion by officers</li> <li>○ Special hazards:                 <ul style="list-style-type: none"> <li>▪ Chemicals</li> <li>▪ Explosives</li> <li>▪ Animals</li> </ul> </li> <li>○ Travel distance, capabilities, and contact numbers for closest ER and alternate ERs.</li> <li>○ Determination of primary and secondary methods of medical evacuation from the scene:                 <ul style="list-style-type: none"> <li>▪ EMS</li> <li>▪ HEMS</li> <li>▪ Law Enforcement vehicle in coordination with the IC</li> </ul> </li> <li>○ Capabilities and contact information for local EMS agencies that cover area of operation.</li> <li>○ Air assets in the area, with predetermined landing zones.</li> <li>○ Designated Casualty Collection Points (CCP)</li> </ul> </li> </ul>
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# TEMS: G – REHABILITATION

**INCLUSION Criteria:** Tactical, law enforcement or TEMS operation that lasts more than 3 hours or is in extreme weather

**EXCLUSION Criteria:** Operation that lasts less than 3 hours and there are no extreme weather

**OTHER PROTOCOLS TO CONSIDER:** None

<b>G: GENERAL GUIDELINES</b>	<p><b>Rehabilitation:</b></p> <ul style="list-style-type: none"> <li>The purpose of rehab is to provide a safe area for rest, hydration, and relief from environmental stressors. It also allows a simple medical evaluation to ensure that team members are fit to return to duty.</li> <li>The actual staffing and operations of rehab area can be done by EMS personnel on scene. A rehab treatment log should be used to document all vital signs and any care or medications provided to law enforcement in the rehab area.</li> </ul>
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# TEMS: G – TOURNIQUET APPLICATION

**INCLUSION Criteria:** Uncontrolled external hemorrhage involving an extremity in the **Hot Zone** of a tactical environment, where proper assessment of injury is not tactically feasible.

**EXCLUSION Criteria:** Hemorrhaging wounds to locations besides the extremities, or bleeding controlled by other means

**OTHER PROTOCOLS TO CONSIDER:** [Tourniquet – Intentional](#), [Pelvic Binder](#), [Hemorrhage Control](#), [Wound Packing](#), [Pain Management](#), [Traumatic Injuries](#)

<b>G: GENERAL GUIDELINES</b>	<ul style="list-style-type: none"> <li>• Assess scene safety and rapidly extract patient to an area that provides substantial ballistic protection. The risk/benefit of treating in place must be evaluated on a scene-by-scene basis. If the patient can apply the tourniquet, this is preferred.</li> <li>• Verify the patient has sustained an injury that may benefit from tourniquet application:             <ul style="list-style-type: none"> <li>○ Uncontrolled external hemorrhage.</li> <li>○ Visualized extremity distention (bilateral femur fractures with presence of shock)</li> <li>○ Traumatic amputation</li> </ul> </li> <li>• Apply the tourniquet as proximal as possible on the extremity, over clothing.</li> <li>• Tighten the windlass enough to visibly confirm cessation of bleeding.             <ul style="list-style-type: none"> <li>○ Confirm absence of distal pulses</li> </ul> </li> <li>• Secure the windlass to prevent tourniquet loosening.</li> <li>• Document time of application.</li> <li>• Continually assess source of bleeding to ensure tourniquet effectiveness.</li> <li>• If bleeding is not successfully controlled with one tourniquet, apply a second tourniquet adjacent to and just below the first tourniquet, making sure to offset the windlass to prevent tangling of the devices.</li> <li>• Immediately extract patient when tactical situation allows.</li> </ul>
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# TEMS: G – SPECIAL SITUATIONS

**INCLUSION Criteria:** Threat environment where traumatic arrest has occurred or patient have eye injuries, possible neck injuries or need decontamination

**EXCLUSION Criteria:** Not in a threat environment; patient does not have any of the following: traumatic arrest, eye injury, neck injury or need for decontamination.

**OTHER PROTOCOLS TO CONSIDER:** [Cardiac Arrest](#), [Traumatic Injuries](#)

G: GENERAL GUIDELINES	<p><b>Resuscitation:</b></p> <ul style="list-style-type: none"> <li>• Patients that are pulseless and apneic in the <b>Hot Zone</b> should not be resuscitated.</li> <li>• Once that patient has been moved to the <b>Warm</b> or <b>Cold Zone</b> and it has been determined that it is safe to do so, resuscitation may be started. Consider Traumatic Arrest guideline.</li> <li>• <b>A sudden increase in threat level may require terminating resuscitation until it is safe to resume.</b></li> </ul> <p><b>C-Spine:</b></p> <ul style="list-style-type: none"> <li>• For patients with penetrating trauma and no neuro deficits, c-spine is not necessary.</li> <li>• For a patient with blunt trauma or any patient with neurologic deficits, c-spine should be used but application will vary based on threat level as follows:             <ul style="list-style-type: none"> <li>○ <b>Hot Zone</b> care or <b>otherwise in immediate danger of serious injury or death:</b> <ul style="list-style-type: none"> <li>▪ Patient should be moved as quickly as possible to safety without application of c-spine precautions.</li> </ul> </li> <li>○ <b>Warm Zone</b> care:             <ul style="list-style-type: none"> <li>▪ C-Spine precaution guidelines should be followed unless safety concerns or other operational limitations prevent it.</li> </ul> </li> <li>○ <b>Cold Zone</b> care:             <ul style="list-style-type: none"> <li>▪ Follow C-Spine guideline.</li> </ul> </li> </ul> </li> </ul> <p><b>Eye Trauma:</b></p> <ul style="list-style-type: none"> <li>• If a penetrating eye injury is noted or suspected, cover both eyes with a rigid eye shield.             <ul style="list-style-type: none"> <li>○ Avoid using a soft eye patch.</li> </ul> </li> <li>• Irrigate any contamination with copious amounts of water or saline when possible.</li> </ul> <p><b>Decontamination:</b></p> <ul style="list-style-type: none"> <li>• Begin process as quickly as safely possible using field expedient sources of water or standard HAZMAT procedures, if available.</li> <li>• Coordinate with SWAT IC and Fire IC for resources and HAZMAT teams.</li> </ul>
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# APPENDICES

**Approved Abbreviations**

[Pilot: Endotracheal Intubation During Cardiac Arrest](#)

**Nitroglycerin Drip**

**Wisconsin Scope of Practice**

**Trauma Triage Guideline**

**Reference Documents**

**Medication Quick Reference Guide**

[Pediatric Crash Cards – Quick Reference Guides](#)

[Pediatric Quick Reference Guides](#)

**Sources**

# APPROVED ABBREVIATIONS

## A

@	At
AAA	Abdominal Aortic Aneurysm
ABD	Abdomen
ABC	Airway, breathing, circulation
AC	Antecubital
ACLS	Advanced Cardiac Life Support
AED	Automatic External Defibrillator
A-fib	Atrial fibrillation
AIDS	Acquired Immune Deficiency Syndrome
ALS	Advanced Life Support
AKA	Also known as/above knee amputation
AMA	Against Medical Advice
AMI	Acute Myocardial Infarction
AMT	Amount
APAP	Acetaminophen
APGAR	Infant assessment scale
APPROX	Approximately
ASA	Aspirin
ASHD	Arteriosclerotic Heart Disease

## B

BBB	Bundle Branch Block
Bilat	Bilateral
BKA	Below knee amputation
BLS	Basic Life Support
BM	Bowel movement
BP	Blood pressure
BG	Blood glucose
BVM	Bag valve mask

## C

CABG	Coronary Artery Bypass Graft
CAD	Coronary Artery Disease
CA	Cancer
Cath	Catheterization
CC	Chief complaint
CCU	Coronary Care Unit/Critical Care Unit
CHF	Congestive Heart Failure
CMS	Circulation, movement, sensation
CNS	Central Nervous System
C/o	Complains of
CO2	Carbon dioxide
COPD	Chronic Obstructive Pulmonary Disease
CP	Chest pain
CPR	Cardiopulmonary Resuscitation
CQI	Continuous Quality Improvement
CSF	Cerebral Spinal Fluid
CT	Computerized Axial Tomography
CVA	Cerebral Vascular Accident

## D

D/C	Discontinue/Discharge
DNR	Do Not Resuscitate
DOA	Dead on Arrival
DT	Delirium Tremens
DVT	Deep Vein Thrombosis
D5W	Dextrose 5% in Water
Dx	Diagnosis

**E**

ECG	Electrocardiogram
EEG	Electroencephalogram
EENT	Eyes, ears, nose, throat
EJ	External jugular
EMS	Emergency Medical Services
EMT	Emergency Medical Technician
EOA	Esophageal Obturator Airway
ETA	Estimated Time of Arrival
ETOH	Ethyl Alcohol
ETT	Endotracheal Tube
EXT	External (extension)

**F**

F	Female
FB	Foreign body
FOB	Foreign Object/Body
FLEX	Flexion
FROM	Full Range of Motion
Fx	Fracture

**G**

G	Gram
GCS	Glasgow Coma Scale
GI	Gastrointestinal
GSW	Gun Shot Wound
Gtts	Drops
GU	Genitourinary
GYN	Gynecology

**H**

HEENT	Head, ears, eyes, nose, throat
HIV	Human Immuno-Deficiency Virus
HR	Heart Rate
HTN	Hypertension
Hx	History of
Hyper	Above, or high
Hypo	Below, or low

**I**

ICF	Intracellular Fluid
ICP	Intracranial Pressure
ICU	Intensive Care Unit
IM	Intramuscular
IO	Intraosseous
IV	Intravenous
IVP	Intravenous Push
IVPB	Intravenous Piggyback

**J**

J	Joules
JVD	Jugular Vein Distension

**K**

kg	Kilogram
KO	Keep Open
KVO	Keep Vein Open

**L**

L&D	Labor and Delivery
LAT	Lateral
LBBB	Left Bundle Branch Block
lb	Pound
LLQ	Left Lower Quadrant
LMP	Last Menstrual Period
LOC	Level of Consciousness
LR	Lactated Ringers
L-Spine	Lumbar Spine
LSB/LBB	Long Spine Board/Long Back Board
LUQ	Left Upper Quadrant

**M**

MAE	Moves All Extremities
MAST	Military Anti-Shock Trousers
mcg	Microgram
MCI	Mass Casualty Incident
MDI	Metered Dose Inhaler
ME	Medical Examiner
mEq	Milliequivalent
MED	Medication/Medium
mg	Milligram
MICU	Medical Intensive Care Unit
MI	Myocardial Infarction
MOI	Mechanism of Injury
MRI	Magnetic Resonance Imaging
MVA	Motor Vehicle Accident

**N**

NaCl	Sodium Chloride
NAD	No Acute Distress
NC	Nasal Cannula
NEB	Nebulizer
NKDA	No Known Drug Allergies
NRB	Non-Rebreather Mask
NS	Normal Saline
NSR	Normal Sinus Rhythm
NTG	Nitroglycerin
N/V	Nausea/Vomiting
N/V/D	Nausea/Vomiting/Diarrhea

**O**

O2	Oxygen
O2Sat	Oxygen Saturation via Pulse Oximeter
OB	Obstetrics
OD	Overdose
OPA	Oropharyngeal Airway
OTC	Over The Counter
(OU)	Both Eyes

**P**

P	Pulse
PAC	Premature Atrial Contraction
PALP	Palpation
PALS	Pediatric Advanced Life Support
PASG	Pneumatic Antishock Garment
PCN	Penicillin
PE	Physical Exam/Pulmonary Embolism
PEEP	Positive End Expiratory Pressure
PEARL	Pupils Equal and Reactive to Light
PJC	Premature Junctional Contraction
PMHx	Past Medical History

**P (cont.)**

PO	Orally
POV	Privately Owned Vehicle
PRN	As needed
PSVT	Paroxysmal Supraventricular Tachycardia
PT	Patient
PTA	Prior to Arrival
POx	Pulse Oximetry
PVC	Premature Ventricular Contraction

**Q**

q	Every
qam	Every morning
qh	Every hour
q2h	Every two hours
q3h	Every three hours
q4h	Every four hours
qhs	Every night at bedtime
qid	Four times a day

**R**

R/O	Rule out
ROM	Range of Motion
RLQ	Right Lower Quadrant
RUQ	Right Upper Quadrant
Rx	Prescription

**S**

SaO2	Systemic Arterial Oxygen Saturation
SIDS	Sudden Infant Death Syndrome
SL	Sublingual
SOB	Short of Breath
SpO2	Oxygen Saturation via Pulse Oximeter
STach	Sinus Tachycardia

STAT	At once
STI	Sexually Transmitted Infection
SubQ	Subcutaneous
START	Simple Triage & Rapid Treatment
SVT	Supraventricular Tachycardia
SZ	Seizure
Sx	Symptom

**T**

T	Temperature
TIA	Transient Ischemic Attack
TKO	To Keep Open
Tx	Treatment

**U**

URI	Upper Respiratory Infection
UTI	Urinary Tract Infection

**V**

V-fib	Ventricular fibrillation
VS	Vital Signs
VTach	Ventricular Tachycardia

**W**

WNL	Within Normal Limits
WPW	Wolf-Parkinson-White Syndrome

**Y**

YO	Years Old
YTD	Year To Date

**Symbols**

♂	Male	+	Positive
♀	Female	-	Negative
Ⓡ	Right	?	Questionable
Ⓛ	Left	~	Approximately
▲	Change	=	Equal

# PILOT: ENDOTRACHEAL INTUBATION DURING CARDIAC ARREST

**ONLY IF AUTHORIZED BY OFFICE OF MEDICAL DIRECTION**

**INDICATIONS:** Patients in [Cardiac Arrest](#)

**CONTRAINDICATIONS:** Supraglottic airway secured with adequate ventilation and oxygenation

**OTHER GUIDELINES TO CONSIDER:** [Cardiac Arrest](#), [Airway Obstruction](#), [Suctioning](#), [Cricothyrotomy – Surgical](#)

Priorities Prior to Intubation:	
INT	<p><b>High Quality CPR</b></p> <ul style="list-style-type: none"> <li>• Initiate and maintain high-quality CPR:                             <ul style="list-style-type: none"> <li>○ <b>Adult:</b> 30 compressions to 2 ventilations (preferred)</li> <li>○ <b>Pediatric:</b> 15 compressions to 2 ventilations</li> <li>○ Continuous compressions can be performed until monitor defib pads applied</li> </ul> </li> <li>• Apply defib pads and search for shockable rhythm</li> <li>• If shockable rhythm present:                             <ul style="list-style-type: none"> <li>○ Defibrillate; then begin 2 minutes of high-quality CPR</li> <li>○ Continuous compressions may be performed</li> </ul> </li> </ul> <p><b>Position:</b></p> <ul style="list-style-type: none"> <li>• Position the patient with their external auditory meatus (ear) on the same horizontal plane as their sternal notch                             <ul style="list-style-type: none"> <li>○ Face should be parallel to ceiling, base of neck should be slightly flexed, ramp or pad under the upper back or shoulders as needed to achieve proper airway alignment</li> </ul> </li> <li>• Insert <a href="#">Basic Airway Adjunct – OPA</a></li> </ul> <p><b>Preoxygenate:</b></p> <ul style="list-style-type: none"> <li>• Administer apneic oxygenation throughout entire procedure via nasal cannula at 15 LPM to increase oxygen reserve saturation</li> <li>• Begin <a href="#">Bag Valve Mask (BVM) Ventilation</a></li> </ul> <p><b>Deploy Mechanical CPR Device when appropriate for the patient and adequate personnel available (minimum of 3)</b></p>
PARA	<p><b>Prepare:</b></p> <ul style="list-style-type: none"> <li>• Have appropriate equipment prepared at the patient side</li> <li>• Initiate <a href="#">IV/IO Access</a></li> <li>• Administer initial dose of <a href="#">Epinephrine</a></li> <li>• Apply <a href="#">Waveform Capnography</a> and <a href="#">Pulse Oximetry</a></li> <li>• Consider <a href="#">Endotracheal Intubation</a> after a minimum of three (3) two (2) minute cycles of high-quality CPR and all of the above have been met</li> <li>• <b>Use of video laryngoscopy with recording capabilities is required</b></li> <li>• <b>If using a stylet:</b> <ul style="list-style-type: none"> <li>○ Lubricate stylet with water soluble lubricant</li> <li>○ Insert stylet into ETT</li> <li>○ Bend the tube/stylet to desired shape                                     <ul style="list-style-type: none"> <li>▪ Optimal shape for intubation with direct laryngoscopy is “straight-to-the-cuff” with a “hockey stick” bend at the cuff no more than 35°</li> </ul> </li> </ul> </li> </ul>

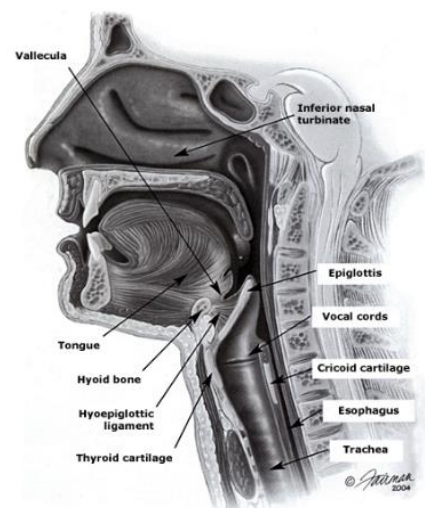



**Prepare (cont.):**

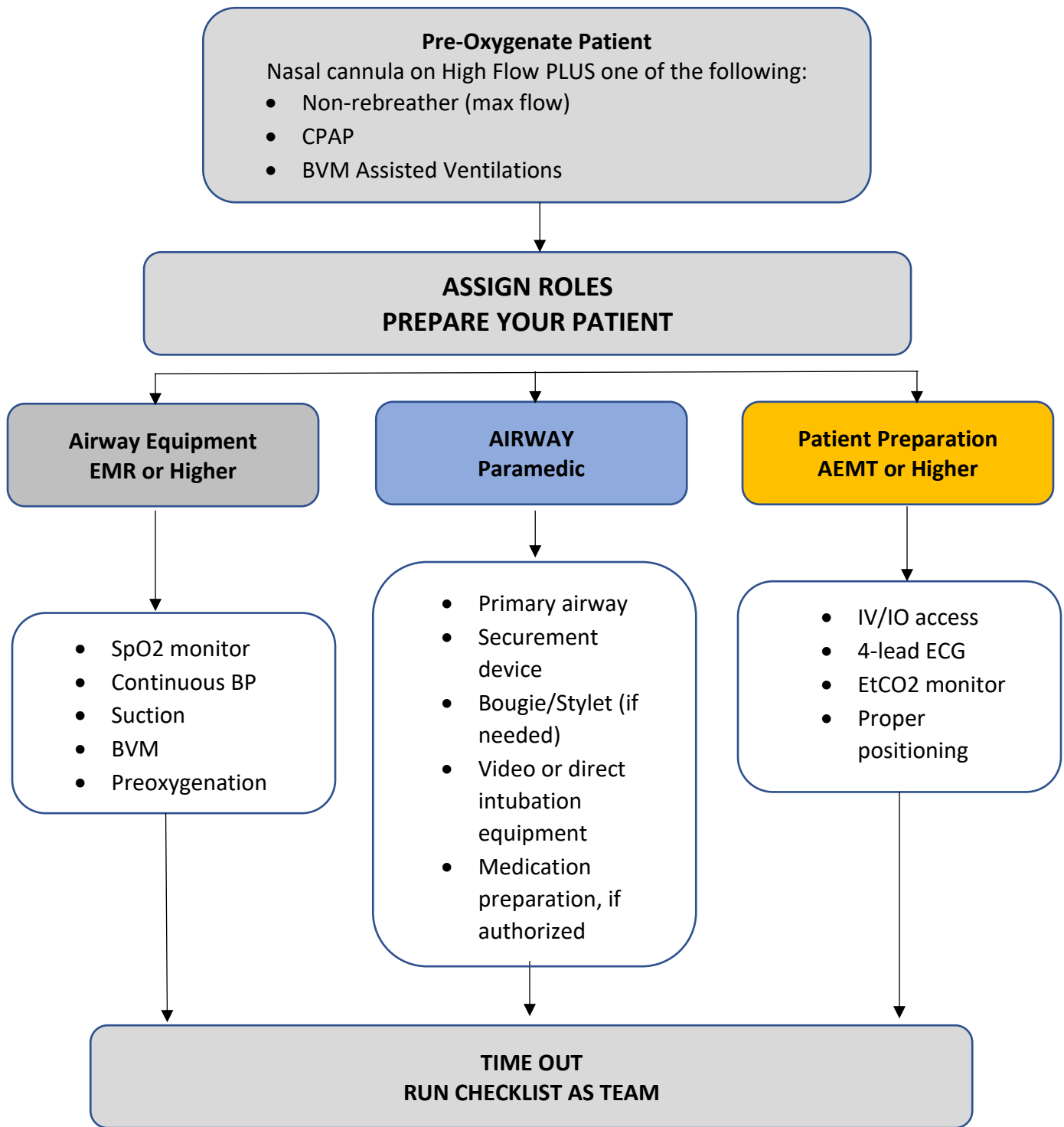
- Mnemonic for tracheal intubation preparation: **STOP MAID**
  - **S:** Suction – SALAD technique
  - **T:** Tools for intubation – (laryngoscope blades, handles, bougie or stylet, and other preferred devices)
  - **O:** Oxygen source for preoxygenation and ongoing ventilation
  - **P:** Positioning – ramp the patient to achieve alignment of the patient’s ear to the level of the sternal notch
  
  - **M:** Monitors (ECG, SpO2, NIBP, EtCO2)
  - **A:** Airway (BVM, airway devices (OPA, i-gel, ETTs, syringes, stylets))
  - **I:** Intravenous or [Intraosseous \(IO\) Access](#)
  - **D:** Drugs

**Procedure:**

- **Under no circumstances should compressions pause during intubation attempt**
- Open the mouth, using scissor technique if opening one handed
- Suction the patient’s airway using Suction Assisted Laryngoscopy and Airway Decontamination (SALAD) technique
- Following oral decontamination, insert the laryngoscope blade **slowly** until the epiglottis is visualized
  - **Curved blade (Mac):**
    - Advance blade into the vallecula
  - **Straight blade (Miller):**
    - Advance the blade just under the epiglottis
  - **Hyperangulated blade (Video):**
    - Insert midline; view the cords by placing the blade tip at the base of the tongue in or near the vallecula.  
Apply forward pressure on the hyoepiglottic ligament to expose larynx
- Maintain suction during insertion of the blade, keeping suction catheter tip in front of laryngoscope blade
- Apply gentle lifting force, forward and upward, without rotating blade backward. Minimize contact with teeth.
- To optimize cord view, bimanual laryngoscopy should be used in place of cricoid pressure or BURP



<b>INT</b>	<p><b>Procedure (cont.):</b></p> <ul style="list-style-type: none"> <li>• ETT is inserted from the right side of patients mouth to maximize view and provide control of the position of the tip of the ETT</li> <li>• Place the tracheal tube or bougie through the vocal cords             <ul style="list-style-type: none"> <li>○ <b>If using ETT with stylet:</b> <ul style="list-style-type: none"> <li>▪ Once an optimal view is obtained, pass tube through the right, and below the line-of-sight to the cords</li> <li>▪ If resistance is felt at glottic opening, rotate tube 90° counterclockwise</li> <li>▪ <b>The tube must be visualized passing through the cords. Advance tube until the cuff is seen passing through cords</b></li> <li>▪ If resistance is felt after passing through the cords, rotate the tube 90° clockwise</li> <li>▪ Once the tube is in place, hold tube firmly and remove stylet</li> </ul> </li> <li>○ <b>If using an <a href="#">Endotracheal Introducer (Bougie)</a></b> <ul style="list-style-type: none"> <li>▪ Once an optimal view is obtained, pass the bougie through the cords.</li> <li>▪ Advance the bougie <i>slowly</i> until it lodges in the proximal bronchi. If bougie does not stop advancing, this is suggestive of esophageal placement</li> <li>▪ Advance the lubricated ETT over the bougie without removing the laryngoscope.                             <ul style="list-style-type: none"> <li>• If the tube cannot advance through the cords, rotate 90° counterclockwise</li> </ul> </li> <li>▪ Visualize the ETT passing through the cords                             <ul style="list-style-type: none"> <li>• If resistance is felt, rotate ETT 90° clockwise (180° clockwise if tube was rotated counterclockwise to pass through vocal cords).</li> </ul> </li> <li>▪ Stop advancing once cuff is through cords</li> <li>▪ Hold the ETT firmly and remove the bougie.</li> <li>▪ Confirm placement, then remove laryngoscope</li> </ul> </li> </ul> </li> </ul> <li>• <b>Note depth of ETT at teeth:</b> <ul style="list-style-type: none"> <li>○ Typical depth: ETT size x 3 (i.e., 7.0mm ETT should have a total depth of 21mm at teeth)</li> </ul> </li> <li>• Inflate the ETT with 5-10mL of air</li> <li>• Attach <a href="#">Waveform Capnography</a> and ventilate with a BVM.</li> <li>• Confirm ETT placement with EtCO2 and bilateral lung sounds with equal chest rise and fall</li> <li>• If airway was contaminated prior to or during intubation, perform <a href="#">Suctioning</a> as needed</li> <li>• Secure tube with a commercial securing device</li> <li>• Consider <a href="#">Orogastric (OG) Tube Insertion</a> <ul style="list-style-type: none"> <li>○ After two unsuccessful <a href="#">Endotracheal Intubation</a> attempts, insert <a href="#">i-gel®</a> (or other supraglottic airway) or begin <a href="#">Bag Valve Mask (BVM) Ventilation</a></li> <li>○ Ensure patient is reoxygenated and vital signs reevaluated between attempts</li> <li>○ Consider modifying approach with each subsequent attempt                             <ul style="list-style-type: none"> <li>▪ Position</li> <li>▪ New provider</li> <li>▪ Equipment</li> </ul> </li> </ul> </li> <li>• Once advanced airway is established, continue CPR, ventilating:             <ul style="list-style-type: none"> <li>○ <b>Adult:</b> 1 breath every 6 seconds</li> <li>○ <b>Pediatric:</b> 1 breath every 2-3 seconds</li> </ul> </li> <li>• If ROSC is achieved and patient does not tolerate ETT, consider <a href="#">Sedation</a></li>
<b>PARA</b>	
<b>NOTES</b>	<p><b>Bimanual Laryngoscopy:</b></p> <ul style="list-style-type: none"> <li>• During intubation, an assistant places their hand on the patient’s thyroid cartilage</li> <li>• The person intubating guides the assistant's hand with their right hand to achieve the best laryngeal view. Have the assistant maintain pressure and direction once view is achieved             <ul style="list-style-type: none"> <li>○ The assistant maintains pressure on the thyroid cartilage in the same direction and with same force as guided by the person intubating</li> </ul> </li> </ul> <div style="text-align: right;">  </div>



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# NITROGLYCERIN DRIP

**ONLY IF AUTHORIZED BY OFFICE OF MEDICAL DIRECTION**

Other Names: Nitrostat, Nitro-Bid, Nitro-Dur

**Actions**

Nitroglycerin dilates coronary arteries and improves collateral flow to ischemic regions. It relaxes vascular smooth muscle, thereby dilating peripheral arteries and veins which decreases both preload and afterload. It also reduces left ventricle systolic wall tension, which decreases afterload and lowers the oxygen demand of the heart

**Contraindications**

- SBP < 100 mmHg
- HR > 140 or < 50
- Known hypersensitivity to nitrates
- Recent use of erectile dysfunction medications in past 48 hours such as: Viagra (sildenafil), Cialis (tadalafil), Levitra (vardenafil), Stendra (avanafil)
- Head injury

**Indications & Dose**

- Chest Pain/Acute Coronary Syndrome (ACS)
  - **Adult:**
    - **IV/IO INFUSION ONLY:** Begin infusion at 10 mcg/min and increase by 10 mcg/min every 5 minutes; maximum infusion 40 mcg/min
- Hypertensive Emergencies with Difficulty Breathing: Pulmonary Edema
  - **Adult Systolic BP > 180/100 mmHg:**
    - **IV/IO INFUSION ONLY:** Begin infusion at 40 mcg/min and increase by 40 mcg/min every 5 minutes; maximum infusion 120 mcg/min
    - **Reduce drip rate as BP starts to lower**

**Adverse Effects**

- Neuro: Dizziness, headache
- CV: Hypotension, syncope

NITROGLYCERIN DRIP 50 mg in 250 mL									
Dose - mcg/min	10	15	20	25	30	35	40	45	50
Flow Rate - mL/hr	3	4.5	6	7.5	9	10.5	12	13.5	16.5
Dose - mcg/min	55	60	65	70	75	80			
Flow Rate - mL/hr	16.5	18	19.5	21	22.5	24			

**Considerations**

- **May only be administered on a IV pump**
- **Medication must be administered with approved nitroglycerin IV tubing**
- Medication is stored in a glass bottle
- Monitor continuous ECG throughout administration
- Blood pressure and heart rate should be documented before administration, within 5 minutes of administration and throughout patient care
- Prior use of erectile dysfunction medications can lead to severe hypotension
- Hypotension is enhanced in the elderly and in cases of hypovolemia (dehydration)
- Nitroglycerin is not an ideal medication to treat isolated hypertension, unless the hypertension is related to pulmonary edema or chest pain

**Pharmacokinetics**

- Onset:
  - **IV/IO:** 2 minutes; peak effect 3-5 minutes
- Duration:
  - **IV/IO:** 3-5 minutes; expect BP to drop within 3-5 minutes of starting infusion

**Pregnancy/Lactation**

- Okay to use in pregnancy and breastfeeding

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# WISCONSIN SCOPE OF PRACTICE

Wisconsin Admin. Code § DHS 110.12 states that an emergency medical services (EMS) practitioner or emergency medical responder may only perform the skills, use the equipment, and administer the medications that are specified by the Department of Health Services (DHS) in the Wisconsin scope of practice for the level to which the individual is licensed, certified, or credentialed.

The Wisconsin scope of practice for each certification and practitioner level may be found on the [DHS EMS website](#). The Wisconsin scope of practice for each certification and license level is reviewed annually in consultation with the Wisconsin EMS Advisory Board and the Physician Advisory Committee and published and posted on the DHS website by March 31 of each year.

Below is a quick reference table of emergency medical responder and practitioner-level terms, followed by definitions and additional information to supplement the scopes of practice that follow.

<b>Key to Emergency Medical Responder and Practitioner Levels</b>	
<b>EMR</b>	Emergency Medical Responder
<b>EMT</b>	Emergency Medical Technician
<b>AEMT</b>	Advanced Emergency Medical Technician
<b>INT</b>	EMT-Intermediate
<b>PARA</b>	Paramedic
<b>CCP</b>	Paramedic with Critical Care Endorsement for Inter-Facility Transport (IFT) Only

**Required (R) Skills, Equipment, and Medications**

All skills, equipment, and medications designated with an "R" at a certification or license level are required for that level; these core skills ensure equal access to EMS care across the state. All "R" skills must be submitted as part of the EMS Service Operational Plan and approved by DHS.

**Optional (O) Skills, Equipment, and Medications**

All skills, equipment, and medications designated with an "O" at a certification and license level are optional advanced skills for that level based on the needs and resources of a community. These optional skills must be submitted as part of the EMS Service Operational Plan and reported to DHS through the designated electronic reporting tool for approval.

**Emergency Medical Responder Certification Level**

For the EMR certification level, any DHS-approved "O" skill is considered an Advanced Skill and must be reported in a patient care report and submitted to the Wisconsin



Ambulance Run Data System (WARDS) as outlined in Wis. Admin. Code § DHS 110.34 (8). All other EMS practice levels are required to report both “R” and “O” approved skills in a patient care report submitted to WARDS.

### **Certification and License-level modifications**

Items designated with a footnote are modified for the indicated practice level by the conditions contained within the footnote at the end of that section and have specified requirements.



## PART A: SCOPE OF PRACTICE for 911 EMS Practitioners and Emergency Medical Responders

### I. Skill—Airway, Ventilation, Oxygenation

<b>I. Skill—Airway, Ventilation, Oxygenation</b>	<b>EMR</b>	<b>EMT</b>	<b>AEMT</b>	<b>INT</b>	<b>PARA</b>
Airway – Nasopharyngeal	R	R	R	R	R
Airway – Non-visualized (an extraglottic device inserted without the need to visualize the vocal cords). If a non-visualized airway is inserted, the use of end-tidal CO2 detection (capnometry or capnography) to confirm safe device position and effective ventilation is mandatory.	O	R	R	R	R
Airway – Oropharyngeal	R	R	R	R	R
Airway Obstruction – Manual Dislodgement Techniques	R	R	R	R	R
Airway Obstruction – Dislodgement by Direct Laryngoscopy		R	R	R	R
Bag-Valve Mask (BVM)	R	R	R	R	R
Chest Decompression – Needle				R	R
Chest Seal – Vented Preferred	O	R	R	R	R
CO Monitoring	O	O	O	O	O
Cricothyrotomy – Surgical or Needle					R
End Tidal CO2 continuous monitoring device for ongoing ventilation status and metabolic clinical decision-making	O	O	O	R	R
End Tidal CO2 detection device required to confirm safe device position and effective ventilation if any non-visualized airway device, endotracheal tube, cricothyrotomy device or tracheostomy tube is used by an EMS provider	R	R	R	R	R
Gastric Decompression with Advanced Airway	O	O	O	O	R
Intubation				O	R
Intubation – Rapid Sequence Induction					O
Manual Airway Maneuvers	R	R	R	R	R
Non-Invasive Positive Pressure Ventilation		O	R	R	R
Oxygen Therapy – Nebulizer	O	R	R	R	R
Oxygen Therapy – Nasal Cannula	O	R	R	R	R
Oxygen Therapy – Non-Rebreather Mask	O	R	R	R	R
Oxygen Therapy – Tracheostomy Tube	O	R	R	R	R
Oxygen Therapy – High Flow Nasal Cannula					O
Pulse Oximetry	O	R	R	R	R
Suctioning – Tracheobronchial Suctioning	O	R	R	R	R
Suctioning – Upper Airway (Soft and Rigid)	R	R	R	R	R
Ventilator – Automated Transport Ventilator		O <sup>1</sup>	O <sup>1</sup>	O <sup>1</sup>	O
Ventilator – Variable Setting					O <sup>2</sup>

Notes: <sup>1</sup>May only be used for CPR; <sup>2</sup>May only use FIO2, rate, and volume adjustments in assist control (AC) mode.

## II. Skill—Cardiovascular, Circulation

II. Skill—Cardiovascular, Circulation	EMR	EMT	AEMT	INT	PARA
Cardiocerebral Resuscitation (CCR)	O	O	O	O	O
Cardiopulmonary Resuscitation (CPR)	R	R	R	R	R
Cardioversion – Electrical				R	R
CPR Mechanical Device	O	O	O	O	O
Defibrillation – Automated and Semi-Automated (AED)	R	R	R	R	R
Defibrillation – Manual				R	R
ECG Monitor – Acquisition and Transmission	O	O	O	R	R
ECG Monitor – Interpretation				R	R
ECG 12, 15 or 18 Lead – Acquisition and Transmission	O	O	O	R	R
ECG 12, 15 or 18 Lead - Interpretation				R	R
Hemorrhage Control – Direct Pressure	R	R	R	R	R
Hemorrhage Control – Hemostatic Agents	O	O	O	O	O
Hemorrhage Control – Junctional Tourniquet	O	O	O	O	O
Hemorrhage Control – Pressure Points	R	R	R	R	R
Hemorrhage Control – Skin Clamp (Temporary Use)	O	O	O	O	O
Hemorrhage Control – Tourniquet	R	R	R	R	R
Hemorrhage Control – Wound Packing	O	R	R	R	R
Impedance Threshold Device (ITD)		O	O	O	O
Pericardiocentesis					O
Transcutaneous Pacing				R	R
Point of Care Cardiac Ultrasound – Cardiac Arrest					O
Valsalva Maneuver				R	R

## III. Skill—Splinting and Spinal Motion Immobilization

III. Skill—Splinting and Spinal Motion Immobilization	EMR	EMT	AEMT	INT	PARA
Cervical Collar	R	R	R	R	R
Manual Cervical Stabilization	R	R	R	R	R
Seated Spinal Motion Restriction	O	R	R	R	R
Splinting – Manual	R	R	R	R	R
Splinting – Pelvic Compression Device	O	O	O	O	R
Splinting – Rigid	R	R	R	R	R
Splinting – Soft	R	R	R	R	R
Splinting – Traction	O	R	R	R	R
Splinting – Vacuum	O	O	O	O	O



#### IV. Skill—Medication Administration Routes

IV. Skill—Medication Administration Routes	EMR	EMT	AEMT	INT	PARA
Aerosolized, Nebulized	O	R	R	R	R
Endotracheal Tube (ET)				R	R
Intradermal (ID)	O	O	O	O	O
Intramuscular (IM)	O <sup>1</sup>	R	R	R	R
Intramuscular – Auto-Injector	R	R	R	R	R
Intranasal (IN)	O <sup>2</sup>	R	R	R	R
Intranasal – Auto-Injector	R <sup>2</sup>	R	R	R	R
Intraosseous (IO)			R	R	R
Intravenous (IV)			R	R	R
Mucosal, Sublingual (SL)		R	R	R	R
Oral (PO)	O	R	R	R	R
Rectal				R	R
Subcutaneous (SQ)		O	O	O	O

Note: <sup>1</sup>May only be used for manually drawn epinephrine 1:1000 for anaphylaxis or vaccine administration. <sup>2</sup>May only be used for naloxone.

#### V. Skill—Initiation, Maintenance, Fluids

V. Skill—Initiation, Maintenance, Fluids	EMR	EMT	AEMT	INT	PARA
Central Line or PICC Line – Access and Maintenance (No additional training required in code situation)					O
Intraosseous			R	R	R
IV –External Jugular				O	O
IV –Peripheral			R	R	R
IV Pump – Non-medicated IV Fluids			O	O	O
IV Pump – Two or Less Medicated IVs					O
Maintenance – Medicated IV Fluids					R
Maintenance – Non-medicated IV Fluids			R	R	R
Other Access Ports – Access and Maintenance					O
Saline Lock – Initiation and Access			R	R	R
Saline Lock – Monitor		O	R	R	R

#### VI. Skill—Miscellaneous

VI. Skill—Miscellaneous	EMR	EMT	AEMT	INT	PARA
Assisted Delivery (Childbirth)	R	R	R	R	R
Blood Chemistry Analysis					O
Blood Glucose Monitoring	O	R	R	R	R
Blood Pressure – Automated	O	O	O	O	O
Eye Irrigation	R	R	R	R	R

<b>VI. Skill—Miscellaneous (cont'd)</b>	<b>EMR</b>	<b>EMT</b>	<b>AEMT</b>	<b>INT</b>	<b>PARA</b>
Immunizations	O	O	O	O	O
Long Board	O	R	R	R	R
Nasopharyngeal and/or Oropharyngeal Sampling/Obtaining	O	O	O	O	O
Patient Physical Restraints	O	R	R	R	R
Telemetric monitoring devices and transmission of clinical data including video data	O	O	O	O	O
Venous Blood Sampling – Obtaining			O	O	O
Vital Signs	R	R	R	R	R

**VII. Skill—Assisted Patient Medications**

<b>VII. Skill—Assisted Patient Medications</b>	<b>EMR</b>	<b>EMT</b>	<b>AEMT</b>	<b>INT</b>	<b>PARA</b>
Any patient prescribed medication with online medical control approval (only if administration route is within scope of practice)	O	O	O	O	O

**VIII. Skill—Medications Approved Per Protocol**

<b>VIII. Skill—Medications Approved per Protocol</b>	<b>EMR</b>	<b>EMT</b>	<b>AEMT</b>	<b>INT</b>	<b>PARA</b>
0.45% Sodium Chloride			O	O	O
0.9% Sodium Chloride (Normal Saline)			R	R	R
Activated Charcoal		O	O	O	O
Acetaminophen (Tylenol)		O	R	R	R
Adenosine (Adenocard)				R	R
Albuterol	O	R	R	R	R
Antiarrhythmic Category				R <sup>3</sup>	R
Amiodarone (Cordarone)				O	R
Lidocaine (Xylocaine)				O	R
Procainamide					O
Antiemetic Category	O	O	O	R	R
Dolesteron (Anzemet)					O
Droperidol					O
Isopropyl Alcohol	O	O	O	O	O
Metoclopramide (Reglan)					O
Ondansetron (Zofran)			O	O	O
Prochlorperazine (Compazine)					O
Promethazine (Phenergan)					O
Any patient prescribed medication with online medical control approval (only if administration route is with- in scope of practice)	O	O	O	O	O
Aspirin	O	R	R	R	R
Atropine				R	R

Auto-injector antidotes for chemical and hazardous material exposures	O	O	O	O	O
Benzodiazepine Category				R <sup>4</sup>	R <sup>5</sup>
Diazepam (Valium)				O	O
Lorazepam (Ativan)				O	O
Midazolam (Versed)				O	O
Blood and Blood Product-Initiation					O
Buprenorphine					O
Calcium					R
Cimetidine					O
Clopidogrel (Plavix)					O
Cyanide Antidote Kits					O
Dexamethasone (Decadron)					O
Dextrose			R	R	R

VIII. Skill—Medications Approved per Protocol (cont'd)	EMR	EMT	AEMT	INT	PARA
Diltiazem (Cardizem)					O
Diphenhydramine (Benadryl)					O
Epinephrine (1:1000)-manual injection or autoinjector	O	R	R	R	R
Etomidate (Amidate)					O
Famotidine (Pepcid)					O
Flumazenil (Romazicon)					O
Glucagon		O	O	O	O
Glucose	O	R	R	R	R
Haloperidol (Haldol)					O
Heparin					O
Hydralazine					O
Hydrocortisone					O
Hydroxyzine (Vistaril)					O
Ipratropium (Atrovent)		O	O	O	O
Ketamine (Ketalar)					O
Labetalol					O
Lactated Ringer's			O	O	O
Lidocaine (Xylocaine)				O	R
Magnesium					R
Methylprednisolone (Solu-Medrol)					O
Metoprolol (Lopressor)					O
Naloxone (Narcan) manual or autoinjector	O	R	R	R	R
Nifedipine					O
Nitroglycerin (sublingual tablet or spray)			R	R	R
Nitroglycerin (drip or paste)					O
Nitrous oxide			O	O	O
Non-steroidal anti-inflammatory category		R <sup>10</sup>	R <sup>10</sup>	R <sup>10</sup>	R <sup>10</sup>
Ibuprofen (Advil)		O	O	O	O
Ketorolac (Toradol)			O	O	O
Naproxen		O	O	O	O
Olanzapine					O
Opioid Category				R <sup>8</sup>	R <sup>9</sup>
Fentanyl (Sublimaze)				O	O
Hydromorphone (Dilaudid)					O
Morphine				O	O

VIII. Skill—Medications Approved per Protocol (cont'd)	EMR	EMT	AEMT	INT	PARA
Other Short Acting Beta Agonists (e.g., epinephrine, racemic epinephrine) inhaled and/or nebulized for respiratory distress		O	O	O	O
Oxygen	O	R	R	R	R
Oxymetazoline (Afrin)		O	O	O	O
Oxytocin (Pitocin)					O
Pancuronium (Pavulon)					O
Pralidoxime (2-PAM)					O
Proparacaine					O
Rocuronium (Zemuron)					O
Sodium Bicarbonate					R
Succinylcholine (Anectine)					O
Terbutaline					O
Tetracaine					O
Ticagrelor (Brilinta)					O
Tranexamic Acid (TXA)					O
Vasopressor Category				R	R <sup>7</sup>
Epinephrine (1:10,000)				R	R
Norepinephrine (Levophed)					O
Phenylephrine					O
Vasopressin (Pitressin)				O	O
Vecuronium (Norcuron)					O
Verapamil					O
Ziprasidone (Geodon)					O

Notes: <sup>3</sup>Must choose one antiarrhythmic and may only administer via bolus; <sup>4</sup>Must choose only one benzodiazepine for seizures (midazolam preferred); <sup>5</sup>Must have at least one benzodiazepine (midazolam preferred); <sup>6</sup>Must have at least one antiemetic; <sup>7</sup>Must have at least one vasopressor (norepinephrine preferred); <sup>8</sup>Must choose only one narcotic for pain control (fentanyl preferred); <sup>9</sup>Must have at least one narcotic (fentanyl preferred); <sup>10</sup>Must have at least one nonsteroidal anti-inflammatory listed.

**PART B: ADDITIONAL SCOPE OF PRACTICE ITEMS FOR AMBULANCE SERVICE PROVIDERS LICENSED TO PROVIDE INTERFACILITY TRANSPORT**

<b>Inter-Facility Transport Use Only</b>	<b>EMR</b>	<b>EMT</b>	<b>AEMT</b>	<b>INT</b>	<b>PARA</b>	<b>CCP</b>
<b>Skill—Airway, Ventilation, Oxygenation</b>						
Ventilator – Automated Transport Ventilator		O <sup>1</sup>	O <sup>1</sup>	O <sup>1</sup>	O <sup>1</sup>	O
Ventilator – Variable Setting					O <sup>2</sup>	R
<b>Skill—Cardiovascular, Circulation</b>						
Monitor – Arterial Line						R
Monitor – CVP Line						R
Transvenous Pacing – Maintenance and Troubleshooting (Not Initiation)					O	R
Monitor – Swan-Ganz Catheter						R
<b>Skill—Initiation, Maintenance, Fluids</b>						
IV Pump – Non-medicated IV Fluids			O	O	O	R
IV Pump – Two or Less Medicated IVs					O	R
IV Pump – More than Two Medicated IVs						R
Central Line, PICC Line – Access and Maintenance (No additional training required in code situation)					O	R
Other Access Ports-Access and Maintenance					O	R
<b>Skill—Medications</b>						
Additional Medications-Maintenance of any ordered medications by the transferring physician with Service EMS Medical Director Authorization by protocol, agency formulary or online medical control.					O	O
Additional Medications authorized by Service EMS Medical Director by protocol, agency formulary or online medical control.						O
Blood and Blood Product- Maintenance					O	R
Blood and Blood Product- Initiation					O	O
<b>Skill - Miscellaneous</b>						
Chest Tube - Insertion						O
Chest Tube - Monitoring					R	R
Foley Catheter Insertion						O
Foley Catheter Monitoring		R	R	R	R	R
Nasogastric, Gastrostomy or Jejunostomy Tube Monitoring		R	R	R	R	R
ICP Monitoring						R

Notes: <sup>1</sup>May only be used for CPR; <sup>2</sup>May only use FIO2, rate, and volume adjustments in assist control (AC) mode.



# TRAUMA TRIAGE GUIDELINES

## RED CRITERIA

### High Risk for Serious Injury

#### Injury Patterns

- Penetrating injuries to head, neck, torso, and proximal extremities
- Skull deformity, suspected skull fracture
- Suspected spinal injury with new motor or sensory loss
- Chest wall instability, deformity, or suspected flail chest
- Suspected pelvic fracture
- Suspected fracture of two or more proximal long bones
- Crushed, degloved, mangled, or pulseless extremity
- Amputation proximal to wrist or ankle
- Active bleeding requiring a tourniquet or wound packing with continuous pressure

#### Mental Status & Vital Signs

**All Patients**

- Unable to follow commands (motor GCS < 6)
- RR < 10 or > 29 breaths/min
- Respiratory distress or need for respiratory support
- Room-air pulse oximetry < 90%

**Age 0–9 years**

- SBP < 70mmHg + (2 x age in years)

**Age 10–64 years**

- SBP < 90 mmHg or
- HR > SBP

**Age ≥ 65 years**

- SBP < 110 mmHg or
- HR > SBP

Patients meeting any one of the above RED criteria should be transported to the highest-level trauma center available within the geographic constraints of the regional trauma system

## YELLOW CRITERIA

### Moderate Risk for Serious Injury

#### Mechanism of Injury

- High-Risk Auto Crash
  - Partial or complete ejection
  - Significant intrusion (including roof)
    - >12 inches occupant site OR
    - >18 inches any site OR
    - Need for extrication for entrapped patient
  - Death in passenger compartment
    - Child (age 0–9 years) unrestrained or in unsecured child safety seat
  - Vehicle telemetry data consistent with severe injury
- Rider separated from transport vehicle with significant impact (eg, motorcycle, ATV, horse, etc.)
- Pedestrian/bicycle rider thrown, run over, or with significant impact
- Fall from height > 10 feet (all ages)

#### Mechanism of Injury

Consider risk factors, including:

- Low-level falls in young children (age ≤ 5 years) or older adults (age ≥ 65 years) with significant head impact
- Anticoagulant use
- Suspicion of child abuse
- Special, high-resource healthcare needs
- Pregnancy > 20 weeks
- Burns in conjunction with trauma
- Children should be triaged preferentially to pediatric capable centers

**If concerned, take to a trauma center**

Patients meeting any one of the YELLOW CRITERIA WHO DO NOT MEET RED CRITERIA should be preferentially transported to a trauma center, as available within the geographic constraints of the regional trauma system (need not be the highest-level trauma center)

# REFERENCE DOCUMENTS

**Medication Administration Cross Check (MACC)**

**Neonatal Resuscitation Decision Tree**

**SALT Mass Casualty Triage**

**Suspected Stroke – All Levels**

**General Ventilator Management**

**Medication Quick Reference Guide**





# AURORA SOUTH WI EMS

## MEDICATION ADMINISTRATION CROSS CHECK (MACC)

The MACC must be completed prior to the administration of any medication.

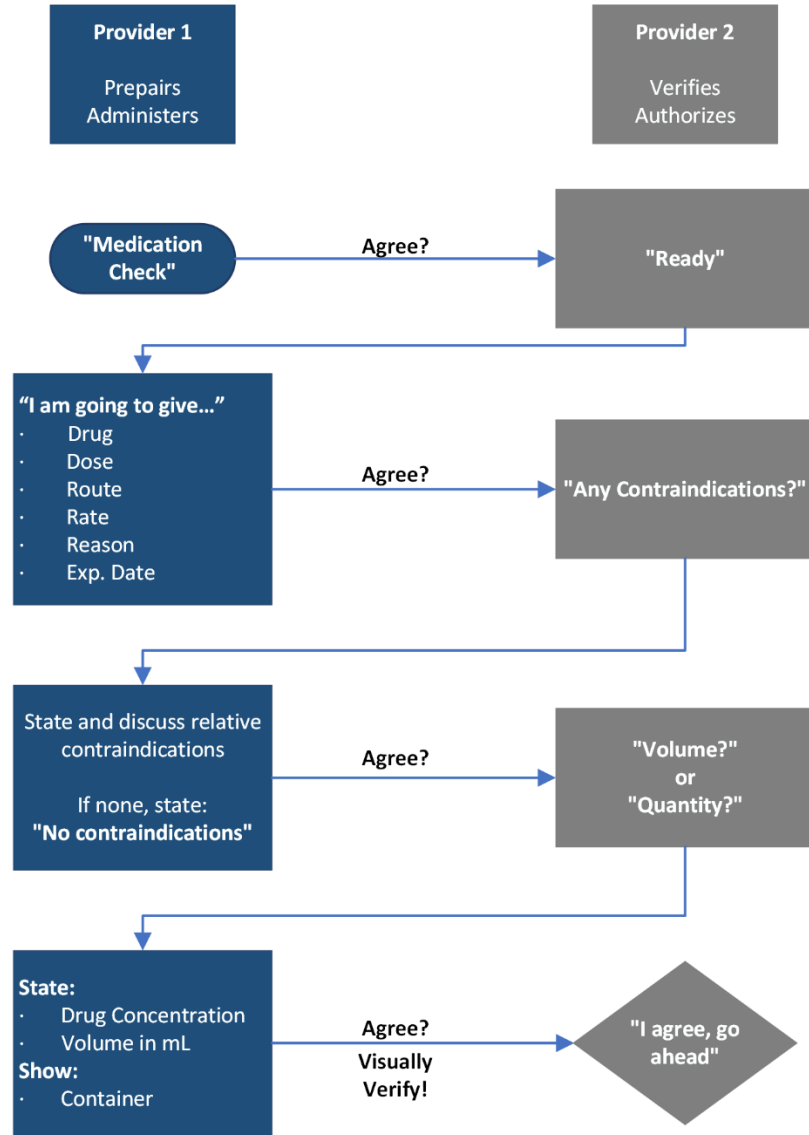
If a discrepancy, disagreement, or need for clarification is encountered at any step in the process, it **MUST** be resolved prior to continuing the MACC.

If there is an interruption or change in patient condition of any kind, **Provider 1** must re-initiate the process.

**Contraindications include:**  
 Expiration date  
 Known patient allergies  
 Verification of vital signs

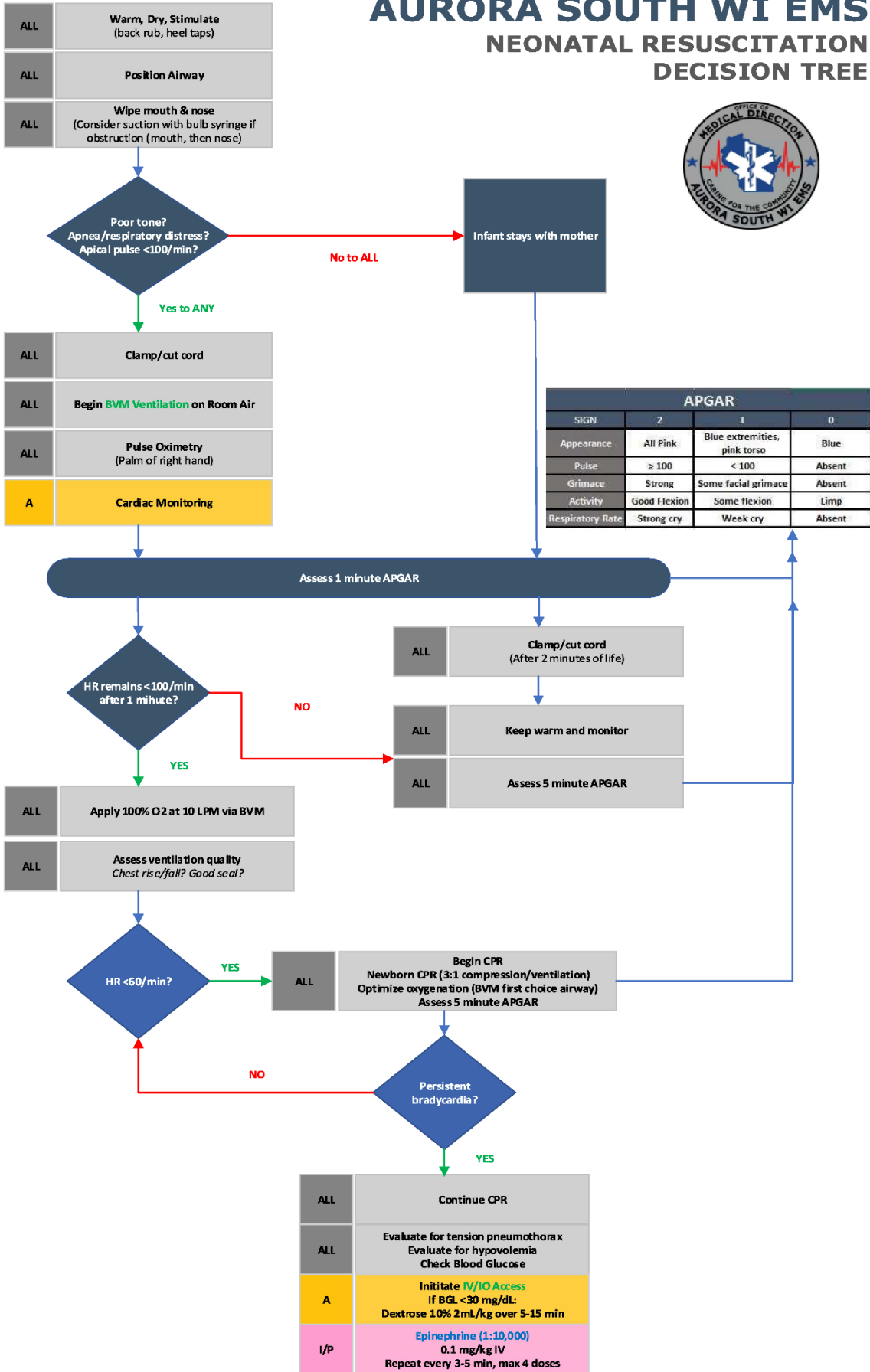
Avoid ambiguous statements of confirmation such as "okay".

Only **Provider 2** can authorize the administration of a medication.



NEVER administer the contents of a syringe that is not labeled, or without visualizing the vial or ampule from which it was immediately drawn!

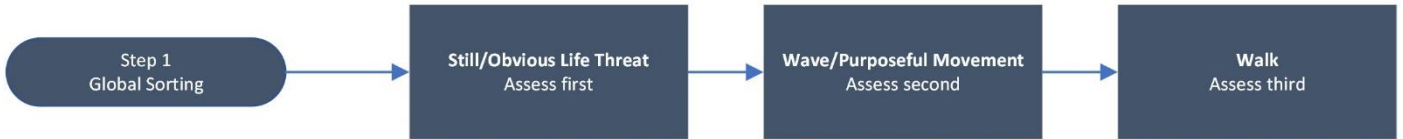
# AURORA SOUTH WI EMS NEONATAL RESUSCITATION DECISION TREE



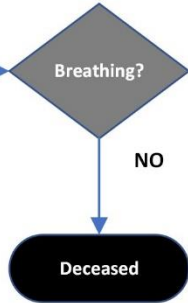


# AURORA SOUTH WI EMS

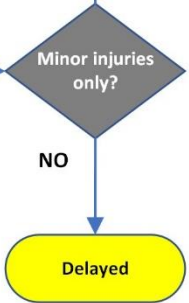
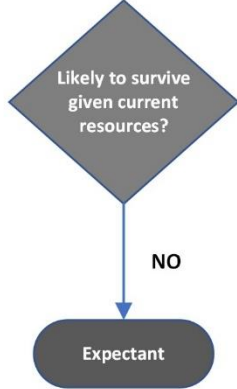
## SALT MASS CASUALTY TRIAGE



- Life Saving Interventions**
1. Control major hemorrhage
  2. Open airway (child, consider 2 rescue breaths)
  3. Tension Pneumothorax
  4. Auto-inject antidotes



- CRAP Assessment**
- C - Commands: obeys or makes purposeful movements?
  - R - Respiratory distress: distress absent?
  - A - Arterial hemorrhage: controlled?
  - P - Peripheral pulses present?



**Interventional Stroke Hospitals**

**MILWAUKEE**  
Ascension St. Mary's  
Froedtert  
Aurora St. Luke's

**MADISON**  
UW Madison

**WAUKESHA**  
ProHealth Waukesha Memorial

**ILLINOIS**  
Javon Bea -Riverside

**Suspected Stroke – All Levels**

- Initial medical care
- Check blood glucose and treat hypoglycemia per protocol
- DO NOT give meds to lower BP unless directed by medical control
  - Contact Medical Control if SBP > 220 mmHg or DBP > 120 mmHg
- Keep NPO
- Position patient with:
  - Neck midline in neutral position
  - Head of bed elevated 30° if SBP>90 mmHg

- Perform Neuro Exam Using BE FAST**
- **B**alance: Sudden loss of balance, sudden trouble walking, loss of coordination, vertigo
  - **E**yes: Sudden trouble seeing or loss of vision in one or both eyes
  - **F**ace weakness; have patient smile and look for unevenness of droop
  - **A**rm or leg weakness that is sudden (have patient hold both arms out in front of them with eyes closed and look for drift)
  - **S**peech: unable to speak, slurred or confused speech that is sudden (have patient say, "You can't teach an old dog new tricks.")
  - **T**ime: Last known well time
  - **T**errible headache: sudden, worst

At least one **BE FAST** criteria is positive

YES

NO

Last known well time is < 24 hours or unknown

NO

- Transport to closest appropriate hospital
- Document:
  - Results of **BE FAST** stroke screen
  - Last known well time
  - Time of symptom identification
  - History of anticoagulants

YES

- Perform SNOw Exam for Large Vessel Occlusion (LVO) Stroke**
- **S**peech: Unable to speak/expressive aphasia
  - **N**eglect: lack of awareness; patient neglects one side of their body or one side of their surroundings
  - **O**cular deviation: eye gaze deviates to one side only and patient cannot look past midline to the other side

At least one **SNOw** criteria is positive

NO

- Transport to closest appropriate hospital
- Notify hospital of neuro/stroke alert as soon as possible

YES

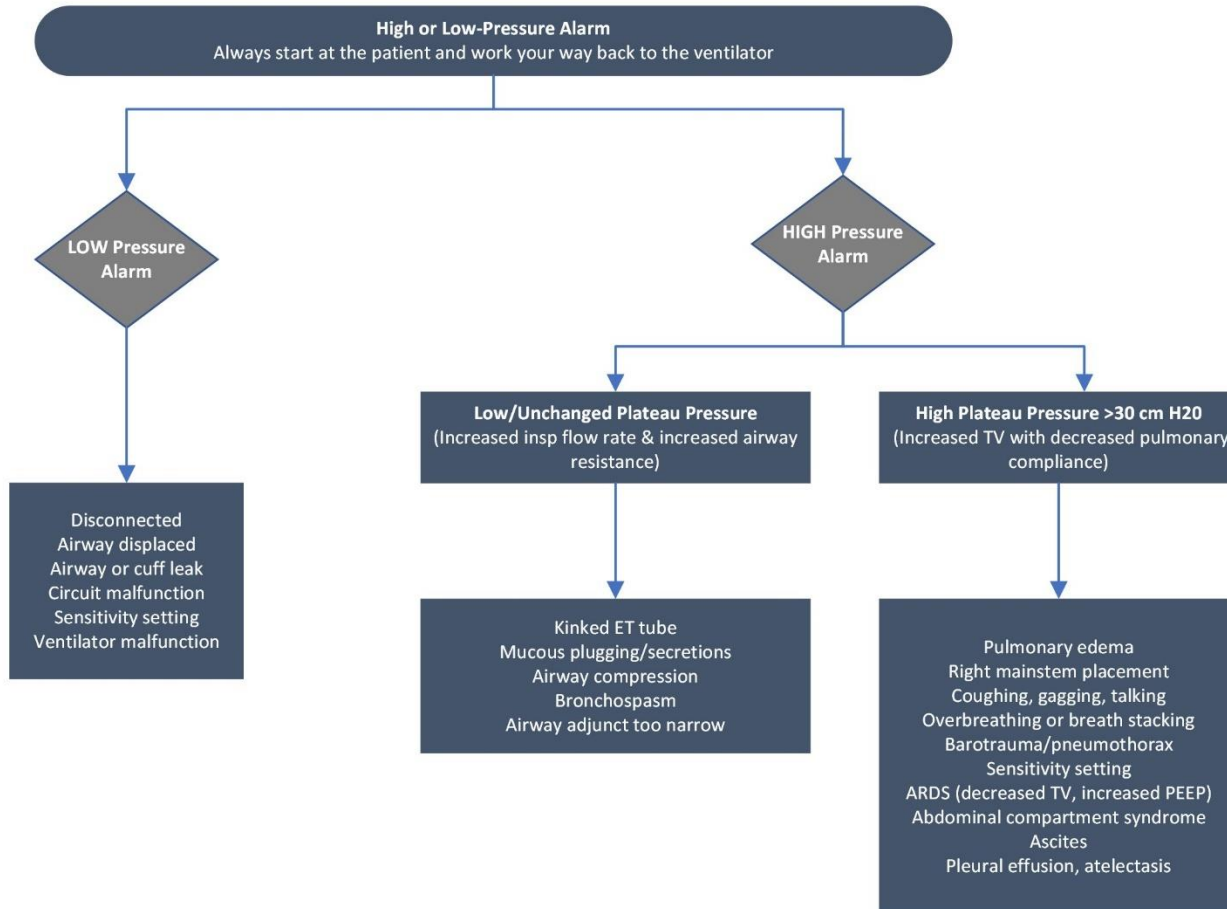
- Transport; consider closest interventional stroke facility
- Notify hospital of neuro/stroke alert and potential LVO stroke as soon as possible

- Document:
  - Results of **BE FAST & SNOw** stroke screen
  - Last known well time
  - Time of symptom identification
  - History of anticoagulants



# AURORA SOUTH WI EMS

## GENERAL VENTILATOR MANAGEMENT



# MEDICATION QUICK REFERENCE GUIDE

Medication	EMR	EMT	AEMT	INT	PARA	Indication	Dose/Wt-Based	Max Dose	Pregnancy	Lactation	Notes
Acetaminophen		O	R	R	R	Pain management. Fever, Septic shock	500-650 mg every 4 hours OR 1 G every 6 hours	4G/24 hours	Yes	Yes	
Adenosine				R	R	Tachycardia	6 mg, if no response repeat with 12 mg	18 mg	Yes	Yes	Requires a rapid IVP, followed by a 20 ml saline bolus
Albuterol	O	R	R	R	R	Allergic reaction/Anaphylaxis, Asthma/COPD, Cardiac Arrest, Pneumonia/TB	2.5mg-10mg based on severity	7.5-20mg based on severity			
						Hyperkalemia	10 mg	10 mg	Yes	Yes	
Amiodarone				O	R	Cardiac Arrest	300 mg IVP; if refractory, an add'l 150mg	450 mg	Yes	Yes	Treat reversible causes first
Aspirin	O	R	R	R	R	Chest pain/ACS/STEMI	150 mg over 10 minutes	150 mg	Yes	Yes	Do not use in children <12 years old
						Bradycardia	1 mg	3 mg			
Atropine				R	R	Organophosphate Poisoning	2 mg	may repeat until resolved	Yes	Yes	
Calcium Chloride					R	Bradycardia due to OD Hyperkalemia	1G slowly over 5 minutes. May repeat in 15 minute to total 3 doses	3G	Yes	Yes	OD on calcium channel or beta blockers not responsive to epinephrine
Calcium Gluconate					R	Bradycardia due to OD	3G slowly over 5 minutes. May repeat in 15 minute to total 3 doses	9G	Yes	Yes	OD on calcium channel or beta blockers not responsive to epinephrine
						Hyperkalemia					Do not mix with Sodium Bicarbonate
Dexamethasone				O	O	Allergic reaction/Anaphylaxis, Asthma/COPD, Shock-Adrenal Insufficiency	10 mg	10mg	Yes	Yes	
Dextrose			R	R	R	Hypoglycemia	25G	25G	Yes	Yes	Do not mix with Sodium Bicarbonate
Diazepam				O	O	Sedation Seizure	>65 years: 2.5 mg ages 12-65: 5 mg; may repeat every 3 minutes 12+ years: 5 mg; may repeat every 5 minutes		Yes	Yes	Can not be mixed with LR Do not give IM
Diltiazem					O	Tachycardia-narrow, irregular or regular and stable	18-65 years: 0.25 mg/kg SIVP of 2 minutes; max single dose 20 mg. May repeat in 15 minutes 0.35 mg/kg SIVP over 2 minutes; max repeat dose 25 mg >65 years: 0.25 mg/kg SIVP of 2 minutes; max single dose 15 mg. May repeat in 15 minutes 0.35 mg/kg SIVP over 2 minutes; max repeat dose 20 mg	45 mg 35 mg		Yes	Rule out and treat underlying potential causes
Diphenhydramine					O	Allergic reaction/Anaphylaxis, Nausea/Vomiting, Dystonic Reaction	50 mg		Yes	Yes	
						Nausea/Vomiting, Dizziness/Vertigo, Behavioral/Psychiatric Emergencies		5 mg		Yes	
Propranolol					O	Patient restraint	Ages 14+: 1.25 mg SIVP over 2 minutes. May repeat in 5 minutes to desired effect; max cumulative dose 5 mg Ages 14+: 2.5 mg SIVP over 2 minutes. May repeat in 5 minutes to desired effect; max cumulative dose 20 mg	20 mg		Yes	

Medication	EMR	EMT	A/EMT	INT	PARA	Indication	Dose/Wt-Based	Max Dose	Pregnancy	Lactation	Notes
Epinephrine 1:1000	O	R	R	R	R	Allergic reaction/Anaphylaxis, Asthma/COPD	0.3 mg Epi Pen OR 0.5mg every 5-15 minutes if symptoms persist		Yes	Yes	
	O	R	R	R	R	Epistaxis	2mg to saturate 2x2				
Epinephrine 1:10000						Cardiac Arrest	1mg. May repeat every 3-5 minutes	4mg			
						Allergic reaction/Anaphylaxis, Asthma/COPD not improving with IM Epi. Bradycardia, Cardiogenic Shock, Hypotension/Shock, Sepsis	1:10000 Push Dose 0.05mg every 2-5 minutes as needed. May double subsequent boluses to 0.1 mg		Yes	Yes	Cardiogenic Shock, Hypotension/Shock and Sepsis allow for an Epi 1:10000 infusion at 2-20 mcg/minute
Etomidate					O	Airway Management	0.3 mg/kg	40mg single dose	Yes	Yes	
					O	Cardioversion- Conscious Sedation	0.1 mg/kg. May repeat x1	10 mg single dose			
Fentanyl					O	Pain management	50 mcg-300 mcg, depending on route of administration		Yes	Yes	Give SIVP to prevent chest wall/muscle rigidity
					O	MAS Management	1 mcg/kg max single dose 200 mcg; may repeat in 5 minutes until desired effect				
Glucagon	O	O	O	O	O	Hypoglycemia	1 mg; amy repeat once in 15 minutes if not improved		Yes	Yes	Can be considered for a beta-blocker OD, however starting dose is 3 mg
Glucose (Oral gel)	O	R	R	R	R	Hypoglycemia	>8 years: 30 grams PO, may repeat in 15 minutes if not improved Adult <65 years: 1 mg every 15 minutes Adult >65 years: 0.5 mg every 15 minutes		Yes	Yes	Moderate to severe acute pain
Hydromorphone					O	Pain Management			Yes	Yes	
Ibuprofen	O	O	O	O	O	Pain Management, Fever or Suspected Sepsis	600 mg	3-2 G/24 hours	NO	Yes	
Ipratropium Bromide					O	Allergic reaction/Anaphylaxis, Difficulty Breathing	0.5 mg		Yes	Yes	
					O	Nausea/Vomiting	1 prep		Yes	Yes	
Isopropyl Alcohol	O				O	Airway Management	2 mg/kg; max single dose 200mg				
					O	Chemical Restraint, Sedation	IV/IO: 2 mg/kg; max single dose 200mg IM: 5mg/kg; max single dose 500 mg				
Ketamine					O	Cardioversion, Seizures	1.5 mg/kg; max single dose 200mg		Yes	Yes	Should not be used if patient has a known or suspected history of schizophrenia
					O	Pain Management	IV/IO: 10 mg; may repeat every 5 minutes IN/IM: 40 mg; may repeat every 15 minutes				
Ketorolac					O	Fever, Pain Management, Sepsis-Fever	IV/IO: 0.5mg/kg; max of 15 mg IM/PO: 1.0 mg/kg; max of 30 mg		NO	Yes	Do not use with other NSAID use within 4 hours
Labetalol					O	Hypertensive Emergencies, Obstetrical Complications	20 mg SIVP over 2 minutes; may repeat every 10 minutes until target BP is reached		Yes	Yes	



Medication	EMR	EMT	AEMT	INT	PARA	Indication	Dose/Wt Based	Max Dose	Pregnancy	Lactation	Notes
Lidocaine				<b>O</b>	<b>R</b>	IO Access Cardiac Arrest, Tachycardia	1 mg/kg, max 50 mg 1.0 mg/kg, max 100 mg; may repeat 0.5 mg/kg every 5-10 minutes	3 mg/kg	Yes	Yes	Allow to dwell for 1 minute prior to flushing Flush the IV with 10ml saline
				<b>O</b>	<b>O</b>	Anxiety/Sedation and Dizziness/Vertigo Chemical Restraint, MAAM (Medication Assisted Airway Management) Seizure	12-65 years: 0.5mg; may repeat every 10 minutes >65 years: 0.25mg; may repeat every 10 minutes **IM route, may repeat in 20 minutes** 2 mg; may repeat every 5 minutes **IM route, may repeat every 20 minutes** IV/IO: 2 mg; may repeat every 5 minutes IM: 4 mg, may repeat every 20 minutes		Yes	Yes	Can not be given with LR
Magnesium Sulfate					<b>R</b>	Cardiac Arrest Difficulty Breathing Eclampsia/Pre-eclampsia Tachycardia	Mix 2 G in 10 ml and administer IVP over 1-2 minutes; if ineffective may repeat immediately Mix 2 G in 10 ml and administer IVP over 10 minutes Mix 4 G in 100 ml NS/DSW over 4 minutes Mix 2 G in 50-100 ml and administer IVP over 10 minutes; if ineffective may repeat once in 15 minutes		Yes	Yes	
					<b>O</b>	Asthma/COPD, Allergic Reaction/Anaphylaxis and Sepsis	125 mg		Yes	Yes	
					<b>O</b>	Nausea/Vomiting, Pain Management (Migraine), Vertigo/Dizziness	Adult: 10 mg; repeat dose depends on route of administration Adult >65: IV/IO: 5 mg; may repeat once in 5 minutes		Yes	Yes	Treat dystonic reactions with Benadryl
Metoprolol					<b>O</b>	Hypertensive Emergencies, Tachycardia (SVT)	5 mg slowly over 2 minutes; may repeat every 5 minutes	15 mg	Yes	Yes	

Medication	EMR	EMT	AEMT	INT	PARA	Indication	Dose/Wt Based	Max Dose	Pregnancy	Lactation	Notes
Midazolam						Anxiety-Severe	12-65 years: IV/IO 2 mg; may repeat every 3 minutes IM/IN: 5 mg, may repeat every 10 minutes >65 years: IV/IO 1 mg; may repeat every 3 minutes. IM/IN: 2 mg, may repeat every 10 minutes		Yes		
						Patient Restraint:Chemical	12-65 years: IV/IO 5 mg IM/IN: 10 mg, may repeat every 10 minutes >65 years: IV/IO 2 mg; may repeat every 3 minutes. IM/IN: 5 mg, may repeat every 10 minutes		Yes		
						Sedation-MAAM	IV/IO: 0.1 mg/kg, max single dose 5 mg; may repeat in 3 minutes				Only if MAP >65
						Sedation-Procedural	IV/IO: 5 mg				IM/IN preferred if IV has not been established
Morphine						Seizure	5 mg; may repeat every 5 minutes until seizure stops IM/IN: 10 mg, may repeat every 10 minutes until seizure stops				
						Pain Management: Acute Severe	<65 years: IV/IO/IM: 0.1mg/kg, max initial dose 10 mg; may repeat every 10 minutes >65 years OR impaired: 0.05 mg/kg, max initial dose 5 mg; may repeat every 10 minutes				
						Pain Management: Acute Moderate	<65 years: IV/IO/IM: 0.05 mg/kg, max initial dose 5 mg; may repeat every 10 minutes >65 years OR impaired: 0.025 mg/kg, max initial dose 2.5 mg; may repeat every 10 minutes		Yes		
Naloxone						Pain Management: MAAM	IV/IO: 0.1 mg/kg, max single dose 10 mg; may repeat every 10 minutes				
						AMS/Unconscious, Overdose or Toxic Exposure	IN: 1 mg (0.5mg/nostril); may repeat every 5 minutes IM: 0.5mg; may repeat every 5 minutes IV/IO: 0.4-0.5mg; may repeat every 2 minutes		Yes		Goal of titration is to achieve and maintain adequate respiratory drive, not necessarily consciousness
						Cardiac Arrest: Suspected narcotic/opioid OD	2mg	10 mg			

Medication	EMR	EMT	AEMT	INT	PARA	Indication	Dose/Wt-Based	Max Dose	Pregnancy	Lactation	Notes
Nitroglycerin						Chest Pain/STEMI	SL: 0.4mg every 5 minutes				
	R	R	R			Difficulty Breathing/Pulmonary Edema	SBP 100-159 mmHg: SL 0.4 mg, may repeat every 3 minutes until symptoms resolve SBP 160-199 mmHg: SL 0.8mg, may repeat every 3 minutes until symptoms resolve SL 1.2 mg, may repeat every 3 minutes until symptoms resolve				Erectile dysfunction medications can lead to severe hypotension
Nitrous Oxide			O	O	O	Hypertensive Crisis	SL: 0.4mg every 5 minutes		No	Yes	Self administered. DO NOT use in 1st or 2nd trimester of pregnancy
Norepinephrine					O	Shock	IV/IO INFUSION ONLY: 0.1 mcg/kg/minute starting dose. Titrate to age appropriate MAP	2 mcg/kg/min	Yes	Yes	
Ondansetron			O	O	O	Nausea/Vomiting	>12 years: 8 mg	8 mg	Yes	Yes	
Oxygen	O	R	R	R	R						
Oxymetazoline			O	O	O	Epistaxis/Nosebleed	2 sprays up bleeding nostril	2 sprays	Yes	Yes	
Oxytocin					O	Postpartum Hemorrhage	IM ONLY: 10 Units		No	Yes	IV administration can cause cardiovascular collapse Can be use before or after placental delivery
Phenylephrine					O	Epistaxis	>6 years: 2-3 sprays/nostril <6 years: 1 spray/nostril	400 mcg	Yes	Yes	Do not use in hypovolemic shock states.
Promethazine					O	Nausea/Vomiting, Pain Management (Migraine), Dizziness/Vertigo	Adult <65 years: IV/IO/IM/PO: 25 mg; administer IV/IO slowly over 2 minutes >65 years: 12.5 mg; administer IV/IO slowly over 2 minutes		Yes	Yes	Treat dystonic reactions with Benadryl
Prochlorperazine					O	Nausea/Vomiting, Pain Management (Migraine), Dizziness/Vertigo	Adult <65 years: IV/IO/IM/PO: 10 mg; administer IV/IO slowly over 2 minutes >65 years: 5 mg; administer IV/IO slowly over 2 minutes		Yes	Yes	Treat dystonic reactions with Benadryl
Rocuronium					O	MAAM, Advanced Airway	IV/IO: 1 mg/kg	100 mg	No	Yes	Provides NO sedation
Sodium Bicarbonate					R	Agitated Delirium, Hyperkalemia	Adult > 12 years: IV/IO: 50 mEq over 5 minutes.	50 mEq	Yes	Yes	Give after administration of Calcium for Hyperkalemia
						Overdose-Tricyclic Antidepressant	IV/IO: 1 mEq/kg; may repeat every 5 minutes until adequate response				Continue to administer until QRS < 100 msec unless the patient has a known BBB
Succinylcholine					O	MAAM	Adult > 10 years: IV/IO: 1.5 mg/kg rapid IVP	200 mg			Provides NO sedation
Tetracaine					O	Eye Emergencies-Pain Management	Ophthalmic: Instill 1-2 drops in affected eye(s); repeat 5-10 minutes to control pain	3 doses	Yes	Yes	
Tranexamic Acid-TXA					O	Shock-Traumatic Hemorrhagic	SLOW IV/IO: 20 mg mixed in 100 ml NS/LR/DSW and infused over 10 minutes	1 G	Yes	Yes	
Vecuronium					O	MAAM, Advanced Airway	IV/IO: 0.1 mg/kg				Provides NO sedation

# PEDIATRIC QUICK REFERENCE GUIDES

GRAY: 3-5 kg	
HR 120-160 SBP 60 MAP 40 RR 30-60	
Equipment	
OPA	50mm
Laryngoscope blade	1 Miller
ET tube	3.0mm cuffed
ET insertion length	9-10.5cm
igel size	1 (pink)
Suction catheter	8F
Defibrillation	8J/16J
Medication	Dosage
Fluid bolus	30 ml
Acetaminophen	64 mg
Adenosine	0.4mg/0.8mg
Albuterol	2.5 mg
Amiodarone	20 mg
Atropine	0.1 mg
Calcium Chloride	80 mg/ 10 mins
Calcium Gluconate	240 mg/5 mins
Dexamethasone	1.2 mg Croup/Stridor 2.4 mg
Dextrose 10%	40ml
Diazepam	0.4 mg
Diltiazem	CONTACT MEDICAL CONTROL
Diphenhydramine	4 mg
Droperidol	0.2 mg
Epi 1:1,000	Epi Pen Jr. OR 0.04 mg IM
Epi 1:10,000	0.04 mg IV/IO
Epi 1:100,000	0.004 mg/0.008mg
Etomidate	1.2 mg
Fentanyl	4 mcg
Glucagon	0.5 mg
Glucose	7.5 G
Hydromorphone	DO NOT USE
Ibuprofen	DO NOT USE
Ipratropium Bromide	0.5 mg
Ketamine	DO NOT USE
Ketorolac	DO NOT USE
Labetalol	0.8 mg
Lidocaine	4 mg
Lorazepam	0.4mg
Magnesium	200 mg in 10ml/ 2 mins
Methylprednisolone	8 mg
Metoclopramide	0.4 mg
Metoprolol	DO NOT USE
Midazolam-Seizures	0.8 mg IM
Midazolam	0.4 mg IV/IO
Morphine-MAAM only	0.4 mg
Narcan	0.4 mg
Nitroglycerin	DO NOT USE
Nitrous Oxide	50% Nitrous & 50% Oxygen
Norepinephrine	0.3-6mcg/min INFUSION
Ondansetron	0.8 mg
Oxymetazoline	DO NOT USE
Phenylephrine	DO NOT USE
Promethazine	DO NOT USE
Prochlorperazine	DO NOT USE
Rocuronium	4 mg
Sodium Bicarbonate	4 mEq
Succinylcholine	10 mg
Tetracaine	1-2 drops
TXA	DO NOT USE
Vecuronium	0.4 mg

PINK: 6-7 kg; 3-5 months	
HR 100-140 SBP 70 MAP 42 RR 30-60	
Equipment	
OPA	50mm
Laryngoscope blade	1 Miller
ET tube	3.0mm cuffed
ET insertion length	10-10.5cm
igel size	1.5 (blue)
Suction catheter	8F
Defibrillation	12J/24J
Medication	Dosage
Fluid bolus	120 ml
Acetaminophen	96 mg
Adenosine	0.6mg/1.2mg
Albuterol	2.5 mg
Amiodarone	30 mg
Atropine	0.12 mg
Calcium Chloride	120 mg/ 10 mins
Calcium Gluconate	360 mg/ 5 mins
Dexamethasone	1.8 mg Croup/Stridor 3.6 mg
Dextrose 10%	60 ml
Diazepam	0.6 mg
Diltiazem	CONTACT MEDICAL CONTROL
Diphenhydramine	6 mg
Droperidol	0.3 mg
Epi 1:1,000	Epi Pen Jr. OR 0.06 mg IM
Epi 1:10,000	0.06 mg IV/IO
Epi 1:100,000	0.006 mg/0.012 mg
Etomidate	1.8 mg
Fentanyl	6 mcg
Glucagon	0.5 mg
Glucose	7.5 G
Hydromorphone	.01 mg
Ibuprofen	60 mg
Ipratropium Bromide	0.5 mg
Ketamine	12 mg
Ketorolac	DO NOT USE
Labetalol	1.2 mg
Lidocaine	7 mg
Lorazepam	0.6 mg
Magnesium	300 mg in 10ml/ 2 mins
Methylprednisolone	12 mg
Metoclopramide	0.6 mg
Metoprolol	DO NOT USE
Midazolam-Seizures	1.2 mg IM
Midazolam	0.6 mg IV/IO
Morphine-MAAM only	0.6 mg
Narcan	0.6 mg
Nitroglycerin	DO NOT USE
Nitrous Oxide	50% Nitrous & 50% Oxygen
Norepinephrine	0.6-12 mcg/min INFUSION
Ondansetron	1.2 mg
Oxymetazoline	DO NOT USE
Phenylephrine	DO NOT USE
Promethazine	DO NOT USE
Prochlorperazine	DO NOT USE
Rocuronium	6 mg
Sodium Bicarbonate	6 mEq
Succinylcholine	14 mg
Tetracaine	1-2 drops
TXA	DO NOT USE
Vecuronium	0.6 mg

RED: 8-9 kg; 6-11 months	
HR 100-140 SBP 70 MAP 42 RR 30-60	
Equipment	
OPA	50mm
Laryngoscope blade	1 Miller
ET tube	3.0mm cuffed
ET insertion length	10.5-11cm
igel size	1.5 (blue)
Suction catheter	8F
Defibrillation	16J/32J
Medication	Dosage
Fluid bolus	160 ml
Acetaminophen	128 mg
Adenosine	0.8mg/1.6mg
Albuterol	2.5 mg
Amiodarone	40 mg
Atropine	0.16 mg
Calcium Chloride	160 mg/ 120 mins
Calcium Gluconate	480 mg/ 5 mins
Dexamethasone	2.4mg Croup/Stridor 4.8 mg
Dextrose 10%	80 ml
Diazepam	0.8 mg
Diltiazem	CONTACT MEDICAL CONTROL
Diphenhydramine	8 mg
Droperidol	0.4 mg
Epi 1:1,000	Epi Pen Jr. OR 0.08 mg IM
Epi 1:10,000	0.08 mg IV/IO
Epi 1:100,000	0.008 mg/0.016 mg
Etomidate	2.4 mg
Fentanyl	8 mcg
Glucagon	0.5 mg
Glucose	7.5 G
Hydromorphone	.01 mg
Ibuprofen	80 mg
Ipratropium Bromide	0.5 mg
Ketamine	16 mg
Ketorolac	4 mg
Labetalol	1.6 mg
Lidocaine	9 mg
Lorazepam	0.8 mg
Magnesium	400 mg in 10 ml/ 2 mins
Methylprednisolone	16 mg
Metoclopramide	0.8 mg
Metoprolol	DO NOT USE
Midazolam-Seizures	1.6 mg IM
Midazolam	0.8 mg IV/IO
Morphine-MAAM only	0.8 mg
Narcan	0.8 mg
Nitroglycerin	DO NOT USE
Nitrous Oxide	50% Nitrous & 50% Oxygen
Norepinephrine	0.8-16 mcg/min INFUSION
Ondansetron	1.6 mg
Oxymetazoline	DO NOT USE
Phenylephrine	DO NOT USE
Promethazine	DO NOT USE
Prochlorperazine	DO NOT USE
Rocuronium	8 mg
Sodium Bicarbonate	8 mEq
Succinylcholine	18 mg
Tetracaine	1-2 drops
TXA	DO NOT USE
Vecuronium	0.8 mg

<b>PURPLE: 10-11 kg; 12-24 months</b>	
<b>HR 100-140 SBP 76 MAP 45 RR 20-40</b>	
<b>Equipment</b>	
OPA	60mm
Laryngoscope blade	1 Miller
ET tube	3.5mm cuffed
ET insertion length	11-12cm
igel size	1.5 (blue)-2.0 (black)
Suction catheter	8-10F
Defibrillation	20J/40J
<b>Medication</b>	
<b>Dosage</b>	
Fluid bolus	200 ml
Acetaminophen	160 mg
Adenosine	1mg/2mg
Albuterol	2.5 mg
Amiodarone	50 mg
Atropine	0.2 mg
Calcium Chloride	200 mg/ 10 mins
Calcium Gluconate	600 mg/ 5 mins
Dexamethasone	3.0 mg croup/stridor 6.0 mg
Dextrose 10%	100 ml
Diazepam	1.0 mg
Diltiazem	<b>CONTACT MEDICAL CONTROL</b>
Diphenhydramine	10 mg
Droperidol	0.5 mg
Epi 1:1,000	Epi Pen Jr. OR 0.10 mg IM
Epi 1:10,000	0.1 mg IV/IO
Epi 1:100,000	0.01 mg/0.02 mg
Etomidate	3.0 mg
Fentanyl	10 mcg
Glucagon	0.5 mg
Glucose	15 G
Hydromorphone	0.2mg
Ibuprofen	100 mg
Ipratropium Bromide	0.5 mg
Ketamine	20 mg
Ketorolac	5 mg
Labetalol	2.0 mg
Lidocaine	11 mg
Lorazepam	1.0 mg
Magnesium	500 mg in 10 ml/ 2 mins
Methylprednisolone	20 mg
Metoclopramide	1.0 mg
Metoprolol	<b>DO NOT USE</b>
Midazolam-Seizures	2.0 mg IM
Midazolam	1.0 mg IV/IO
Morphine-MAAM only	1.0 mg
Narcan	1.0 mg
Nitroglycerin	<b>DO NOT USE</b>
Nitrous Oxide	50% Nitrous & 50% Oxygen
Norepinephrine	1-20 mcg/min INFUSION
Ondansetron	2.0 mg
Oxymetazoline	<b>DO NOT USE</b>
Phenylephrine	50 mcg once
Promethazine	<b>DO NOT USE</b>
Prochlorperazine	<b>DO NOT USE</b>
Rocuronium	10 mg
Sodium Bicarbonate	10 mEq
Succinylcholine	20 mg
Tetracaine	1-2 drops
TXA	<b>DO NOT USE</b>
Vecuronium	1.0 mg

<b>YELLOW: 12-14 kg; 2 years</b>	
<b>HR 100-140 SBP 76 MAP 45 RR 20-40</b>	
<b>Equipment</b>	
OPA	60mm
Laryngoscope blade	2 Miller/Mac
ET tube	4.0mm cuffed
ET insertion length	12.5-13.5cm
igel size	2 (black)
Suction catheter	10F
Defibrillation	26J/52J
<b>Medication</b>	
<b>Dosage</b>	
Fluid bolus	260 ml
Acetaminophen	192 mg
Adenosine	1.3mg/2.6mg
Albuterol	2.5 mg
Amiodarone	60 mg
Atropine	0.26 mg
Calcium Chloride	260 mg/ 10 mins
Calcium Gluconate	780 mg/ 5 mins
Dexamethasone	3.9 mg
Dextrose 10%	130 ml
Diazepam	1.3 mg
Diltiazem	<b>CONTACT MEDICAL CONTROL</b>
Diphenhydramine	13 mg
Droperidol	0.65 mg
Epi 1:1,000	Epi Pen Jr. OR 0.13 mg IM
Epi 1:10,000	0.13 mg IV/IO
Epi 1:100,000	0.013 mg/ 0.026 mg
Etomidate	3.9 mg
Fentanyl	13 mcg
Glucagon	0.5 mg
Glucose	15G
Hydromorphone	0.2 mg
Ibuprofen	120 mg
Ipratropium Bromide	0.5 mg
Ketamine	26 mg
Ketorolac	6.5 mg
Labetalol	2.6 mg
Lidocaine	14 mg
Lorazepam	1.0 mg
Magnesium	650 mg in 10 ml/ 2 mins
Methylprednisolone	26 mg
Metoclopramide	1.3 mg
Metoprolol	<b>DO NOT USE</b>
Midazolam-Seizures	5 mg IM
Midazolam	1.3 mg IV/IO
Morphine-MAAM only	1.3 mg
Narcan	1.3 mg
Nitroglycerin	<b>DO NOT USE</b>
Nitrous Oxide	50% Nitrous & 50% Oxygen
Norepinephrine	1.3-26 mcg/min INFUSION
Ondansetron	2.6 mg
Oxymetazoline	<b>DO NOT USE</b>
Phenylephrine	50 mcg once
Promethazine	3.25 mg
Prochlorperazine	1.3 mg
Rocuronium	13 mg
Sodium Bicarbonate	13 mEq
Succinylcholine	26 mg
Tetracaine	1-2 drops
TXA	<b>DO NOT USE</b>
Vecuronium	1.3 mg

<b>WHITE: 15-18 kg; 3-4 years</b>	
<b>HR 100-140 SBP 76 MAP 45 RR 20-40</b>	
<b>Equipment</b>	
OPA	60mm
Laryngoscope blade	2 Miller/Mac
ET tube	4.5mm cuffed
ET insertion length	14-15cm
igel size	2 (black)
Suction catheter	10-12F
Defibrillation	30J/60J
<b>Medication</b>	
<b>Dosage</b>	
Fluid bolus	300 ml
Acetaminophen	256 mg
Adenosine	1.5mg/3.0mg
Albuterol	2.5 mg
Amiodarone	75 mg
Atropine	0.3 mg
Calcium Chloride	300 mg/ 10 mins
Calcium Gluconate	900 mg/ 5 mins
Dexamethasone	4.5 mg
Dextrose 10%	150 ml
Diazepam	1.5 mg
Diltiazem	<b>CONTACT MEDICAL CONTROL</b>
Diphenhydramine	15 mg
Droperidol	0.75 mg
Epi 1:1,000	Epi Pen Jr. OR 0.15 mg IM
Epi 1:10,000	0.15 IV/IO
Epi 1:100,000	0.015 mg/ 0.030 mg
Etomidate	4.5 mg
Fentanyl	15 mcg
Glucagon	0.5 mg
Glucose	15 G
Hydromorphone	0.3 mg
Ibuprofen	160 mg
Ipratropium Bromide	0.5 mg
Ketamine	30 mg
Ketorolac	7.5 mg
Labetalol	3.0 mg
Lidocaine	18 mg
Lorazepam	1.0 mg
Magnesium	750 mg in 10 ml/ 2 mins
Methylprednisolone	30 mg
Metoclopramide	1.5 mg
Metoprolol	<b>DO NOT USE</b>
Midazolam-Seizures	5 mg IM
Midazolam	1.5 mg IV/IO
Morphine-MAAM only	1.5 mg
Narcan	1.5 mg
Nitroglycerin	<b>DO NOT USE</b>
Nitrous Oxide	50% Nitrous & 50% Oxygen
Norepinephrine	1.5-30 mcg/min INFUSION
Ondansetron	3.0 mg
Oxymetazoline	<b>DO NOT USE</b>
Phenylephrine	50 mcg once
Promethazine	3.75 mg
Prochlorperazine	1.5 mg
Rocuronium	15 mg
Sodium Bicarbonate	15 mEq
Succinylcholine	30 mg
Tetracaine	1-2 drops
TXA	<b>DO NOT USE</b>
Vecuronium	1.5 mg

<b>BLUE: 19-23 kg; 5-6 years</b>	
HR 80-120 SBP 80 MAP 48 RR 20-30	
Equipment	
OPA	70mm
Laryngoscope blade	2 Miller/Mac
ET tube	5.0mm cuffed
ET insertion length	15.5-16.5cm
igel size	2 (black)
Suction catheter	10-12F
Defibrillation	40J/80J
Medication	Dosage
Fluid bolus	400 ml
Acetaminophen	320 mg
Adenosine	2mg/4mg
Albuterol	2.5 mg
Amiodarone	100 mg
Atropine	0.4 mg
Calcium Chloride	400 mg/ 10 mins
Calcium Gluconate	1200 mg/5 mins
Dexamethasone	6.0 mg
Dextrose 10%	200 ml
Diazepam	2.0 mg
Diltiazem	<b>CONTACT MEDICAL CONTROL</b>
Diphenhydramine	20 mg
Droperidol	1.0 mg
Epi 1:1,000	Epi Pen Jr. OR 0.20 mg IM
Epi 1:10,000	0.2 mg IV/IO
Epi 1:100,000	0.02 mg/ 0.04 mg
Etomidate	6.0 mg
Fentanyl	20 mcg
Glucagon	1 mg
Glucose	15G
Hydromorphone	0.3 mg
Ibuprofen	200 mg
Ipratropium Bromide	0.5 mg
Ketamine	40 mg
Ketorolac	10 mg
Labetalol	4 mg
Lidocaine	23 mg
Lorazepam	1.0 mg
Magnesium	1000 mg in 10 ml/2 mins
Methylprednisolone	40 mg
Metoclopramide	2.0 mg
Metoprolol	<b>DO NOT USE</b>
Midazolam-Seizures	5 mg IM
Midazolam	2.0 mg IV/IO
Morphine-MAAM only	2.0 mg
Narcan	0.4-0.5 mg IV/IO Cardiac Arrest 2 mg
Nitroglycerin	<b>DO NOT USE</b>
Nitrous Oxide	50% Nitrous & 50% Oxygen
Norepinephrine	2-40 mcg/min INFUSION
Ondansetron	4.0mg
Oxymetazoline	<b>DO NOT USE</b>
Phenylephrine	50 mcg once
Promethazine	5 mg
Prochlorperazine	2.0 mg
Rocuronium	20 mg
Sodium Bicarbonate	20 mEq
Succinylcholine	40 mg
Tetracaine	1-2 drops
TXA	<b>DO NOT USE</b>
Vecuronium	2.0 mg

<b>ORANGE: 24-29 kg; 7-9 years</b>	
HR 80-120 SBP 84 MAP 52 RR 16-24	
Equipment	
OPA	80mm
Laryngoscope blade	2-3 Miller/Mac
ET tube	5.5mm cuffed
ET insertion length	17-18cm
igel size	2.5 (white)
Suction catheter	12F
Defibrillation	60J/120J
Medication	Dosage
Fluid bolus	600 ml
Acetaminophen	416 mg
Adenosine	3mg/6mg
Albuterol	2.5 mg
Amiodarone	150 mg
Atropine	0.6 mg
Calcium Chloride	600 mg/ 10 mins
Calcium Gluconate	1800 mg/ 5 mins
Dexamethasone	9.0 mg
Dextrose 10%	250 ml
Diazepam	2.5 mg
Diltiazem	<b>CONTACT MEDICAL CONTROL</b>
Diphenhydramine	30 mg
Droperidol	1.25 mg
Epi 1:1,000	Epi Pen OR 0.25 mg IM
Epi 1:10,000	0.3 mg IV/IO
Epi 1:100,000	0.03 mg/ 0.06 mg
Etomidate	9.0 mg
Fentanyl	30 mcg
Glucagon	1 mg
Glucose	30G
Hydromorphone	0.4 mg
Ibuprofen	260 mg
Ipratropium Bromide	0.5 mg
Ketamine	60 mg
Ketorolac	15 mg
Labetalol	6 mg
Lidocaine	29 mg
Lorazepam	1.0 mg
Magnesium	1500 mg in 10 ml/ 2 mins
Methylprednisolone	60 mg
Metoclopramide	3.0 mg
Metoprolol	<b>DO NOT USE</b>
Midazolam-Seizures	5 mg IM
Midazolam	3.0 mg IV/IO
Morphine-MAAM only	3.0 mg
Narcan	0.4-0.5 mg IV/IO Cardiac Arrest 2 mg
Nitroglycerin	<b>DO NOT USE</b>
Nitrous Oxide	50% Nitrous & 50% Oxygen
Norepinephrine	3-60 mcg/min INFUSION
Ondansetron	6.0 mg
Oxymetazoline	2 sprays
Phenylephrine	50 mcg once
Promethazine	7.5 mg
Prochlorperazine	3.0 mg
Rocuronium	30 mg
Sodium Bicarbonate	30 mEq
Succinylcholine	60 mg
Tetracaine	1-2 drops
TXA	<b>DO NOT USE</b>
Vecuronium	3.0 mg

<b>GREEN: 30-36 kg; 10-11 years</b>	
HR 80-120 SBP 90 MAP 55 RR 16-20	
Equipment	
OPA	80mm
Laryngoscope blade	2-3 Miller/Mac
ET tube	6.0mm cuffed
ET insertion length	18.5-19.5cm
igel size	2.5 (white)-3 (yellow)
Suction catheter	12F
Defibrillation	70J/140J
Medication	Dosage
Fluid bolus	700 ml
Acetaminophen	480 mg
Adenosine	3.5mg/7mg
Albuterol	2.5 mg
Amiodarone	175 mg
Atropine	0.75 mg
Calcium Chloride	700 mg/ 10 mins
Calcium Gluconate	2100 mg/ 5 mins
Dexamethasone	10 mg
Dextrose 10%	250 ml
Diazepam	3.0 mg
Diltiazem	<b>CONTACT MEDICAL CONTROL</b>
Diphenhydramine	35 mg
Droperidol	1.25 mg
Epi 1:1,000	Epi Pen OR 0.35 mg IM
Epi 1:10,000	0.35 mg IV/IO
Epi 1:100,000	0.035 mg/ 0.07 mg
Etomidate	10.5 mg
Fentanyl	35 mcg
Glucagon	1 mg
Glucose	30G
Hydromorphone	0.5 mg
Ibuprofen	300 mg
Ipratropium Bromide	0.5 mg
Ketamine	70 mg
Ketorolac	15 mg
Labetalol	7 mg
Lidocaine	36 mg
Lorazepam	1.0 mg
Magnesium	1750 mg in 10 ml/ 2 mins
Methylprednisolone	70 mg
Metoclopramide	3.5 mg
Metoprolol	<b>DO NOT USE</b>
Midazolam-Seizures	5 mg IM
Midazolam	3.5 mg IV/IO
Morphine-MAAM only	3.5 mg
Narcan	0.4-0.5 mg IV/IO Cardiac Arrest 2 mg
Nitroglycerin	<b>DO NOT USE</b>
Nitrous Oxide	50% Nitrous & 50% Oxygen
Norepinephrine	3.5-70 mcg/min INFUSION
Ondansetron	7.0 mg
Oxymetazoline	2 sprays
Phenylephrine	50 mcg/ 100 mcg
Promethazine	8.75 mg
Prochlorperazine	3.5 mg
Rocuronium	35 mg
Sodium Bicarbonate	35 mEq
Succinylcholine	70 mg
Tetracaine	1-2 drops
TXA	<b>DO NOT USE</b>
Vecuronium	3.5 mg

# PEDIATRIC CRASH CARDS – QUICK REFERENCE GUIDES



<b>RED: 8-9 kg; 6-11 months</b>	
HR 100-140 SBP 70 MAP 42 RR 30-60	
Equipment	
OPA	50mm
Laryngoscope blade	1 Miller
ET tube	3.0mm cuffed
ET insertion length	10.5-11cm
igel size	1.5 (blue)
Suction catheter	8F
Defibrillation	16J/32J
Medication	Dosage
Fluid bolus	160 ml
Adenosine	0.8mg/1.6mg
Amiodarone	40 mg
Atropine	0.16 mg
Calcium Chloride	160 mg/ 120 mins
Calcium Gluconate	480 mg/ 5 mins
Diazepam	0.8 mg
Diltiazem	<b>CONTACT MEDICAL CONTROL</b>
Epi 1:1,000	Epi Pen Jr. OR 0.08 mg IM
Epi 1:10,000	0.08 mg IV/IO
Epi 1:100,000	0.008 mg/0.016 mg
Etomidate	2.4 mg
Fentanyl	8 mcg
Hydromorphone	.01 mg
Ketamine	16 mg
Lidocaine	9 mg
Lorazepam	0.8 mg
Magnesium	400 mg in 10 ml/ 2 mins
Midazolam-Seizures	1.6 mg IM
Midazolam	0.8 mg IV/IO
Morphine-MAAM only	0.8 mg
Narcan	0.8 mg
Norepinephrine	0.8-1.6 mcg/min INFUSION
Phenylephrine	<b>DO NOT USE</b>
Rocuronium	8 mg
Succinylcholine	18 mg
Vecuronium	0.8 mg

<b>PINK: 6-7 kg; 3-5 months</b>	
HR 100-140 SBP 70 MAP 42 RR 30-60	
Equipment	
OPA	50mm
Laryngoscope blade	1 Miller
ET tube	3.0mm cuffed
ET insertion length	10-10.5cm
igel size	1.5 (blue)
Suction catheter	8F
Defibrillation	12J/24J
Medication	Dosage
Fluid bolus	120 ml
Adenosine	0.6mg/1.2mg
Amiodarone	30 mg
Atropine	0.12 mg
Calcium Chloride	120 mg/ 10 mins
Calcium Gluconate	360 mg/ 5 mins
Diazepam	0.6 mg
Diltiazem	<b>CONTACT MEDICAL CONTROL</b>
Epi 1:1,000	Epi Pen Jr. OR 0.06 mg IM
Epi 1:10,000	0.06 mg IV/IO
Epi 1:100,000	0.006 mg/0.012 mg
Etomidate	1.8 mg
Fentanyl	6 mcg
Hydromorphone	.01 mg
Ketamine	12 mg
Lidocaine	7 mg
Lorazepam	0.6 mg
Magnesium	300 mg in 10ml/ 2 mins
Midazolam-Seizures	1.2 mg IM
Midazolam	0.6 mg IV/IO
Morphine-MAAM only	0.6 mg
Narcan	0.6 mg
Norepinephrine	0.6-1.2 mcg/min INFUSION
Phenylephrine	<b>DO NOT USE</b>
Rocuronium	6 mg
Succinylcholine	14 mg
Vecuronium	0.6 mg

<b>GRAY: 3-5 kg</b>	
HR 120-160 SBP 60 MAP 40 RR 30-60	
Equipment	
OPA	50mm
Laryngoscope blade	1 Miller
ET tube	3.0mm cuffed
ET insertion length	9-10.5cm
igel size	1 (pink)
Suction catheter	8F
Defibrillation	8J/16J
Medication	Dosage
Fluid bolus	30 ml
Adenosine	0.4mg/0.8mg
Amiodarone	20 mg
Atropine	0.1 mg
Calcium Chloride	80 mg/ 10 mins
Calcium Gluconate	240 mg/ 5 mins
Diazepam	0.4 mg
Diltiazem	<b>CONTACT MEDICAL CONTROL</b>
Epi 1:1,000	Epi Pen Jr. OR 0.04 mg IM
Epi 1:10,000	0.04 mg IV/IO
Epi 1:100,000	0.004 mg/0.008mg
Etomidate	1.2 mg
Fentanyl	4 mcg
Hydromorphone	<b>DO NOT USE</b>
Ketamine	<b>DO NOT USE</b>
Lidocaine	4 mg
Lorazepam	0.4mg
Magnesium	200 mg in 10ml/ 2 mins
Midazolam-Seizures	0.8 mg IM
Midazolam	0.4 mg IV/IO
Morphine-MAAM only	0.4 mg
Narcan	0.4 mg
Norepinephrine	0.3-6mcg/min INFUSION
Phenylephrine	<b>DO NOT USE</b>
Rocuronium	4 mg
Succinylcholine	10 mg
Vecuronium	0.4 mg

<b>WHITE: 15-18 kg; 3-4 years</b>	
HR 100-140 SBP 76 MAP 45 RR 20-40	
Equipment	
OPA	60mm
Laryngoscope blade	2 Miller/Mac
ET tube	4.5mm cuffed
ET insertion length	14-15cm
igel size	2 (black)
Suction catheter	10-12F
Defibrillation	30J/60J
Medication	Dosage
Fluid bolus	300 ml
Adenosine	1.5mg/3.0mg
Amiodarone	75 mg
Atropine	0.3 mg
Calcium Chloride	300 mg/10 mins
Calcium Gluconate	900 mg/5 mins
Diazepam	1.5 mg
Diltiazem	<b>CONTACT MEDICAL CONTROL</b>
Epi 1:1,000	Epi Pen Jr. OR 0.15 mg IM
Epi 1:10,000	0.15 IV/IO
Epi 1:100,000	0.015 mg/0.030 mg
Etomidate	4.5 mg
Fentanyl	15 mcg
Hydromorphone	0.3 mg
Ketamine	30 mg
Lidocaine	18 mg
Lorazepam	1.0 mg
Magnesium	750 mg in 10 ml/ 2 mins
Midazolam-Seizures	5 mg IM
Midazolam	1.5 mg IV/IO
Morphine-MAAM only	1.5 mg
Narcan	1.5 mg
Norepinephrine	1.5-30 mcg/min INFUSION
Phenylephrine	50 mcg once
Rocuronium	15 mg
Succinylcholine	30 mg
Vecuronium	1.5 mg

<b>YELLOW: 12-14 kg; 2 years</b>	
HR 100-140 SBP 76 MAP 45 RR 20-40	
Equipment	
OPA	60mm
Laryngoscope blade	2 Miller/Mac
ET tube	4.0mm cuffed
ET insertion length	12.5-13.5cm
igel size	2 (black)
Suction catheter	10F
Defibrillation	26J/52J
Medication	Dosage
Fluid bolus	260 ml
Adenosine	1.3mg/2.6mg
Amiodarone	60 mg
Atropine	0.26 mg
Calcium Chloride	260 mg/10 mins
Calcium Gluconate	780 mg/5 mins
Diazepam	1.3 mg
Diltiazem	<b>CONTACT MEDICAL CONTROL</b>
Epi 1:1,000	Epi Pen Jr. OR 0.13 mg IM
Epi 1:10,000	0.13 mg IV/IO
Epi 1:100,000	0.013 mg/0.026 mg
Etomidate	3.9 mg
Fentanyl	13 mcg
Hydromorphone	0.2 mg
Ketamine	26 mg
Lidocaine	14 mg
Lorazepam	1.0 mg
Magnesium	650 mg in 10 ml/ 2 mins
Midazolam-Seizures	5 mg IM
Midazolam	1.3 mg IV/IO
Morphine-MAAM only	1.3 mg
Narcan	1.3 mg
Norepinephrine	1.3-26 mcg/min INFUSION
Phenylephrine	50 mcg once
Rocuronium	13 mg
Succinylcholine	26 mg
Vecuronium	1.3 mg

<b>PURPLE: 10-11 kg; 12-24 months</b>	
HR 100-140 SBP 76 MAP 45 RR 20-40	
Equipment	
OPA	60mm
Laryngoscope blade	1 Miller
ET tube	3.5mm cuffed
ET insertion length	11-12cm
igel size	1.5 (blue)-2.0 (black)
Suction catheter	8-10F
Defibrillation	20J/40J
Medication	Dosage
Fluid bolus	200 ml
Adenosine	1mg/2mg
Amiodarone	50 mg
Atropine	0.2 mg
Calcium Chloride	200 mg/10 mins
Calcium Gluconate	600 mg/5 mins
Diazepam	1.0 mg
Diltiazem	<b>CONTACT MEDICAL CONTROL</b>
Epi 1:1,000	Epi Pen Jr. OR 0.10 mg IM
Epi 1:10,000	0.1 mg IV/IO
Epi 1:100,000	0.01 mg/0.02 mg
Etomidate	3.0 mg
Fentanyl	10 mcg
Hydromorphone	0.2 mg
Ketamine	20 mg
Lidocaine	11 mg
Lorazepam	1.0 mg
Magnesium	500 mg in 10 ml/ 2 mins
Midazolam-Seizures	2.0 mg IM
Midazolam	1.0 mg IV/IO
Morphine-MAAM only	1.0 mg
Narcan	1.0 mg
Norepinephrine	1-20 mcg/min INFUSION
Phenylephrine	50 mcg once
Rocuronium	10 mg
Succinylcholine	20 mg
Vecuronium	1.0 mg

<b>GREEN: 30-36 kg; 10-11 years</b> HR 80-120 SBP 90 MAP 55 RR 16-20		Equipment	
OPA	80mm		
Laryngoscope blade	2-3 Miller/Mac		
ET tube	6.0mm cuffed		
ET insertion length	18.5-19.5cm		
igel size	2.5 (white)-3 (yellow)		
Suction catheter	12F		
Defibrillation	70J/140J		
Medication	Dosage		
Fluid bolus	700 ml		
Adenosine	3.5mg/7mg		
Amiodarone	175 mg		
Atropine	0.75 mg		
Calcium Chloride	700 mg/ 10 mins		
Calcium Gluconate	2100 mg/ 5 mins		
Diazepam	3.0 mg		
Diltiazem	<b>CONTACT MEDICAL CONTROL</b>		
Epi 1:1,000	Epi Pen OR 0.35 mg IM		
Epi 1:10,000	0.35 mg IV/IO		
Epi 1:100,000	0.035 mg/ 0.07 mg		
Etomidate	10.5 mg		
Fentanyl	35 mcg		
Hydromorphone	0.5 mg		
Ketamine	70 mg		
Lidocaine	36 mg		
Lorazepam	1.0 mg		
Magnesium	1750 mg in 10 ml/ 2 mins		
Midazolam-Seizures	5 mg IM		
Midazolam	3.5 mg IV/IO		
Morphine-MAAM only	3.5 mg		
Narcan	0.4-0.5 mg IV/IO		
Norepinephrine	3.5-70 mcg/min INFUSION		
Phenylephrine	50 mcg/100 mcg		
Rocuronium	35 mg		
Succinylcholine	70 mg		
Vecuronium	3.5 mg		

<b>ORANGE: 24-29 kg; 7-9 years</b> HR 80-120 SBP 84 MAP 52 RR 16-24		Equipment	
OPA	80mm		
Laryngoscope blade	2-3 Miller/Mac		
ET tube	5.5mm cuffed		
ET insertion length	17-18cm		
igel size	2.5 (white)		
Suction catheter	12F		
Defibrillation	60J/120J		
Medication	Dosage		
Fluid bolus	600 ml		
Adenosine	3mg/6mg		
Amiodarone	150 mg		
Atropine	0.6 mg		
Calcium Chloride	600 mg/ 10 mins		
Calcium Gluconate	1800 mg/ 5 mins		
Diazepam	2.5 mg		
Diltiazem	<b>CONTACT MEDICAL CONTROL</b>		
Epi 1:1,000	Epi Pen OR 0.25 mg IM		
Epi 1:10,000	0.3 mg IV/IO		
Epi 1:100,000	0.03 mg/ 0.06 mg		
Etomidate	9.0 mg		
Fentanyl	30 mcg		
Hydromorphone	0.4 mg		
Ketamine	60 mg		
Lidocaine	29 mg		
Lorazepam	1.0 mg		
Magnesium	1500 mg in 10 ml/ 2 mins		
Midazolam-Seizures	5 mg IM		
Midazolam	3.0 mg IV/IO		
Morphine-MAAM only	3.0 mg		
Narcan	0.4-0.5 mg IV/IO		
Norepinephrine	3-60 mcg/min INFUSION		
Phenylephrine	50 mcg once		
Rocuronium	30 mg		
Succinylcholine	60 mg		
Vecuronium	3.0 mg		

<b>BLUE: 19-23 kg; 5-6 years</b> HR 80-120 SBP 80 MAP 48 RR 20-30		Equipment	
OPA	70mm		
Laryngoscope blade	2 Miller/Mac		
ET tube	5.0mm cuffed		
ET insertion length	15.5-16.5cm		
igel size	2 (black)		
Suction catheter	10-12F		
Defibrillation	40J/80J		
Medication	Dosage		
Fluid bolus	400 ml		
Adenosine	2mg/4mg		
Amiodarone	100 mg		
Atropine	0.4 mg		
Calcium Chloride	400 mg/ 10 mins		
Calcium Gluconate	1200 mg/ 5 mins		
Diazepam	2.0 mg		
Diltiazem	<b>CONTACT MEDICAL CONTROL</b>		
Epi 1:1,000	Epi Pen Jr. OR 0.20 mg IM		
Epi 1:10,000	0.2 mg IV/IO		
Epi 1:100,000	0.02 mg/ 0.04 mg		
Etomidate	6.0 mg		
Fentanyl	20 mcg		
Hydromorphone	0.3 mg		
Ketamine	40 mg		
Lidocaine	23 mg		
Lorazepam	1.0 mg		
Magnesium	1000 mg in 10 ml/ 2 mins		
Midazolam-Seizures	5 mg IM		
Midazolam	2.0 mg IV/IO		
Morphine-MAAM only	2.0 mg		
Narcan	0.4-0.5 mg IV/IO		
Norepinephrine	2-40 mcg/min INFUSION		
Phenylephrine	50 mcg once		
Rocuronium	20 mg		
Succinylcholine	40 mg		
Vecuronium	2.0 mg		

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